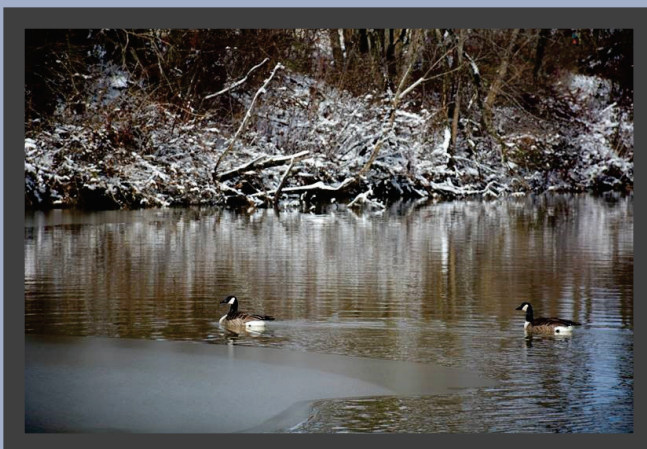
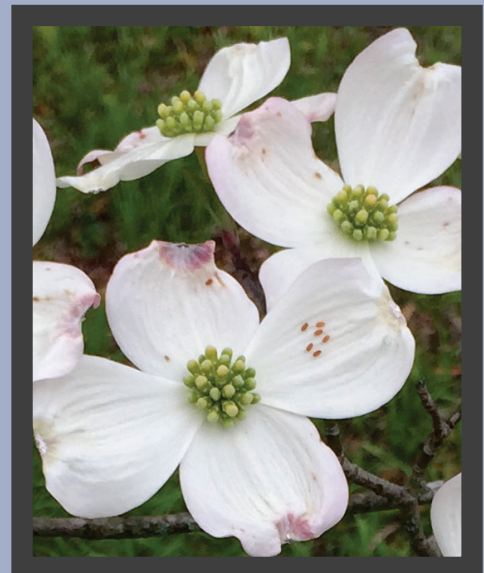
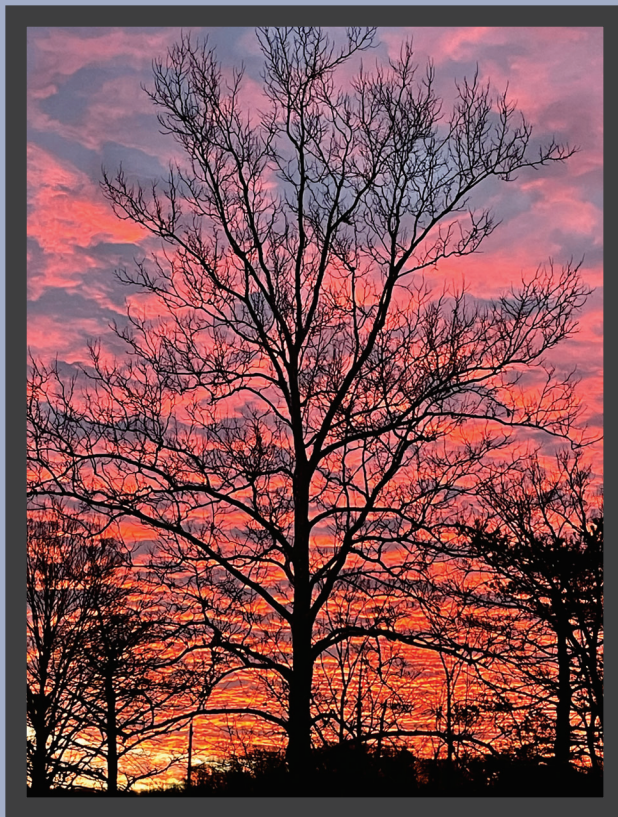




# U.S. Department of Energy

## Portsmouth Gaseous Diffusion Plant

Annual Site  
Environmental Data  
2020



September 2021



**U.S. Department of Energy  
Portsmouth Gaseous Diffusion Plant  
Annual Site Environmental Data – 2020  
Piketon, Ohio**



**U.S. Department of Energy  
DOE/PPPO/03-1035&D1**

**September 2021**

**By**

**Fluor-BWXT Portsmouth LLC, under Contract DE-AC30-10CC40017**

**FBP-ER-RCRA-WD-RPT-0376, Revision 1**

This document has been approved for public release:

*Richard Henderson* (signature on file)

9/8/2021

Classification Office

Date

This page intentionally left blank.

## CONTENTS

TABLES .....	iii
ACRONYMS AND ABBREVIATIONS .....	v
1. INTRODUCTION.....	1-1
2. ENVIRONMENTAL MONITORING.....	2-1
3. AIR DOSE.....	3-1
4. GROUNDWATER.....	4-1
5. REFERENCES.....	5-1

This page intentionally left blank.

## TABLES

2.1	Radionuclide concentrations in FBP and Centrus NPDES outfall water samples – 2020.....	2-2
2.2	FBP NPDES permit summary January 2020 – June 2020.....	2-5
2.3	FBP NPDES permit summary July 2020 – December 2020 .....	2-10
2.4	MCS NPDES permit summary – 2020 .....	2-15
2.5	FBP NPDES discharge summary and compliance rates – 2020.....	2-16
2.6	MCS NPDES discharge summary and compliance rates – 2020.....	2-22
2.7	Centrus NPDES discharge monitoring results – 2020 .....	2-23
2.8	Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2020.....	2-24
2.9	Drainage basin monitoring of surface water and sediment for MCS cylinder storage yards – 2020.....	2-26
2.10	Ambient air monitoring program summary for radionuclides and fluoride – 2020.....	2-27
2.11	Ambient air monitoring program summary for non-radionuclides – 2020.....	2-33
2.12	External radiation monitoring program (mrem) – 2020.....	2-38
2.13	External radiation monitoring (mrem) at locations near on-site cylinder storage yards – 2020.....	2-38
2.14	Settleable solids monitoring results – 2020 .....	2-39
2.15	Local surface water monitoring program results – 2020 .....	2-40
2.16	Sediment monitoring program results – 2020.....	2-44
2.17	Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2020.....	2-50
2.18	Biota (fish) monitoring program results – 2020.....	2-53
2.19	Biota (crops) monitoring program results – 2020.....	2-54
2.20	Biota (deer) monitoring program results – 2020.....	2-56
2.21	Biota (milk and eggs) monitoring program results – 2020 .....	2-57
3.1	Emissions (Ci/year) from DOE air emission sources – 2020 .....	3-1
3.2	Predicted radiation doses from airborne releases at PORTS – 2020 .....	3-2

3.3 Dose calculations for ambient air monitoring stations – 2020..... 3-2

4.1 VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020..... 4-4

4.2 VOCs detected at the PK Landfill – 2020..... 4-12

4.3 VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2020..... 4-13

4.4 VOCs detected at the X-749A Classified Materials Disposal Facility – 2020 ..... 4-15

4.5 VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2020..... 4-16

4.6 VOCs detected at the X-701B Former Holding Pond – 2020..... 4-18

4.7 Results for radionuclides at the X-701B Former Holding Pond – 2020 ..... 4-25

4.8 Results for chromium at the X-633 Former Recirculating Cooling Water Complex – 2020..... 4-32

4.9 VOCs detected at the X-616 Former Chromium Sludge Surface Impoundments – 2020 ..... 4-33

4.10 Results for chromium at the X-616 Former Chromium Sludge Surface Impoundments – 2020..... 4-34

4.11 VOCs detected at the X-740 Former Waste Oil Handling Facility – 2020..... 4-35

4.12 Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2020..... 4-37

4.13 VOCs detected at the X-735 Landfills – 2020..... 4-38

4.14 Results for radionuclides at the X-735 Landfills – 2020 ..... 4-39

4.15 VOCs detected at the X-734 Landfills – 2020..... 4-40

4.16 Results for cadmium and nickel at the X-533 Former Switchyard Complex – 2020 ..... 4-41

4.17 VOCs detected at the X-344C Former Hydrogen Fluoride Storage Building – 2020 ..... 4-42

4.18 VOCs detected at surface water monitoring locations – 2020..... 4-43

4.19 Results for radionuclides at surface water monitoring locations – 2020 ..... 4-44



## ACRONYMS AND ABBREVIATIONS

#/100 mL	number per 100 mL
ACP	American Centrifuge Plant
°C	degrees Celsius
Ci	curie
cm	centimeter
DOE	U.S. Department of Energy
DUF <sub>6</sub>	depleted uranium hexafluoride
FBP	Fluor-BWXT Portsmouth LLC
°F	degrees Fahrenheit
g	gram
GPD	gallons per day
in.	inch
kg	kilogram
L	liter
m	meter
m <sup>3</sup>	cubic meter
µg	microgram
mg	milligram
MCS	Mid-America Conversion Services, LLC
MGD	million gallons per day
mrem	millirem
ng	nanogram
NPDES	National Pollutant Discharge Elimination System
Ohio EPA	Ohio Environmental Protection Agency
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
VOC	volatile organic compound

This page intentionally left blank.

## 1. INTRODUCTION

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

This document is a compilation of the environmental monitoring data for calendar year 2020 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 Gaseous Diffusion Plant Annual Site Environmental Report – 2020* (DOE 2021b).

The DOE has established a total public annual dose limit of 100 millirem (mrem)/year above background in DOE Order 458.1, *Radiation Protection of the Public and the Environment*. This annual dose limit is also subject to the concept of "as low as reasonably achievable"<sup>1</sup>. Radiological monitoring data presented in this Data Report and discussed in the *Annual Site Environmental Report for 2020* indicate that the maximum annual dose a member of the public could receive from radionuclides released by PORTS in 2020 or detected by environmental monitoring programs in 2020 is 1.0 mrem/year and is considered as low as reasonably achievable.

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. Emissions of some non-radiological air pollutants are controlled by air emission permits issued by Ohio Environmental Protection Agency (Ohio EPA). The *Portsmouth Gaseous Diffusion Plant Annual Site Environmental Report – 2020* (DOE 2021b) provides more information about non-radiological chemicals released from PORTS or detected by PORTS monitoring programs during 2020.

---

<sup>1</sup> "As low as reasonably achievable" is an approach to radiation protection to manage and control releases of radioactive material to the environment, the workforce, and members of the public so that levels are as low as reasonable, taking into account societal, environmental, technical, economic, and public policy considerations. As low as reasonably achievable is not a specific release or dose limit, but a process that has the goal of optimizing control and managing release of radioactive material to the environment and doses so they are as far below the applicable limits as reasonably achievable. This approach optimizes radiation protection.

This page intentionally left blank.

## 2. ENVIRONMENTAL MONITORING

This section provides environmental monitoring data collected in 2020 by DOE contractors Fluor-BWXT Portsmouth LLC (FBP) and Mid-America Conversion Services, LLC (MCS). Data collected by Centrus for NPDES outfalls associated with the American Centrifuge Plant (ACP) are also reported in this section.

The following tables are provided in this section:

- Table 2.1. Radionuclide concentrations in FBP and Centrus NPDES outfall water samples – 2020
- Table 2.2. FBP NPDES permit summary January 2020 – June 2020
- Table 2.3. FBP NPDES permit summary July 2020 – December 2020
- Table 2.4. MCS NPDES permit summary – 2020
- Table 2.5. FBP NPDES discharge summary and compliance rates – 2020
- Table 2.6. MCS NPDES discharge summary and compliance rates – 2020
- Table 2.7. Centrus NPDES discharge monitoring results – 2020
- Table 2.8 Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2020
- Table 2.9. Drainage basin monitoring of surface water and sediment for MCS cylinder storage yards – 2020
- Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020
- Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020
- Table 2.12. External radiation monitoring program (mrem) – 2020
- Table 2.13. External radiation monitoring (mrem) at locations near on-site cylinder storage yards – 2020
- Table 2.14. Settleable solids monitoring results – 2020
- Table 2.15. Local surface water monitoring program results – 2020
- Table 2.16. Sediment monitoring program results – 2020
- Table 2.17. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2020
- Table 2.18. Biota (fish) monitoring program results – 2020
- Table 2.19. Biota (crops) monitoring program results – 2020

- Table 2.20. Biota (deer) monitoring program results – 2020
- Table 2.21. Biota (milk and eggs) monitoring program results – 2020.

**Table 2.1. Radionuclide concentrations in FBP and Centrus  
 NPDES outfall water samples – 2020**

NPDES outfall <sup>a</sup>	Parameter <sup>b</sup>	Number of samples <sup>c</sup>	Minimum <sup>d</sup>	Maximum <sup>d</sup>	Average <sup>e</sup>
<i>FBP Outfalls</i>					
001	Americium-241	4(4)	< 0.0027	< 0.024	
	Neptunium-237	4(4)	0	< 0.00248	
	Plutonium-238	4(4)	0	< 0.00844	
	Plutonium-239/240	4(4)	< 0.00624	< 0.0169	
	Technetium-99	13(2)	< 1.77	50.3	18.6
	Uranium	13(0)	< 0.348	5.24	2.53
	Uranium-233/234	13(0)	0.594	9.54	4.77
	Uranium-235/236	13(4)	< 0.0325	0.509	
	Uranium-238	13(0)	0.112	1.68	0.812
002	Americium-241	4(4)	0	< 0.0185	
	Neptunium-237	4(4)	0	< 0.00773	
	Plutonium-238	4(4)	0	< 0.00392	
	Plutonium-239/240	4(4)	0	< 0.0232	
	Technetium-99	12(12)	0	< 3.76	
	Uranium	12(1)	< 0.218	1.05	0.721
	Uranium-233/234	12(0)	0.29	1.02	0.601
	Uranium-235/236	12(12)	< 0.00613	< 0.0682	
	Uranium-238	12(1)	< 0.0626	0.344	0.237
003	Americium-241	4(4)	< 0.00372	< 0.0205	
	Neptunium-237	4(4)	0	< 0.00958	
	Plutonium-238	4(4)	0	< 0.00292	
	Plutonium-239/240	4(4)	0	< 0.00785	
	Technetium-99	12(0)	39	97.3	66.8
	Uranium	12(0)	1.11	3.41	2.34
	Uranium-233/234	12(0)	0.754	2.73	1.76
	Uranium-235/236	12(10)	< 0.0126	0.137	
	Uranium-238	12(0)	0.37	1.13	0.774
004	Americium-241	4(4)	0	< 0.0259	
	Neptunium-237	4(4)	0	0	
	Plutonium-238	4(4)	0	< 0.0109	
	Plutonium-239/240	4(4)	< 0.00336	< 0.0145	
	Technetium-99	12(12)	0	< 2.69	
	Uranium	12(12)	< 0.0698	< 0.264	
	Uranium-233/234	12(12)	< 0.0358	< 0.0979	
	Uranium-235/236	12(12)	0	< 0.0227	
	Uranium-238	12(12)	< 0.0235	< 0.0857	

**Table 2.1. Radionuclide concentrations in FBP and Centrus  
 NPDES outfall water samples – 2020 (continued)**

NPDES outfall <sup>a</sup>	Parameter <sup>b</sup>	Number of samples <sup>c</sup>	Minimum <sup>d</sup>	Maximum <sup>d</sup>	Average <sup>e</sup>
<i>FBP Outfalls</i>					
005	Americium-241	4(4)	0	< 0.0166	
	Neptunium-237	4(4)	0	< 0.00264	
	Plutonium-238	4(4)	0	< 0.00673	
	Plutonium-239/240	4(4)	< 0.00558	< 0.0127	
	Techneium-99	12(11)	0	75	
	Uranium	12(10)	< 0.0775	0.267	
	Uranium-233/234	12(6)	< 0.0225	0.151	
	Uranium-235/236	12(12)	0	< 0.0277	
009	Uranium-238	12(9)	< 0.0261	0.0902	
	Americium-241	4(4)	0	< 0.015	
	Neptunium-237	4(4)	0	< 0.0141	
	Plutonium-238	4(4)	0	< 0.00392	
	Plutonium-239/240	4(4)	0	< 0.00905	
	Techneium-99	12(12)	0	< 3.14	
	Uranium	12(0)	1.35	6.27	3.24
	Uranium-233/234	12(0)	0.547	2.53	1.41
010	Uranium-235/236	12(10)	< 0.0393	0.121	
	Uranium-238	12(0)	0.447	2.09	1.08
	Americium-241	4(4)	< 0.0146	< 0.028	
	Neptunium-237	4(4)	0	< 0.00703	
	Plutonium-238	4(4)	0	< 0.0186	
	Plutonium-239/240	4(4)	< 0.00677	< 0.0217	
	Techneium-99	12(10)	0	26.1	
	Uranium	12(1)	1.04	2.26	1.69
011	Uranium-233/234	12(0)	0.451	2.06	1.17
	Uranium-235/236	12(11)	< 0.0201	< 0.101	
	Uranium-238	12(0)	0.345	0.746	0.558
	Americium-241	4(4)	< 0.00316	< 0.0337	
	Neptunium-237	4(4)	< 0.00276	< 0.0102	
	Plutonium-238	4(4)	0	0	
	Plutonium-239/240	4(4)	0	< 0.0209	
	Techneium-99	12(12)	0	< 4.55	
015	Uranium	12(0)	0.889	2.47	1.89
	Uranium-233/234	12(0)	0.339	1.23	0.900
	Uranium-235/236	12(11)	< 0.0142	< 0.0952	
	Uranium-238	12(0)	0.297	0.821	0.627
	Americium-241	4(4)	0	< 0.0139	
	Neptunium-237	4(4)	0	< 0.00602	
	Plutonium-238	4(4)	0	< 0.00608	
	Plutonium-239/240	4(4)	0	< 0.0183	
015	Techneium-99	12(12)	0	< 4.71	
	Uranium	12(1)	< 0.277	1.14	0.751
	Uranium-233/234	12(0)	0.107	0.823	0.438
	Uranium-235/236	12(12)	0	< 0.0966	
	Uranium-238	12(1)	< 0.0907	0.367	0.248

**Table 2.1. Radionuclide concentrations in FBP and Centrus  
 NPDES outfall water samples – 2020 (continued)**

NPDES outfall <sup>a</sup>	Parameter <sup>b</sup>	Number of samples <sup>c</sup>	Minimum <sup>d</sup>	Maximum <sup>d</sup>	Average <sup>e</sup>	
<i>FBP Outfalls</i>						
608	Americium-241	4(4)	0	< 0.0106		
	Neptunium-237	4(4)	0	< 0.00213		
	Plutonium-238	4(4)	0	< 0.0148		
	Plutonium-239/240	4(4)	< 0.00621	< 0.0148		
	Technetium-99	12(0)	123	451	194	
	Uranium	12(0)	0.553	1.26	0.911	
	Uranium-233/234	12(0)	0.212	0.747	0.392	
	Uranium-235/236	12(12)	0	< 0.0364		
610	Uranium-238	12(0)	0.184	0.422	0.303	
	Americium-241	2(2)	0	< 0.0138		
	Neptunium-237	2(2)	0	< 0.0157		
	Plutonium-238	2(2)	0	< 0.00446		
	Plutonium-239/240	2(2)	0	< 0.0163		
	Technetium-99	3(2)	< 2.22	11.6		
	Uranium	3(0)	0.834	1.68	1.27	
	Uranium-233/234	3(0)	1.08	2.09	1.62	
611	Uranium-235/236	3(2)	< 0.0089	0.125		
	Uranium-238	3(0)	0.279	0.545	0.415	
	Americium-241	4(4)	< 0.00801	< 0.0367		
	Neptunium-237	4(4)	< 0.00223	< 0.0208		
	Plutonium-238	4(4)	0	< 0.0166		
	Plutonium-239/240	4(4)	0	< 0.0167		
	Technetium-99	12(0)	9.57	654	339	
	Uranium	12(0)	2.9	5.2	4.15	
012	Uranium-233/234	12(0)	2.3	4.42	3.51	
	Uranium-235/236	12(0)	0.136	0.269	0.198	
	Uranium-238	12(0)	0.945	1.71	1.36	
	<i>Centrus outfalls</i>					
	012	Americium-241	4(4)	< 0.042	< 0.089	
		Neptunium-237	4(4)	< 0.053	< 0.294	
		Plutonium-238	4(4)	< 0.067	< 0.111	
		Plutonium-239/240	4(4)	< 0.05	< 0.111	
Technetium-99		51(51)	< 8.16	< 12		
013	Uranium	51(0)	0.52	2.15	1.17	
	Americium-241	4(4)	< 0.053	< 0.075		
	Neptunium-237	4(4)	< 0.057	< 0.194		
	Plutonium-238	4(4)	< 0.049	< 0.077		
	Plutonium-239/240	4(4)	< 0.065	< 0.087		
013	Technetium-99	51(51)	< 7.94	< 11.7		
	Uranium	51(0)	0.21	1.70	0.96	

<sup>a</sup>FBP internal NPDES Outfalls 608, 610, and 611 discharge to NPDES Outfall 003 (X-6619 Sewage Treatment Plant).

<sup>b</sup>Uranium is reported in µg/L; all other radionuclides are reported in pCi/L.

<sup>c</sup>Number in parentheses is the number of samples that were below the detection limit.

<sup>d</sup>Minimum or maximum values reported as "0" may actually be negative results. A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results. These negative value results are reported as "0" in the table for simplicity.

<sup>e</sup>Averages 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. These criteria were adapted from *Data Quality Assessment: A Reviewer's Guide* (EPA 2006).



**Table 2.2. FBP NPDES permit summary January 2020 – June 2020**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 001 (X-230J7 East Holding Pond)</i>					
Cadmium, total recoverable	µg/L	1/quarter	24-hr composite		
Chlorine, total residual	mg/L	1/week	Grab	0.05	0.05
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/month	Grab	25	1700
Oil & grease	mg/L	1/week	Grab	10	15
pH	SU	1/week	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Dissolved solids, total (Residue, total filterable)	mg/L	1/week	24-hr composite		
Silver, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/week	24-hr composite	20	45
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
<i>FBP Outfall 002 (X-230K South Holding Pond)</i>					
Cadmium, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/quarter	Grab		
pH	SU	1/week	Grab		6.5–9.0
Nitrogen, ammonia (NH <sub>3</sub> )	mg/L	1/month	24-hr composite		
Oil & grease	mg/L	1/week	Grab		10
Selenium, total recoverable	µg/L	1/month	24-hr composite		5.0
Silver, total recoverable	µg/L	1/quarter	24-hr composite		
Thallium, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/week	24-hr composite	20	45
<i>FBP Outfall 003 (X-6619 Sewage Treatment Plant)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	TUa	1/quarter	24-hr composite		
Acute toxicity, <i>Pimephales promelas</i>	TUa	1/quarter	24-hr composite		
Carbonaceous biochemical oxygen demand, 5-day	mg/L	1/week	24-hr composite	10 (15.1)	15 (22.7)
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
E. coli <sup>c</sup>	#/100 mL	1/week	Grab	126	284
Flow rate	MGD	Daily	24-hr total		
Mercury, total	ng/L	1/month	Grab	66 (0.000099)	1700 (0.0025)

**Table 2.2. FBP NPDES permit summary January 2020 – June 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 003 (X-6619 Sewage Treatment Plant)</i>					
Nitrogen, ammonia (NH <sub>3</sub> )	mg/L	1/2 weeks	24-hr composite		
Nitrite plus nitrate	mg/L	1/quarter	24-hr composite		
Oil & grease	mg/L	1/quarter	Grab		
pH	SU	3/week	Grab		6.5–9.0
Silver, total recoverable	µg/L	1/quarter	24-hr composite		
Thallium, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids	mg/L	1/week	24-hr composite	12 (18.2)	18 (27.3)
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
<i>FBP Outfall 004 (Cooling Tower Blowdown)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	TUa	1/quarter	24-hr composite		
Acute toxicity, <i>Pimephales promelas</i>	TUa	1/quarter	24-hr composite		
Chlorine, total residual	mg/L	1/week	Grab		0.05
Copper, total recoverable	µg/L	1/month	24-hr composite		66 (0.160)
Dissolved solids, total (Residue, total filterable)	mg/L	1/month	24-hr composite	3500 (8480)	4000 (9690)
Flow rate	MGD	Daily	24-hr total		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	15	20
pH	SU	1/month	Grab		6.5–9.0
Total suspended solids	mg/L	1/month	24-hr composite	18 (43)	27 (65)
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
<i>FBP Outfall 005 (X-611B Lime Sludge Lagoons)</i>					
Flow rate	MGD	3/week	24-hr total (estimate)		
Lead, total recoverable	µg/L	1/month	Grab		
Mercury, total	ng/L	1/month	Grab		
pH	SU	1/week	Grab		6.5–10.0
Selenium, total recoverable	µg/L	1/month	Grab		5
Total suspended solids <sup>b</sup>	mg/L	1/week	Grab	10	15
<i>FBP Outfall 009 (X-230L North Holding Pond)</i>					
Bis(2-ethylhexyl)phthalate	µg/L	1/month	Composite	8.4	1105
Copper, total recoverable	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	Grab		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	10	15
pH	SU	1/week	Grab		6.5–9.0

**Table 2.2. FBP NPDES permit summary January 2020 – June 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 009 (X-230L North Holding Pond)</i>					
Silver, total recoverable	µg/L	1/month	Grab	1.3	2.7
Total suspended solids <sup>b</sup>	mg/L	1/week	Grab	30	45
Zinc, total recoverable	µg/L	1/quarter	Grab		
<i>FBP Outfall 010 (X-230J5 Northwest Holding Pond)</i>					
Flow rate	MGD	Daily	24-hr total		
Lead, total recoverable	µg/L	1/month	24-hr composite		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab	10	15
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	24-hr composite	30	45
Zinc, total recoverable	µg/L	1/month	24-hr composite		
<i>FBP Outfall 011 (X-230J6 Northeast Holding Pond)</i>					
Cadmium, total recoverable	µg/L	1/quarter	Grab		
Chlorine, total residual	mg/L	1/2 weeks	Grab	0.05	0.05
Copper, total recoverable	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	Grab		
Oil & grease	mg/L	1/2 weeks	Grab	10	15
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/month	Grab		5.6
Thallium, total recoverable	µg/L	1/quarter	Grab		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	Grab	30	45
Zinc, total recoverable	µg/L	1/month	Grab		
<i>FBP Outfall 015 (X-624 Groundwater Treatment Facility)</i>					
Arsenic, total recoverable	µg/L	1/quarter	Grab		
Barium, total recoverable	µg/L	1/quarter	Grab		
Flow rate	MGD	Daily	24-hr total		
PCBs	µg/L	1/quarter	Grab		<i>d</i>
pH	SU	1/2 weeks	Grab		6.5–9.0
Silver, total recoverable	µg/L	1/month	Grab	1.3	6.8
Trichloroethene	µg/L	1/2 weeks	Grab	10	10

**Table 2.2. FBP NPDES permit summary January 2020 – June 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total (estimate)		
Iron, total <sup>b</sup>	µg/L	1/2 weeks	Grab	3500	7000
Manganese, total <sup>b</sup>	µg/L	1/2 weeks	Grab	2000	4000
pH	SU	1/2 weeks	Grab		6.0–10.0
Precipitation, total	in.	Daily	24-hr total		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	Grab	35	50
<i>FBP Outfall 604 (X-700 Bionitrification Facility)</i>					
Copper, total	µg/L	1/month	24-hr composite		
Iron, total	µg/L	1/month	24-hr composite		
Flow rate	MGD	Daily	24-hr total estimate		
Nickel, total	µg/L	1/month	24-hr composite		
Nitrogen, nitrate	mg/L	1/month	24-hr composite		
pH	SU	1/month	Grab		6.5–9.0
Zinc, total	µg/L	1/month	24-hr composite		
<i>FBP Outfall 605 (X-705 Microfiltration Treatment System)</i>					
Chromium, hexavalent	µg/L	1/month	Grab		
Chromium, total	µg/L	1/month	24-hr composite		
Copper, total	µg/L	1/month	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Nickel, total	µg/L	1/month	24-hr composite		
Nitrogen, ammonia (NH <sub>3</sub> )	mg/L	1/month	24-hr composite		
Nitrogen, nitrate	mg/L	1/month	24-hr composite		
Nitrogen, nitrite	mg/L	1/month	24-hr composite		
Nitrogen, Kjeldahl	mg/L	1/month	24-hr composite		
Oil & grease	mg/L	1/month	Grab		
pH	SU	1/month	Grab		6.5–10.0
Sulfate (SO <sub>4</sub> )	mg/L	1/month	24-hr composite		
Total suspended solids	mg/L	1/month	24-hr composite	20	30
Trichloroethene	µg/L	1/month	Grab		
Zinc, total	µg/L	1/month	24-hr composite		
<i>FBP Outfall 608 (X-622 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
<i>trans</i> -1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10

**Table 2.2. FBP NPDES permit summary January 2020 – June 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 610 (X-623 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
<i>trans</i> -1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Outfall 611 (X-627 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Monitoring Station 801 (Upstream Monitoring)</i>					
48-hr acute toxicity, <i>Ceriodaphnia dubia</i>	% affected	1/quarter	Grab		
96-hr acute toxicity, <i>Pimephales promelas</i>	% affected	1/quarter	Grab		
<i>FBP Monitoring Station 902 (Downstream Farfield Monitoring)</i>					
Water temperature	°C	2/week	24-hr maximum	27.8 <sup>c</sup>	29.4 <sup>c</sup>
<i>FBP Monitoring Station 903 (Downstream Farfield Monitoring)</i>					
Water temperature	°C	2/week	24-hr maximum	27.8 <sup>c</sup>	29.4 <sup>c</sup>

<sup>a</sup>If provided in the permit, the loading limit, in kg/day or kg/month, is provided in parentheses.

<sup>b</sup>Limitations do not apply if flow increases as a result of a precipitation or snow melt event and conditions specified in the permit are met.

<sup>c</sup>Summer only (May through October).

<sup>d</sup>No detectable PCBs.

**Table 2.3. FBP NPDES permit summary July 2020 – December 2020**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 001 (X-230J7 East Holding Pond)</i>					
Chlorine, total residual	mg/L	1/week	Grab	0.05	0.05
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/month	Grab	20	1700
Oil & grease	mg/L	1/week	Grab		10
pH	SU	1/week	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Silver, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/week	24-hr composite	20	45
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
<i>FBP Outfall 002 (X-230K South Holding Pond)</i>					
Bis(2-ethylhexyl)phthalate	µg/L	1/month	Multiple grab	8.4	1100
Chlorine, total residual	mg/L	1/week	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	24-hr composite		
Mercury, total (low level)	ng/L	1/quarter	Grab		
pH	SU	1/week	Grab		6.5–9.0
Oil & grease	mg/L	1/week	Grab		10
Selenium, total recoverable	µg/L	1/quarter	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/week	24-hr composite	20	45
<i>FBP Outfall 003 (X-6619 Sewage Treatment Plant)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	TUa	1/year	24-hr composite		
Acute toxicity, <i>Pimephales promelas</i>	TUa	1/year	24-hr composite		
Carbonaceous biochemical oxygen demand, 5-day	mg/L	1/week	24-hr composite	10 (14.8)	15 (22.2)
E. coli <sup>c</sup>	#/100 mL	1/week	Grab	126	284
Flow rate	MGD	Daily	24-hr total		
Mercury, total	ng/L	1/month	Grab	27 (0.000040)	1700 (0.0025)
Nitrogen, ammonia (NH <sub>3</sub> )	mg/L	1/2 weeks	24-hr composite		
Nitrite plus nitrate	mg/L	1/quarter	24-hr composite		
Oil & grease	mg/L	1/quarter	Grab		
pH	SU	3/week	Grab		6.5–9.0
Total suspended solids	mg/L	1/week	24-hr composite	12 (17.8)	18 (26.6)

**Table 2.3. FBP NPDES permit summary July 2020 – December 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 004 (Cooling Tower Blowdown)</i>					
Acute toxicity, <i>Ceriodaphnia dubia</i>	TUa	1/quarter	24-hr composite		
Acute toxicity, <i>Pimephales promelas</i>	TUa	1/quarter	24-hr composite		
Beryllium, total recoverable	µg/L	1/month	24-hr composite		
Cadmium, total recoverable	µg/L	1/month	24-hr composite		
Chlorine, total residual	mg/L	1/week	Grab		0.05
Chromium, total recoverable	µg/L	1/month	24-hr composite		
Cobalt, total recoverable	µg/L	1/month	24-hr composite		
Copper, total recoverable	µg/L	1/month	24-hr composite		66 (0.575)
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/month	24-hr composite		
Mercury, total (low level)	ng/L	1/month	Grab	12 (0.000105)	1700 (0.0148)
Nickel, total recoverable	µg/L	1/month	24-hr composite		
Oil & grease	mg/L	1/week	Grab		10
PCBs	µg/L	1/month	24-hr composite		<i>d</i>
pH	SU	1/week	Grab		6.5–9.0
Residue, total filterable	mg/L	1/month	24-hr composite		
Selenium, total recoverable	µg/L	1/month	24-hr composite		
Silver, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids	mg/L	1/week	24-hr composite	11.2 (97.6)	12.5 (109)
Vanadium, total recoverable	µg/L	1/month	24-hr composite		
Zinc, total recoverable	µg/L	1/month	24-hr composite		
<i>FBP Outfall 005 (X-611B Lime Sludge Lagoons)</i>					
Flow rate	MGD	1/day	24-hr total (estimate)		
Mercury, total	ng/L	1/quarter	Grab		
pH	SU	1/week	Grab		6.5–9.0
Selenium, total recoverable	µg/L	1/quarter	Grab		
Total suspended solids <sup>b</sup>	mg/L	1/week	Grab	10	15
<i>FBP Outfall 009 (X-230L North Holding Pond)</i>					
Barium, total recoverable	µg/L	1/quarter	Grab		
Chlorine, total residual	mg/L	1/week	Grab		
Chromium, total recoverable	µg/L	1/month	Grab		
Copper, total recoverable	µg/L	1/quarter	Grab		
Flow rate	MGD	Daily	24-hr total		
Iron, total recoverable	µg/L	1/quarter	Grab		

**Table 2.3. FBP NPDES permit summary July 2020 – December 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 009 (X-230L North Holding Pond)</i>					
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab		10
PCBs	µg/L	1/month	24-hr composite		<i>d</i>
pH	SU	1/week	Grab		6.5–9.0
Thallium, total recoverable	µg/L	1/month	Grab		
Trichloroethene	µg/L	1/month	Grab		
Total suspended solids <sup>b</sup>	mg/L	1/week	Grab	30	45
Zinc, total recoverable	µg/L	1/quarter	Grab		
<i>FBP Outfall 010 (X-230J5 Northwest Holding Pond)</i>					
Chromium, total recoverable	µg/L	1/month	24-hr composite		
Copper, total recoverable	µg/L	1/quarter	24-hr composite		
Flow rate	MGD	Daily	24-hr total		
Iron, total recoverable	µg/L	1/quarter	24-hr composite		
Lead, total recoverable	µg/L	1/quarter	24-hr composite		
Mercury, total	ng/L	1/quarter	Grab		
Oil & grease	mg/L	1/month	Grab		10
PCBs	µg/L	1/month	24-hr composite		<i>d</i>
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/quarter	24-hr composite		
Thallium, total recoverable	µg/L	1/month	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	24-hr composite	30	45
Trichloroethene	µg/L	1/month	Grab		
Zinc, total recoverable	µg/L	1/quarter	24-hr composite		
<i>FBP Outfall 011 (X-230J6 Northeast Holding Pond)</i>					
Chlorine, total residual	mg/L	1/2 weeks	Grab	0.05	0.05
Chromium, total recoverable	µg/L	1/month	Grab		
Copper, total recoverable	µg/L	1/quarter	Grab		
Flow rate	MGD	Daily	24-hr total		
Fluoride, total	mg/L	1/quarter	Grab		
Oil & grease	mg/L	1/2 weeks	Grab		10
PCBs	µg/L	1/month	Grab		<i>d</i>
pH	SU	1/2 weeks	Grab		6.5–9.0
Precipitation, total	in.	Daily	24-hr total		
Selenium, total recoverable	µg/L	1/quarter	Grab		5.6
Thallium, total recoverable	µg/L	1/month	Grab		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	Grab	30	45
Trichloroethene	µg/L	1/month	Grab		
Zinc, total recoverable	µg/L	1/month	Grab		



**Table 2.3. FBP NPDES permit summary July 2020 – December 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 015 (X-624 Groundwater Treatment Facility)</i>					
Arsenic, total recoverable	µg/L	1/quarter	Grab		
Barium, total recoverable	µg/L	1/quarter	Grab		
Flow rate	MGD	Daily	24-hr total		
PCBs	µg/L	1/quarter	Grab		<i>d</i>
pH	SU	1/2 weeks	Grab		6.5–9.0
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total estimate		
Iron, total <sup>b</sup>	µg/L	1/2 weeks	Grab	3500	7000
Manganese, total <sup>b</sup>	µg/L	1/2 weeks	Grab	2000	4000
pH	SU	1/2 weeks	Grab		
Precipitation, total	in.	Daily	24-hr total		
Residue, settleable	mL/L	When disch	Grab		
Total suspended solids <sup>b</sup>	mg/L	1/2 weeks	Grab	35	50
<i>FBP Outfall 604 (X-700 Bionitrification Facility)</i>					
Copper, total	µg/L	1/month	Grab		
Iron, total	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total estimate		
Nickel, total	µg/L	1/month	Grab		
Nitrogen, nitrate	mg/L	1/month	Grab		
pH	SU	1/month	Grab		6.5–9.0
Zinc, total	µg/L	1/month	Grab		
<i>FBP Outfall 605 (X-705 Microfiltration Treatment System)</i>					
Chromium, hexavalent	µg/L	1/month	Grab		
Chromium, total	µg/L	1/month	Grab		
Copper, total	µg/L	1/month	Grab		
Flow rate	MGD	Daily	24-hr total		
Nickel, total	µg/L	1/month	Grab		
Nitrogen, ammonia (NH <sub>3</sub> )	mg/L	1/month	Grab		
Nitrogen, nitrate	mg/L	1/month	Grab		
Nitrogen, nitrite	mg/L	1/month	Grab		
Nitrogen, Kjeldahl	mg/L	1/month	Grab		
Oil & grease	mg/L	1/month	Grab		
pH	SU	1/month	Grab		6.5–10.0
Sulfate (SO <sub>4</sub> )	mg/L	1/month	Grab		
Total suspended solids	mg/L	1/month	Grab	20	30
Trichloroethene	µg/L	1/month	Grab		
Zinc, total	µg/L	1/month	Grab		

**Table 2.3. FBP NPDES permit summary July 2020 – December 2020 (continued)**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration/Loading <sup>a</sup>	
				Monthly	Daily
<i>FBP Outfall 608 (X-622 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
<i>trans</i> -1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Outfall 610 (X-623 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
<i>trans</i> -1,2-dichloroethene	µg/L	1/2 weeks	Grab	25	66
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Outfall 611 (X-627 Groundwater Treatment Facility)</i>					
Flow rate	MGD	Daily	24-hr total		
pH	SU	1/2 weeks	Grab		
Trichloroethene	µg/L	1/2 weeks	Grab	10	10
<i>FBP Monitoring Station 801 (Upstream Monitoring)</i>					
48-hr acute toxicity, <i>Ceriodaphnia dubia</i>	% affected	1/quarter	Grab		
96-hr acute toxicity, <i>Pimephales promelas</i>	% affected	1/quarter	Grab		
<i>FBP Monitoring Station 902 (Downstream Farfield Monitoring)</i>					
Water temperature	°C	2/week	24-hr maximum	27.8 <sup>c</sup>	29.4 <sup>c</sup>
<i>FBP Monitoring Station 903 (Downstream Farfield Monitoring)</i>					
Water temperature	°C	2/week	24-hr maximum	27.8 <sup>c</sup>	29.4 <sup>c</sup>

<sup>a</sup>If provided in the permit, the loading limit, in kg/day or kg/month, is provided in parentheses.

<sup>b</sup>Limitations do not apply if flow increases as a result of a precipitation or snow melt event and conditions specified in the permit are met.

<sup>c</sup>Summer only (May through October).

<sup>d</sup>No detectable PCBs.

**Table 2.4. MCS NPDES permit summary – 2020**

Effluent characteristics		Monitoring requirements		Discharge limitations	
Parameter	Unit	Measurement frequency	Sampling type	Concentration	
				Monthly	Daily
<i>MCS Outfall 001<sup>a</sup></i>					
Biochemical oxygen demand, 5-day	mg/L	1/week	24-hr composite		
Chlorine, total residual	mg/L	Daily	Grab		0.05
Residue, total filterable	mg/L	1/week	24-hr composite		1500
Flow rate	GPD	Daily	24-hr total estimate		
Nitrogen, ammonia	mg/L	1/week	24-hr composite		
Oil and grease, total	mg/L	1/month	Grab		
pH	SU	Daily	Grab		6.5–9.0
Phosphorus, total	mg/L	1/week	24-hr composite		
Total suspended solids <sup>b</sup>	mg/L	1/week	24-hr composite	30	45
Water temperature	°F	Daily	Maximum	<i>c</i>	<i>c</i>
<i>MCS Outfall 602</i>					
Flow rate	GPD	Daily	24-hr total estimate		
pH	SU	Daily	Grab		

<sup>a</sup>These monitoring requirements and limits apply only when process water is being discharged through the outfall.

<sup>b</sup>Limitations do not apply if flow increases as a result of a precipitation or snow melt event and conditions specified in the permit are met.

<sup>c</sup>Maximum daily and monthly average limits vary according to month.

**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Outfall 001 (X-230J7 East Holding Pond)</i>						
Cadmium, total recoverable	-	2(2)	< 0.088	< 0.088		µg/L
Chlorine, total residual	98	49(34)	< 0.02	0.052		mg/L
monthly average	100	12	0	0.03		mg/L
Copper, total recoverable	-	4(1)	< 0.71	3.3		µg/L
Flow rate	-	366	0.080	2.29	0.620	MGD
Fluoride, total	-	4(3)	< 0.17	0.20		mg/L
Mercury, total (low level)	100	12(0)	4.28	11.1	6.69	ng/L
monthly average <sup>d</sup>	100	12	4.28	11.1	6.69	ng/L
Oil & grease	100	48(46)	< 1.6	5.1		mg/L
monthly average <sup>d</sup>	100	6	0	1.1		mg/L
pH	100	48	7.22	8.89	8.03	SU
Precipitation, total	-	366	0	2.36	0.13	in.
Residue, total filterable	-	24(0)	110	380	211	mg/L
Silver, total recoverable	-	8(6)	< 0.045	0.088		µg/L
Total suspended solids	100	48(3)	0.8	9.6		mg/L
monthly average <sup>d</sup>	100	12	2.6	6.8		mg/L
Zinc, total recoverable	-	4(1)	< 2	54		µg/L
<i>Outfall 002 (X-230K South Holding Pond)</i>						
Bis(2-ethylhexyl)phthalate	100	6(6)	< 0.58	< 0.74		µg/L
monthly average <sup>d</sup>	100	6	0	0		µg/L
Cadmium, total recoverable	-	2(2)	< 0.088	< 0.088		µg/L
Chlorine, total residual	-	24(2)	< 0.02	0.097	0.045	mg/L
Flow rate	-	366	0.005	2.59	0.472	MGD
Fluoride, total	-	4(4)	< 0.17	< 0.17		mg/L
Mercury, total (low level)	-	4(0)	1.70	8.66	4.58	ng/L
Nitrogen, ammonia (NH <sub>3</sub> )	-	6(0)	0.034	0.11	0.071	mg/L
Oil & grease	100	48(47)	< 1.6	2.3		mg/L
pH	100	48	7.49	8.70	8.02	SU
Selenium, total recoverable	-	8(7)	< 1	1.3		µg/L
Silver, total recoverable	-	2(1)	< 0.045	0.065		µg/L
Thallium, total recoverable	-	2(2)	< 0.066	< 0.066		µg/L
Total suspended solids	100	48(2)	< 1.1	32	7.0	mg/L
monthly average <sup>d</sup>	100	12	1.2	15	7.0	mg/L
<i>Outfall 003 (X-6619 Sewage Treatment Plant)</i>						
Acute toxicity, <i>Ceriodaphnia dubia</i>	-	3(3)	< 1	< 1		TUa
Acute toxicity, <i>Pimephales promelas</i>	-	3(3)	< 1	< 1		TUa
Carbonaceous biochemical oxygen demand, 5-day	100	48(39)	< 5.0	11.8		mg/L
monthly average <sup>d</sup>	100	12	0	5.1		mg/L
Carbonaceous biochemical oxygen demand, 5-day (loading)	100	48	0	15		kg/day
monthly average <sup>d</sup>	100	12	0	4.2		kg/day
Copper, total recoverable	-	2(0)	2.8	3.8	3.3	µg/L

**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020 (continued)**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Outfall 003 (X-6619 Sewage Treatment Plant)</i>						
E. coli <sup>b</sup>	100	24(12)	< 1	6.3		#/100 mL
monthly average <sup>d</sup>	100	12	0	3.4		#/100 mL
Flow rate	-	366	0.156	0.657	0.299	MGD
Mercury, total (low level)	100	24(0)	7.52	101	35.9	ng/L
monthly average <sup>d</sup>	67	12	7.52	53.1	29.2	ng/L
Mercury, total (low level) (loading)	100	24	0.00000925	0.000141	0.0000454	kg/day
monthly average <sup>d</sup>	83	12	0.00000925	0.0000687	0.0000353	kg/day
Nitrite plus nitrate (NH <sub>3</sub> )	-	3(0)	6.12	8.8	7.5	mg/L
Nitrogen, ammonia	-	24(13)	< 0.022	2.1		mg/L
Oil & grease	-	4(4)	< 1.7	< 2		mg/L
pH	100	200	7.15	8.63	7.85	SU
Silver, total recoverable	-	2(1)	< 0.045	0.058		µg/L
Thallium, total recoverable	-	2(1)	< 0.066	0.11		µg/L
Total suspended solids	98	48(10)	0.8	19		mg/L
monthly average <sup>d</sup>	100	12	0.6	7.5		mg/L
Total suspended solids (loading)	100	48	0	25		kg/day
monthly average <sup>d</sup>	100	12	0.63	8.3		kg/day
Zinc, total recoverable	-	2(0)	27	39	33	µg/L
<i>Outfall 004 (Cooling Tower Blowdown)</i>						
Acute toxicity, <i>Ceriodaphnia dubia</i>	-	4(4)	< 1	< 1		TUa
Acute toxicity, <i>Pimephales promelas</i>	-	4(4)	< 1	< 1		TUa
Beryllium, total recoverable	-	6(6)	< 0.15	< 0.15		µg/L
Cadmium, total recoverable	-	6(5)	< 0.088	0.088		µg/L
Chlorine, total residual	100	45(45)	< 0.02	< 0.02		mg/L
Chromium, total recoverable	-	6(0)	8.3	15	10.3	µg/L
Cobalt, total recoverable	-	6(0)	0.22	0.31	0.26	µg/L
Copper, total recoverable	100	12(0)	24	44	33	µg/L
Copper, total recoverable (loading)	100	12	0.0020	0.0070	0.0047	kg/day
Flow rate	-	324	0	0.136	0.038	MGD
Fluoride, total	-	6(0)	0.19	0.38	0.27	µg/L
Mercury, total (low level)	100	8(0)	1.53	3.11	2.21	ng/L
monthly average <sup>d</sup>	100	6	1.64	3.11	2.33	ng/L
Mercury, total (low level) (loading)	100	6	0.000000251	0.000000530	0.000000347	kg/day
monthly average <sup>d</sup>	100	6	0.000000251	0.000000530	0.000000347	kg/day
Nickel, total recoverable	-	6(0)	0.53	2.2	1.5	µg/L
Oil & grease	100	27(25)	< 1.6	< 2.0		mg/L
monthly average <sup>d</sup>	100	6	0	0		mg/L
PCBs	-	6(6)	< 0.094	< 0.11		µg/L

**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020 (continued)**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Outfall 004 (Cooling Tower Blowdown)</i>						
pH	100	26	6.50	8.12	7.01	SU
Residue, total filterable	100	12(0)	460	790	581	mg/L
monthly average <sup>d</sup>	100	6	500	790	597	mg/L
Residue, total filterable (loading)	100	6	45	111	76	kg/day
monthly average <sup>d</sup>	100	6	45	111	76	kg/day
Selenium, total recoverable	-	6(6)	< 1	< 1		µg/L
Silver, total recoverable	-	6(6)	< 0.045	< 0.045		µg/L
Total suspended solids	100	26(1)	< 1.1	9.2	3.7	mg/L
monthly average <sup>d</sup>	100	12	1.2	7.4	3.4	mg/L
Total suspended solids (loading)	100	26	0	1.4	0.52	kg/day
monthly average <sup>d</sup>	100	12	0.09	1.1	0.48	kg/day
Vanadium, total recoverable	-	6(2)	< 1.1	2.2		µg/L
Zinc, total recoverable	-	8(0)	30	36	33	µg/L
<i>Outfall 005 (X-611B Lime Sludge Lagoons)</i>						
Flow rate	-	250	0	4.131	1.121	MGD
Lead, total recoverable	-	6(4)	< 0.23	0.60		µg/L
Mercury, total (low level)	-	8(0)	0.541	4.07	2.24	ng/L
pH	98	42	7.29	9.61	8.57	SU
Selenium, total recoverable	-	6(6)	< 1	< 1		µg/L
Total suspended solids	86	49(13)	< 1.1	20.2		mg/L
monthly average <sup>d</sup>	92	12	0	13.6		mg/L
<i>Outfall 009 (X-230L North Holding Pond)</i>						
Barium, total recoverable	-	2(0)	24	26	25	µg/L
Bis(2-ethylhexyl)phthalate	100	6(6)	< 0.58	< 0.62		µg/L
monthly average <sup>d</sup>	100	6	0	0		µg/L
Chlorine, total residual	100	24(6)	< 0.02	0.045		mg/L
Chromium, total recoverable	-	6(4)	< 0.88	1.5		µg/L
Copper, total recoverable	-	8(1)	< 0.71	2.1	1.3	µg/L
Flow rate	-	366	0.160	2.15	0.846	MGD
Fluoride, total	-	2(1)	< 0.17	0.17		mg/L
Iron, total recoverable	-	2(0)	430	510	470	µg/L
Mercury, total	-	4(0)	1.64	3.61	2.54	ng/L
Oil & grease	100	13(12)	< 1.6	2.3		mg/L
monthly average <sup>d</sup>	100	12	0	2.3		mg/L
PCBs		6(6)	< 0.095	< 0.11		µg/L
pH	100	48	7.41	8.36	7.86	SU
Silver, total recoverable	100	6(6)	< 0.045	< 0.045		µg/L
monthly average <sup>d</sup>	100	6	0	0		µg/L
Thallium, total recoverable	100	6(6)	< 0.066	0.079		µg/L
Total suspended solids	100	48(1)	< 1.1	43	12	mg/L
monthly average <sup>d</sup>	100	12	3.3	29	12	mg/L
Trichloroethene		6(6)	< 0.18	< 0.18		µg/L
Zinc, total recoverable	-	4(0)	13	20	17	µg/L

**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020 (continued)**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Outfall 010 (X-230J5 Northwest Holding Pond)</i>						
Chromium, total recoverable	-	6(3)	< 0.88	4.4		µg/L
Copper, total recoverable	-	2(0)	2.3	4.8	3.6	µg/L
Flow rate	-	366	0.050	1.10	0.448	MGD
Iron, total recoverable	-	2(0)	1600	4600	3100	µg/L
Lead, total recoverable	-	8(1)	< 0.23	3.1	0.89	µg/L
Mercury, total	-	4(0)	2.79	5.54	4.11	ng/L
Oil & grease	100	13(12)	< 1.6	4.3		mg/L
monthly average <sup>d</sup>	100	12	0	2.15		mg/L
PCBs	100	6(6)	< 0.093	< 0.10		µg/L
pH	100	24	7.21	8.22	7.80	SU
Precipitation, total	-	366	0	2.36	0.13	in.
Selenium, total recoverable	-	8(8)	< 1.0	< 1.0		µg/L
Thallium, total recoverable	-	6(5)	< 0.066	0.18		µg/L
Total suspended solids	100	24(1)	< 1.1	33	10	mg/L
monthly average <sup>d</sup>	100	12	1	24	9.8	mg/L
Trichloroethene	-	6(6)	< 0.18	< 0.18		µg/L
Zinc, total recoverable	-	8(0)	12	39	28	µg/L
<i>Outfall 011 (X-230J6 Northeast Holding Pond)</i>						
Cadmium, total recoverable	-	2(1)	< 0.088	0.11		µg/L
Chlorine, total residual	100	24(18)	< 0.02	0.05		mg/L
monthly average <sup>d</sup>	100	12	0	0.04		mg/L
Chromium, total recoverable	-	6(0)	1.2	7.0	2.9	µg/L
Copper, total recoverable	-	8(0)	0.97	2.5	1.8	µg/L
Flow rate	-	366	0.007	0.590	0.056	MGD
Fluoride, total	-	4(2)	< 0.17	0.27		mg/L
Oil & grease	100	24(23)	< 1.6	2.6		mg/L
monthly average <sup>d</sup>	100	12	0	1.3		mg/L
PCBs	100	6(6)	< 0.097	< 0.11		µg/L
pH	100	24	7.53	8.53	7.99	SU
Precipitation, total	-	366	0	2.36	0.13	in.
Selenium, total recoverable	-	8(8)	< 1	< 1		µg/L
Thallium, total recoverable	100	8(2)	< 0.066	0.13		µg/L
Total suspended solids	100	24(6)	< 1.1	12		mg/L
monthly average <sup>d</sup>	100	12	0.8	6.6		mg/L
Trichloroethene	-	6(6)	< 0.18	< 0.18		µg/L
Zinc, total recoverable	-	12(0)	2.9	62	28	µg/L
<i>Outfall 015 (X-624 Groundwater Treatment Facility)</i>						
Arsenic, total recoverable	-	4(3)	< 0.5	0.52		µg/L
Barium, total recoverable	-	4(0)	24	29	27	µg/L
Flow rate	-	188	0.0001	0.0049	0.0021	MGD
PCBs	100	4(4)	< 0.097	< 0.10		µg/L
pH	100	24	7.15	8.33	7.65	SU
Silver, total recoverable	-	6(6)	< 0.045	< 0.045		µg/L
Trichloroethene	100	24(22)	< 0.18	1.1		µg/L
monthly average <sup>d</sup>	100	12	0	0.55		µg/L

**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020 (continued)**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Outfall 602 (X-621 Coal Pile Runoff Treatment Facility)</i>						
Flow rate	-	28	0.001	0.247	0.118	MGD
Iron, total	100	10(0)	97	910	344	µg/L
monthly average <sup>d</sup>	100	8	129	910	360	µg/L
Manganese, total	100	10(0)	96	340	269	µg/L
monthly average <sup>d</sup>	100	8	96	340	261	µg/L
pH	100	11	7.00	9.56	8.28	SU
Precipitation, total	-	245	0	2.16	0.14	in.
Residue, settleable (volume)	-	3(3)	< 0.10	< 0.12		mL/L
Total suspended solids	100	10(0)	10	25	17	mg/L
monthly average <sup>d</sup>	100	8	10	25	17	mg/L
<i>Outfall 604 (X-700 Bionitrification Facility)</i>						
Copper, total	-	4(1)	< 0.71	3.7		µg/L
Flow rate	-	35	0.004	0.011	0.010	MGD
Iron, total	-	4(0)	130	1100	420	µg/L
Nickel, total	-	4(0)	1.1	1.5	1.2	µg/L
Nitrogen, nitrate	-	4(0)	3.9	7.5	6.1	mg/L
pH	100	4	7.72	8.47	8.26	SU
Zinc, total	-	4(0)	6.4	29	13	µg/L
<i>Outfall 605 (X-705 Microfiltration Treatment System)<sup>e</sup></i>						
<i>Outfall 608 (X-622 Groundwater Treatment Facility)</i>						
Flow rate	-	356	0.0014	0.0860	0.0613	MGD
pH	-	24	7.29	8.35	7.93	SU
Trichloroethene	100	24(0)	1.3	3.45	2.1	µg/L
monthly average <sup>d</sup>	100	12	1.4	2.9	2.1	µg/L
1,2- <i>trans</i> -dichloroethene	100	24(24)	< 0.21	< 0.21		µg/L
monthly average <sup>d</sup>	100	12	0	0		µg/L
<i>Outfall 610 (X-623 Groundwater Treatment Facility)</i>						
Flow rate	-	3	0.0015	0.0027	0.0019	MGD
pH	-	3	7.55	7.84	7.71	SU
Trichloroethene	100	3(3)	< 0.18	< 0.18		µg/L
monthly average <sup>d</sup>	100	3	0	0		µg/L
1,2- <i>trans</i> -dichloroethene	100	3(3)	< 0.21	< 0.21		µg/L
monthly average <sup>d</sup>	100	3	0	0		µg/L
<i>Outfall 611 (X-627 Groundwater Treatment Facility)</i>						
Flow rate	-	366	0.0178	0.0457	0.0311	MGD
pH	-	24	6.95	8.89	8.16	SU
Trichloroethene	100	24(13)	< 0.18	6.0		µg/L
monthly average <sup>d</sup>	100	12	0	5.8		µg/L
<i>Monitoring Station 801 (Upstream Monitoring)</i>						
48-hr acute toxicity, <i>Ceriodaphnia dubia</i>	-	4(4)	0	0		% affected
96-hr acute toxicity, <i>Pimephales promelas</i>	-	4(4)	0	0		% affected



**Table 2.5. FBP NPDES discharge summary and compliance rates – 2020 (continued)**

Parameter	NPDES compliance rate (%) <sup>a</sup>	Number of measurements <sup>b</sup>	Concentration (and loading if applicable)			Unit
			Minimum	Maximum	Average <sup>c</sup>	
<i>Monitoring Station 902 (Downstream Farfield Monitoring)</i>						
Water temperature	100	96	3.48	28.13	16.07	°C
monthly average	100	12	6.04	27.46	16.07	°C
<i>Monitoring Station 903 (Downstream Farfield Monitoring)</i>						
Water temperature	100	96	4.86	26.90	16.48	°C
monthly average	100	12	6.61	25.81	16.48	°C

<sup>a</sup>Compliance rates are provided only for those parameters with a limit specified in the NPDES permit (many parameters require monitoring only). At all outfalls except Outfalls 003, 004, and 605, permit limitations do not apply to total suspended solids if flow increases as a result of precipitation or snow melt and conditions set in the permit are met. Sample results for total suspended solids that are elevated due to precipitation (and not subject to permit limitations) are not reported in this table, although they are included in the total number of samples reported for each outfall.

<sup>b</sup>Number in parentheses is the number of samples that were below the detection limit.

<sup>c</sup>Averages were not calculated for outfalls that had greater than 15% of the results below the detection limit. This criterion was adapted from *Data Quality Assessment: A Reviewer's Guide* (EPA 2006). For outfalls with less than 15% of the results below the detection limit, any result below the detection limit was assumed to be zero for calculating the average for the parameter in accordance with averaging for NPDES data completed by Ohio EPA.

<sup>d</sup>To compute the monthly average, parameters that were undetected were assumed to be zero. Exceedances due to flow increases from precipitation or snow melt (see footnote a) were not included in the monthly average calculation. The monthly average limitation for some parameters was added to some outfalls or deleted from some outfalls in the NPDES permit effective July 1, 2020.

<sup>e</sup>The X-705 Microfiltration Treatment System (Outfall 605) did not operate in 2020.

**Table 2.6. MCS NPDES discharge summary and compliance rates – 2020**

Parameter	NPDES compliance rate (%)	Number of measurements	Result			Unit
			Minimum	Maximum	Average	
		<i>Outfall 001<sup>a</sup></i>				
		<i>Outfall 602</i>				
Flow rate	-	366	350	11,512	6213	GPD
pH	100	255	6.51	8.76	7.72	SU

<sup>a</sup>This outfall was not used for process water discharges in 2020; therefore, monitoring was not required.

**Table 2.7. Centrus NPDES discharge monitoring results – 2020**

Parameter	Number of samples <sup>a</sup>	Concentration			Unit
		Minimum	Maximum	Average <sup>b</sup>	
<i>Outfall 012 (X-230M Southwest Holding Pond)</i>					
Chlorine	24(0)	0	0.05	0.02	mg/L
Flow rate	366	0.0273	1.631	0.261	MGD
Mercury	12(0)	0.714	4.97	2.29	ng/L
Oil and grease	24(21)	< 1.6	1.9		mg/L
PCBs, total	1(1)	< 0.096			µg/L
pH	24	7.60	8.64	8.14	SU
Total suspended solids	24(4)	< 1.1	10		mg/L
<i>Outfall 013 (X-230N West Holding Pond)</i>					
Barium	12(0)	19	35	26	µg/L
Cadmium	12(5)	< 0.018	0.43		µg/L
Chlorine	24(0)	0	0.050	0.017	mg/L
Copper	12(2)	< 0.71	5.1		µg/L
Flow rate	366	0.0154	1.502	0.206	MGD
Mercury	12(1)	0.374	< 10	2.79	ng/L
Oil and grease	24(23)	< 1.6	< 2.3		mg/L
PCBs, total	1(1)	< 0.1			µg/L
pH	24	7.02	8.53	8.17	SU
Total suspended solids	24(3)	< 1.1	9.2	3.8	mg/L
Zinc	12(0)	2.1	37	18	µg/L
<i>Outfall 613 (X-6002 Particulate Separator)</i>					
Chlorine	11(0)	0	0.05	0.03	mg/L
Flow rate	48	0	0.022	0.0010	MGD
Total suspended solids	11(5)	< 1.1	8.8		mg/L

<sup>a</sup>Number in parentheses is the number of samples that were below the detection limit.

<sup>b</sup>Averages were not calculated for outfalls that had greater than 15% of the results below the detection limit. This criterion was adapted from *Data Quality Assessment: A Reviewer's Guide* (EPA 2006). 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 in accordance with averaging for NPDES data completed by Ohio EPA.

**Table 2.8. Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2020**

Sample location	Parameter	Unit	Number of samples <sup>a</sup>	Minimum <sup>b</sup>	Maximum	Average <sup>c</sup>
<i>FBP cylinder storage yards</i>						
X745-B1	Alpha activity	pCi/L	10(3)	< 1.07	14.5	
	Beta activity	pCi/L	10(0)	3.43	59.5	19.3
	Uranium	µg/L	10(0)	0.22	1.35	0.720
X745-B2	Alpha activity	pCi/L	11(0)	1.96	182	42.9
	Beta activity	pCi/L	11(1)	< 5.67	88.4	38.7
	Uranium	µg/L	11(1)	< 0.009	115	36.4
X745-B3	Alpha activity	pCi/L	11(4)	< 2.21	30.9	
	Beta activity	pCi/L	11(0)	4.58	138	27.5
	Uranium	µg/L	11(0)	0.12	39	5.90
X745-D1	Alpha activity	pCi/L	12(4)	< 1.01	33.7	
	Beta activity	pCi/L	12(0)	3.69	100	23.6
	Uranium	µg/L	12(0)	0.0801	43.8	9.69
X745-F1	Alpha activity	pCi/L	11(5)	< 1.32	18.5	
	Beta activity	pCi/L	11(4)	< 0.20	23.3	
	Uranium	µg/L	11(0)	0.16	7.76	3.67
X745-F2	Alpha activity	pCi/L	12(9)	0	8.1	
	Beta activity	pCi/L	12(4)	< 0.344	31.9	
	Uranium	µg/L	12(0)	0.226	7.13	3.79
X745-F3	Alpha activity	pCi/L	12(5)	< 1.15	4.47	
	Beta activity	pCi/L	12(4)	< 0.394	6.98	
	Uranium	µg/L	12(0)	0.737	4.38	2.59
<i>MCS cylinder storage yards</i>						
X745-C1	Alpha activity	pCi/L	12(10)	0	9.08	
	Beta activity	pCi/L	12(8)	< 0.12	8.67	
	Uranium	µg/L	12(0)	1.14	6.45	2.80
X745-C2	Alpha activity	pCi/L	12(10)	0	5.09	
	Beta activity	pCi/L	12(9)	< 0.247	5.28	
	Uranium	µg/L	12(0)	0.779	7.11	4.57
X745-C3	Alpha activity	pCi/L	12(11)	0	7.27	
	Beta activity	pCi/L	12(9)	0	6.09	
	Uranium	µg/L	12(0)	0.843	3.83	2.27
X745-C4	Alpha activity	pCi/L	12(11)	< 0.233	4.77	
	Beta activity	pCi/L	12(9)	< 2.15	5.03	
	Uranium	µg/L	12(0)	1.47	4.58	3.39
X745-E1	Alpha activity	pCi/L	12(10)	< 0.158	5.84	
	Beta activity	pCi/L	12(5)	< 1.77	9.71	
	Uranium	µg/L	12(0)	0.246	4.00	1.16

**Table 2.8. Radionuclides in surface water runoff samples from FBP and MCS cylinder storage yards – 2020 (continued)**

Sample location	Parameter	Unit	Number of samples <sup>a</sup>	Minimum <sup>b</sup>	Maximum	Average <sup>c</sup>
<i>MCS cylinder storage yards (continued)</i>						
X745-G1A	Alpha activity	pCi/L	12(10)	< 0.793	5.67	
	Beta activity	pCi/L	12(12)	< 0.178	< 4.37	
	Uranium	µg/L	12(0)	1.52	4.87	2.24
X745-G2	Alpha activity	pCi/L	12(12)	< 1.31	< 3.59	
	Beta activity	pCi/L	12(7)	0	6.20	
	Uranium	µg/L	12(0)	0.427	3.48	1.83

<sup>a</sup>Number in parentheses is the number of samples that were below the detection limit.

<sup>b</sup>Minimum values reported as “0” may actually be negative results. A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results. These negative value results are reported as “0” in the table for simplicity.

<sup>c</sup>Averages 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. These criteria were adapted from *Data Quality Assessment: A Reviewer’s Guide* (EPA 2006).

**Table 2.9. Drainage basin monitoring of surface water and sediment for MCS cylinder storage yards – 2020**

Location	Parameter <sup>a</sup>	First quarter <sup>b</sup>			Second quarter <sup>b</sup>		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	Total PCB	0.0311U	0.0311U	92.5	0.0319U	0.0329U	28.4
RM-8	Total PCB	0.0311U	0.0320U	61.6	0.0323U	0.0322U	45
UDS X02	Total PCB	0.0323U	0.0351U	59	0.0336U	0.0328U	21.26
RM-10	Total PCB	0.0311U	0.0333U	20.7	0.0337U	0.0336U	2.18J

Location	Parameter <sup>a</sup>	Third quarter <sup>b</sup>			Fourth quarter <sup>b</sup>		
		SW-F	SW-UF	Sed	SW-F	SW-UF	Sed
UDS X01	Total PCB	0.0314U	0.0316U	51.2	0.0319U	0.0317U	7.33U
RM-8	Total PCB	0.0313U	0.0314U	14	0.0319U	0.328U	48.3
UDS X02	Total PCB	0.0314U	0.0317U	12.4	0.0316U	0.0321U	49
RM-10	Total PCB	0.0312U	0.0317U	6.48	0.0317U	0.0321U	17.46

<sup>a</sup>Results for surface water (SW) are reported in µg/L; results for sediment (Sed) are reported in µg/kg.

<sup>b</sup>Abbreviations 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 or equal to the method detection limit but less than the reporting limit. U – undetected.

**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>
<i>On-site air samplers</i>					
A8	Americium-241	4(4)	< 2.2E-07	< 1.1E-06	
	Fluoride	50(39)	< 0.0052	0.018	
	Neptunium-237	4(4)	0	< 7.4E-07	
	Plutonium-238	4(4)	0	< 1.3E-06	
	Plutonium-239/240	4(4)	< 6.5E-07	< 1.6E-06	
	Techneium-99	12(9)	< 4.6E-06	3.1E-04	
	Thorium-228	4(4)	0	< 3.4E-06	
	Thorium-230	4(4)	< 2.3E-06	< 5.8E-06	
	Thorium-232	4(4)	< 2.5E-07	< 3.1E-06	
	Uranium	12(9)	< 6.6E-06	< 3.6E-05	
	Uranium-233/234	12(11)	< 1.7E-06	1.7E-05	
	Uranium-235/236	12(12)	< 2.8E-07	< 1.9E-06	
	Uranium-238	12(9)	< 2.1E-06	< 1.2E-05	
	A10	Americium-241	4(4)	0	< 9.0E-07
Fluoride		52(47)	< 0.0040	< 0.015	
Neptunium-237		4(4)	< 1.2E-07	< 6.5E-07	
Plutonium-238		4(4)	0	< 1.4E-07	
Plutonium-239/240		4(4)	< 3.9E-07	< 8.9E-07	
Techneium-99		12(10)	< 8.2E-06	2.2E-04	
Thorium-228		4(3)	< 3.1E-07	< 4.8E-06	
Thorium-230		4(4)	0	< 5.4E-06	
Thorium-232		4(4)	< 1.6E-06	< 3.3E-06	
Uranium		12(11)	< 6.9E-06	< 2.3E-05	
Uranium-233/234		12(10)	< 3.4E-06	1.0E-05	
Uranium-235/236		12(12)	0	< 7.2E-07	
Uranium-238		12(11)	< 2.3E-06	< 7.8E-06	
A29		Americium-241	4(4)	0	< 1.4E-06
	Fluoride	52(41)	< 0.0074	0.035	
	Neptunium-237	4(4)	0	< 1.2E-07	
	Plutonium-238	4(4)	0	< 5.4E-07	
	Plutonium-239/240	4(4)	< 1.4E-07	< 1.2E-06	
	Techneium-99	12(7)	0	< 2.1E-04	
	Thorium-228	4(2)	< 2.9E-06	4.3E-05	
	Thorium-230	4(4)	< 5.8E-08	< 9.8E-06	
	Thorium-232	4(4)	< 1.4E-06	< 7.0E-06	
	Uranium	12(9)	< 9.9E-06	3.0E-05	
	Uranium-233/234	12(12)	< 3.5E-06	< 9.3E-06	
	Uranium-235/236	12(12)	0	< 2.0E-06	
	Uranium-238	12(10)	< 3.3E-06	< 9.8E-06	
	A36	Americium-241	4(4)	< 5.0E-07	< 2.5E-06
Fluoride		53(41)	< 0.0036	0.031	
Neptunium-237		4(4)	0	< 1.9E-06	
Plutonium-238		4(4)	0	< 1.4E-07	
Plutonium-239/240		4(4)	< 4.0E-07	< 1.2E-06	
Techneium-99		12(8)	< 1.7E-05	2.2E-04	

**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020 (continued)**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>
<i>On-site air samplers</i>					
A36	Thorium-228	4(3)	0	< 4.4E-06	
	Thorium-230	4(4)	0	< 7.7E-06	
	Thorium-232	4(4)	0	< 2.1E-06	
	Uranium	12(5)	< 7.3E-06	6.1E-05	
	Uranium-233/234	12(6)	< 1.5E-06	2.9E-05	
	Uranium-235/236	12(12)	0	< 1.2E-06	
	Uranium-238	12(6)	< 2.4E-06	2.0E-05	
A36 (duplicate station rad only)	Americium-241	4(4)	< 6.6E-07	< 1.1E-06	
	Neptunium-237	4(4)	0	< 9.0E-07	
	Plutonium-238	4(4)	< 2.8E-07	< 1.2E-06	
	Plutonium-239/240	4(4)	< 1.4E-07	< 9.3E-07	
	Technetium-99	12(7)	< 1.7E-05	7.7E-04	
	Thorium-228	4(3)	< 2.3E-06	6.3E-06	
	Thorium-230	4(4)	0	< 5.8E-06	
	Thorium-232	4(4)	< 1.1E-06	< 3.8E-06	
	Uranium	12(3)	< 1.2E-05	5.6E-05	
	Uranium-233/234	12(5)	< 3.3E-06	2.9E-05	
	Uranium-235/236	12(12)	< 1.6E-07	< 2.2E-06	
	Uranium-238	12(5)	< 3.9E-06	1.9E-05	
A40A	Fluoride	53(41)	< 0.0045	0.028	
A50	Americium-241	1(1)	< 8.3E-07		
	Neptunium-237	1(1)	0		
	Plutonium-238	1(1)	< 4.8E-07		
	Plutonium-239/240	1(1)	< 4.8E-07		
	Technetium-99	3(3)	< 1.1E-05	< 4.0E-05	
	Thorium-228	1(1)	< 5.2E-06		
	Thorium-230	1(1)	< 2.6E-06		
	Thorium-232	1(0)	4.3E-06		
	Uranium	3(1)	< 2.3E-05	3.7E-05	
	Uranium-233/234	3(1)	1.0E-05	1.9E-05	
	Uranium-235/236	3(3)	< 7.4E-07	< 1.1E-06	
	Uranium-238	3(1)	< 7.5E-06	1.2E-05	
A52	Americium-241	1(1)	< 1.3E-06		
	Neptunium-237	1(1)	< 2.0E-07		
	Plutonium-238	1(1)	< 9.2E-07		
	Plutonium-239/240	1(1)	< 1.1E-06		
	Technetium-99	3(2)	< 4.2E-05	5.6E-04	
	Thorium-228	1(1)	< 9.3E-07		
	Thorium-230	1(1)	0		
	Thorium-232	1(1)	< 3.3E-06		
	Uranium	3(1)	< 2.1E-05	6.5E-05	
	Uranium-233/234	3(1)	< 9.7E-06	4.0E-05	
	Uranium-235/236	3(3)	< 2.6E-07	< 2.5E-06	
	Uranium-238	3(1)	< 6.9E-06	2.1E-05	



**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020 (continued)**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>	
<i>On-site air samplers</i>						
A54	Americium-241	1(1)	< 8.8E-07			
	Neptunium-237	1(1)	0			
	Plutonium-238	1(1)	0			
	Plutonium-239/240	1(1)	0			
	Technetium-99	3(3)	0	< 3.2E-05		
	Thorium-228	1(1)	< 5.0E-06			
	Thorium-230	1(1)	< 2.0E-06			
	Thorium-232	1(1)	< 4.3E-06			
	Uranium	3(2)	< 1.5E-05	2.5E-05		
	Uranium-233/234	3(2)	< 6.6E-06	1.4E-05		
	Uranium-235/236	3(3)	< 1.7E-07	< 1.0E-06		
	Uranium-238	3(3)	< 4.8E-06	< 8.2E-06		
	T7	Americium-241	4(4)	< 2.5E-07	< 1.8E-06	
		Neptunium-237	4(4)	0	< 3.4E-07	
Plutonium-238		4(4)	0	< 1.2E-06		
Plutonium-239/240		4(4)	0	< 9.7E-07		
Technetium-99		12(7)	< 9.7E-06	2.1E-04		
Thorium-228		4(4)	< 1.3E-06	< 3.1E-06		
Thorium-230		4(4)	0	< 4.8E-06		
Thorium-232		4(4)	< 2.5E-07	< 2.1E-06		
Uranium		12(11)	< 3.8E-06	2.3E-05		
Uranium-233/234		12(11)	< 2.0E-06	1.5E-05		
Uranium-235/236		12(12)	< 1.5E-07	< 7.7E-07		
Uranium-238		12(11)	< 1.2E-06	< 7.8E-06		
<i>Off-site air samplers</i>						
A3		Americium-241	4(4)	< 1.4E-07	< 8.8E-07	
	Fluoride	51(29)	0.0037	0.039		
	Neptunium-237	4(4)	0	< 3.6E-07		
	Plutonium-238	4(4)	0	0		
	Plutonium-239/240	4(4)	< 4.8E-07	< 1.4E-06		
	Technetium-99	12(9)	0	2.4E-04		
	Thorium-228	4(4)	< 5.6E-07	< 5.0E-06		
	Thorium-230	4(4)	< 5.5E-07	< 9.2E-06		
	Thorium-232	4(4)	< 2.0E-06	< 2.6E-06		
	Uranium	12(11)	< 5.8E-06	< 2.8E-05		
	Uranium-233/234	12(11)	< 4.2E-06	1.5E-05		
	Uranium-235/236	12(12)	< 1.3E-07	< 1.9E-06		
	Uranium-238	12(11)	< 1.8E-06	< 9.2E-06		
	A6	Americium-241	4(4)	< 2.0E-07	< 1.5E-06	
Fluoride		48(40)	< 0.0046	< 0.024		
Neptunium-237		4(4)	0	< 5.3E-07		
Plutonium-238		4(4)	0	< 9.7E-07		
Plutonium-239/240		4(4)	< 5.3E-07	< 1.6E-06		
Technetium-99		12(9)	0	2.2E-04		
Thorium-228		4(3)	0	< 4.4E-06		
Thorium-230		4(4)	0	< 5.6E-06		
Thorium-232		4(4)	< 1.2E-06	< 2.9E-06		

**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020 (continued)**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>
A6	Uranium	12(9)	< 6.9E-06	< 3.4E-05	
	Uranium-233/234	12(12)	< 2.5E-06	< 1.1E-05	
	Uranium-235/236	12(12)	0	< 1.1E-06	
	Uranium-238	12(10)	< 2.2E-06	< 1.1E-05	
A9	Americium-241	4(4)	< 1.2E-07	< 1.5E-06	
	Fluoride	52(44)	< 0.0048	0.023	
	Neptunium-237	4(4)	0	< 3.6E-07	
	Plutonium-238	4(4)	0	< 7.5E-07	
	Plutonium-239/240	4(4)	< 4.3E-07	< 1.2E-06	
	Technetium-99	12(8)	0	1.4E-04	
	Thorium-228	4(2)	1.8E-06	6.7E-06	
	Thorium-230	4(4)	< 2.1E-06	< 7.7E-06	
	Thorium-232	4(4)	< 2.1E-06	< 3.7E-06	
	Uranium	12(10)	< 6.5E-06	2.1E-05	
	Uranium-233/234	12(12)	< 3.9E-06	< 7.0E-06	
	Uranium-235/236	12(12)	< 3.2E-07	< 1.2E-06	
	Uranium-238	12(11)	< 2.1E-06	< 6.9E-06	
	A12	Americium-241	4(4)	< 3.7E-07	< 1.6E-06
Fluoride		52(29)	< 0.0046	0.097	
Neptunium-237		4(4)	0	< 1.2E-07	
Plutonium-238		4(4)	0	< 2.6E-07	
Plutonium-239/240		4(4)	< 2.5E-07	< 5.7E-07	
Technetium-99		12(7)	< 7.3E-06	6.0E-04	
Thorium-228		4(3)	< 1.4E-06	5.3E-06	
Thorium-230		4(4)	0	< 5.0E-06	
Thorium-232		4(3)	< 1.1E-06	4.2E-06	
Uranium		12(9)	< 3.9E-06	7.7E-05	
Uranium-233/234		12(10)	< 3.5E-06	2.8E-05	
Uranium-235/236		12(12)	< 2.0E-07	< 1.9E-06	
Uranium-238		12(9)	< 1.3E-06	2.6E-05	
A15		Americium-241	4(4)	0	< 1.2E-06
	Fluoride	52(39)	< 0.0041	0.016	
	Neptunium-237	4(4)	< 1.3E-07	< 8.3E-07	
	Plutonium-238	4(4)	< 1.4E-07	< 4.5E-07	
	Plutonium-239/240	4(4)	< 2.6E-07	< 9.1E-07	
	Technetium-99	12(8)	0	3.6E-04	
	Thorium-228	4(2)	< 1.3E-06	2.6E-05	
	Thorium-230	4(4)	< 5.6E-07	< 5.7E-06	
	Thorium-232	4(4)	< 6.1E-07	< 3.4E-06	
	Uranium	12(11)	< 7.8E-06	< 2.3E-05	
	Uranium-233/234	12(11)	< 3.4E-06	3.2E-05	
	Uranium-235/236	12(12)	< 2.0E-07	< 1.5E-06	
	Uranium-238	12(11)	< 2.5E-06	< 7.4E-06	
	A23	Americium-241	4(4)	0	< 9.2E-07
Fluoride		53(42)	< 0.0039	0.024	
Neptunium-237		4(4)	0	< 1.5E-06	
Plutonium-238		4(4)	< 1.9E-07	< 7.3E-07	
Plutonium-239/240		4(4)	0	< 2.1E-06	

**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020 (continued)**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>	
A23	Technetium-99	12(9)	< 1.5E-06	3.0E-04		
	Thorium-228	4(2)	< 4.0E-06	6.7E-06		
	Thorium-230	4(4)	< 1.1E-06	< 7.8E-06		
	Thorium-232	4(2)	< 2.3E-06	5.2E-06		
	Uranium	12(9)	8.7E-06	2.5E-05		
	Uranium-233/234	12(11)	< 3.5E-06	1.3E-05		
	Uranium-235/236	12(12)	< 1.6E-07	< 1.4E-06		
	Uranium-238	12(10)	2.9E-06	8.2E-06		
A24	Americium-241	4(4)	< 2.5E-07	< 9.3E-07		
	Fluoride	51(36)	< 0.0028	0.020		
	Neptunium-237	4(4)	0	< 4.4E-07		
	Plutonium-238	4(4)	0	< 6.6E-07		
	Plutonium-239/240	4(4)	< 4.0E-07	< 1.2E-06		
	Technetium-99	12(8)	< 4.0E-06	2.2E-04		
	Thorium-228	4(2)	4.3E-06	7.6E-06		
	Thorium-230	4(4)	< 3.7E-06	< 1.0E-05		
	Thorium-232	4(4)	< 2.1E-06	< 3.0E-06		
	Uranium	12(8)	< 9.8E-06	2.7E-04		
	Uranium-233/234	12(10)	< 4.5E-06	8.5E-05		
	Uranium-235/236	12(11)	0	4.2E-06		
	Uranium-238	12(9)	< 3.2E-06	8.9E-05		
	A28	Americium-241	4(4)	0	< 1.2E-06	
		Fluoride	51(35)	< 0.0061	0.026	
		Neptunium-237	4(4)	0	< 6.3E-07	
Plutonium-238		4(4)	0	< 1.6E-06		
Plutonium-239/240		4(4)	0	< 1.6E-06		
Technetium-99		12(8)	< 1.3E-05	1.9E-04		
Thorium-228		4(2)	< 3.3E-06	5.7E-06		
Thorium-230		4(4)	0	< 5.0E-06		
Thorium-232		4(4)	< 1.3E-06	< 2.9E-06		
Uranium		12(10)	9.3E-06	< 1.9E-05		
Uranium-233/234		12(12)	< 2.8E-06	< 6.3E-06		
Uranium-235/236		12(12)	0	< 7.3E-07		
Uranium-238		12(11)	3.0E-06	< 6.2E-06		
A37 (background)		Americium-241	4(4)	0	< 2.2E-06	
		Fluoride	52(38)	< 0.0045	< 0.015	
		Neptunium-237	4(4)	< 1.3E-07	< 7.4E-07	
	Plutonium-238	4(4)	0	< 1.4E-07		
	Plutonium-239/240	4(4)	< 8.4E-07	< 1.9E-06		
	Technetium-99	12(8)	< 2.9E-06	1.8E-04		
	Thorium-228	4(3)	< 2.7E-06	9.3E-06		
	Thorium-230	4(4)	0	< 5.3E-06		
	Thorium-232	4(4)	< 1.2E-06	< 3.0E-06		
	Uranium	12(10)	< 7.1E-06	< 3.3E-05		
	Uranium-233/234	12(12)	< 2.3E-06	< 9.6E-06		
	Uranium-235/236	12(12)	0	< 1.0E-06		
	Uranium-238	12(11)	< 2.3E-06	< 1.1E-05		

**Table 2.10. Ambient air monitoring program summary for radionuclides and fluoride – 2020 (continued)**

Sampling Location	Parameter <sup>a</sup>	No. of measurements <sup>b</sup>	Minimum <sup>c, d</sup>	Maximum <sup>c, d</sup>	Average <sup>c, e</sup>
A41A	Americium-241	4(4)	< 2.5E-07	< 1.4E-06	
	Fluoride	52(33)	< 0.0045	0.019	
	Neptunium-237	4(4)	0	< 8.3E-07	
	Plutonium-238	4(4)	0	< 5.1E-07	
	Plutonium-239/240	4(4)	< 2.6E-07	< 1.8E-06	
	Technetium-99	12(8)	< 3.4E-06	2.3E-04	
	Thorium-228	4(3)	< 2.0E-06	7.1E-06	
	Thorium-230	4(4)	< 1.2E-06	< 8.6E-06	
	Thorium-232	4(4)	< 8.8E-07	3.8E-06	
	Uranium	12(11)	< 6.9E-06	< 2.1E-05	
	Uranium-233/234	12(11)	< 3.4E-06	1.8E-05	
	Uranium-235/236	12(12)	< 1.9E-07	< 1.0E-06	
	Uranium-238	12(12)	< 2.3E-06	< 6.9E-06	

<sup>a</sup>All parameters are measured in pCi/m<sup>3</sup> with the exception of uranium and fluoride which are measured in µg/m<sup>3</sup>.

<sup>b</sup>Radiological 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 value for the undetected result.

<sup>c</sup>Results for radionuclides 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).

Ambient concentrations of uranium and uranium isotopes reported in 2020 may be slightly elevated and should be considered estimated. Uranium and uranium isotopes were detected in quality control samples associated with the ambient air samples and subsequently in unused filters obtained from the manufacturer that are placed at the ambient air stations to collect samples. The presence of uranium and uranium isotopes in the unused filters may have caused slightly elevated analytical results for uranium and uranium isotopes. Levels of these constituents in ambient air are calculated based on the analytical results and therefore may be slightly elevated as well. Reported minimum and maximum values include these estimated results.

<sup>d</sup>Values reported as less than (<) are based on an undetected result. In some cases, a detected result is between minimum and maximum results that are based on undetected results. This can happen because detection limits can vary for samples and because results can be qualified as undetected during data validation.

Values reported as “0” may actually be negative results. A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results. These negative value results are reported as “0” in the table for simplicity.

<sup>e</sup>Averages are 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 the value of the undetected result to calculate the average for the parameter. These criteria were adapted from *Data Quality Assessment: A Reviewer’s Guide* (EPA 2006).

**Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020**

Sampling Location	Parameter	No. of measurements <sup>a</sup>	Minimum <sup>b, c</sup>	Maximum <sup>b, c</sup>	Average <sup>d</sup>
<i>Particulate matter (PM)<sup>e</sup> (µg/kg)</i>					
A50	PM 2.5 (hourly average)	564	1.2	27.6	10.2
	PM 2.5 (daily average)	23	5.0	17.2	10.1
	PM 10 (hourly average)	564	1.8	156.1	17.7
	PM 10 (daily average)	23	9.1	30.8	17.7
<i>Metals (µg/kg)</i>					
	Antimony	4(4)	< 5.26E-04	< 2.31E-03	
	Arsenic	4(4)	< 4.05E-03	< 5.94E-03	
	Beryllium	4(4)	< 1.16E-04	< 1.53E-04	
	Cadmium	4(4)	< 6.37E-04	< 9.81E-04	
	Chromium	4(4)	< 6.05E-03	< 9.68E-03	
	Cobalt	4(2)	< 1.34E-04	< 5.41E-04	
	Lead	4(4)	< 3.50E-03	< 7.47E-03	
	Manganese	4(4)	< 1.92E-02	< 3.46E-02	
	Mercury	4(4)	< 1.58E-05	< 2.47E-05	
	Nickel	4(2)	< 2.57E-03	8.51E-03	
	Selenium	4(3)	< 9.29E-05	3.55E-04	
<i>VOCs (parts per billion by volume)</i>					
	1,1,1-Trichloroethane	3(3)	< 0.049	< 0.049	
	1,1,2-Trichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethene	3(3)	< 0.020	< 0.020	
	1,2-Dichloroethane	3(2)	< 0.025	0.026	
	1,4-Dioxane	3(3)	< 0.075	< 0.075	
	2-Butanone	3(1)	< 0.183	0.604	
	4-Methyl-2-pentanone	3(3)	< 0.135	< 0.135	
	Benzene	3(0)	0.143	0.251	0.152
	Carbon disulfide	3(3)	< 0.028	< 0.028	
	Carbon tetrachloride	3(0)	0.064	0.075	0.058
	Chloroethane	3(3)	< 0.072	< 0.072	
	Chloroform	3(0)	0.018	0.020	0.018
	<i>cis</i> -1,2-Dichloroethene	3(3)	< 0.025	< 0.025	
	Methylene chloride	3(3)	< 0.97	< 0.97	
	Tetrachloroethene	3(2)	< 0.017	< 0.0792	
	Toluene	3(2)	< 0.196	0.427	
	<i>trans</i> -1,2-Dichloroethene	3(3)	< 0.016	< 0.016	
	Trichloroethene	3(2)	< 0.015	< 0.075	
	Vinyl chloride	3(2)	< 0.066	0.068	
<i>Fibers/Asbestos (fibers per cubic cm)</i>					
	Fibers	4(4)	< 0.0002	< 0.0003	

**Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020 (continued)**

Sampling Location	Parameter	No. of measurements <sup>a</sup>	Minimum <sup>b, c</sup>	Maximum <sup>b, c</sup>	Average <sup>d</sup>
<i>Particulate matter (PM)<sup>e</sup> (µg/kg)</i>					
A51	PM 2.5 (hourly average)	743	1.2	46.7	10.3
	PM 2.5 (daily average)	31	4.8	18.3	10.3
	PM 10 (hourly average)	743	2.0	54.8	14.1
	PM 10 (daily average)	31	6.7	27.4	14.1
<i>Metals (µg/kg)</i>					
	Antimony	4(3)	< 6.63E-04	< 3.09E-03	
	Arsenic	4(4)	< 5.09E-03	< 7.62E-03	
	Beryllium	4(4)	< 1.21E-04	< 1.73E-04	
	Cadmium	4(4)	< 6.08E-04	< 1.13E-03	
	Chromium	4(4)	< 8.56E-03	< 1.17E-02	
	Cobalt	4(3)	< 1.76E-04	1.71E-03	
	Lead	4(4)	< 4.46E-03	< 8.33E-03	
	Manganese	4(4)	< 2.26E-02	< 5.61E-02	
	Mercury	4(4)	< 1.42E-05	< 3.10E-05	
	Nickel	4(3)	< 1.94E-03	4.48E-02	
	Selenium	4(3)	< 1.14E-04	4.32E-04	
<i>VOCs (parts per billion by volume)</i>					
	1,1,1-Trichloroethane	3(3)	< 0.049	< 0.049	
	1,1,2-Trichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethene	3(3)	< 0.02	< 0.02	
	1,2-Dichloroethane	3(3)	< 0.025	< 0.025	
	1,4-Dioxane	3(3)	< 0.075	< 0.075	
	2-Butanone	3(1)	< 0.183	0.767	
	4-Methyl-2-pentanone	3(3)	< 0.135	< 0.135	
	Benzene	3(0)	0.123	0.235	0.181
	Carbon disulfide	3(3)	< 0.028	< 0.0321	
	Carbon tetrachloride	3(0)	0.070	0.075	0.072
	Chloroethane	3(3)	< 0.072	< 0.072	
	Chloroform	3(0)	0.019	0.021	0.020
	<i>cis</i> -1,2-Dichloroethene	3(3)	< 0.025	< 0.025	
	Methylene chloride	3(3)	< 0.97	< 0.97	
	Tetrachloroethene	3(3)	< 0.017	< 0.017	
	Toluene	3(2)	< 0.196	0.28	
	<i>trans</i> -1,2-Dichloroethene	3(3)	< 0.016	< 0.016	
	Trichloroethene	3(3)	< 0.015	< 0.022	
	Vinyl chloride	3(3)	< 0.066	< 0.066	
<i>Fibers/Asbestos (fibers per cubic cm)</i>					
	Fibers	4(4)	< 0.0002	< 0.0002	

**Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020 (continued)**

Sampling Location	Parameter	No. of measurements <sup>a</sup>	Minimum <sup>b, c</sup>	Maximum <sup>b, c</sup>	Average <sup>d</sup>
<i>Particulate matter (PM)<sup>e</sup> (µg/kg)</i>					
A52	PM 2.5 (hourly average)	743	1.1	24.6	9.6
	PM 2.5 (daily average)	31	4.8	16.7	9.6
	PM 10 (hourly average)	743	2.0	37.1	13.8
	PM 10 (daily average)	31	6.9	26.1	13.8
<i>Metals (µg/kg)</i>					
	Antimony	4(2)	< 5.29E-04	3.02E-03	
	Arsenic	4(4)	< 4.14E-03	< 8.00E-03	
	Beryllium	4(4)	< 1.06E-04	< 1.71E-04	
	Cadmium	4(4)	< 6.55E-04	< 1.24E-03	
	Chromium	4(4)	< 6.44E-03	< 1.34E-02	
	Cobalt	4(4)	< 1.41E-04	< 3.71E-04	
	Lead	4(4)	< 3.89E-03	< 8.75E-03	
	Manganese	4(4)	< 1.68E-02	< 5.26E-02	
	Mercury	4(4)	< 1.47E-05	< 2.83E-05	
	Nickel	4(3)	< 2.10E-03	7.43E-03	
	Selenium	4(3)	< 9.19E-05	3.53E-04	
<i>VOCs (parts per billion by volume)</i>					
	1,1,1-Trichloroethane	3(3)	< 0.049	< 0.049	
	1,1,2-Trichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethene	3(3)	< 0.020	< 0.020	
	1,2-Dichloroethane	3(3)	< 0.025	< 0.025	
	1,4-Dioxane	3(3)	< 0.075	< 0.075	
	2-Butanone	3(1)	< 0.183	0.567	
	4-Methyl-2-pentanone	3(3)	< 0.135	< 0.135	
	Benzene	3(0)	0.124	0.245	0.186
	Carbon disulfide	3(1)	0.032	0.051	
	Carbon tetrachloride	3(0)	0.067	0.0763	0.072
	Chloroethane	3(3)	< 0.072	< 0.072	
	Chloroform	3(0)	0.019	0.021	0.020
	<i>cis</i> -1,2-Dichloroethene	3(3)	< 0.025	< 0.025	
	Methylene chloride	3(3)	< 0.97	< 0.97	
	Tetrachloroethene	3(2)	< 0.017	0.070	
	Toluene	3(3)	< 0.196	0.220	
	<i>trans</i> -1,2-Dichloroethene	3(3)	< 0.016	< 0.016	
	Trichloroethene	3(2)	< 0.015	< 0.051	
	Vinyl chloride	3(3)	< 0.066	< 0.066	
<i>Fibers/Asbestos (fibers per cubic cm)</i>					
	Fibers	4(4)	< 0.0002	< 0.0002	

**Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020 (continued)**

Sampling Location	Parameter	No. of measurements <sup>a</sup>	Minimum <sup>b, c</sup>	Maximum <sup>b, c</sup>	Average <sup>d</sup>
<i>Particulate matter (PM)<sup>e</sup> (µg/kg)</i>					
A53	PM 2.5 (hourly average)	718	1.1	25.7	10.0
	PM 2.5 (daily average)	30	4.7	19	10.0
	PM 10 (hourly average)	718	1.9	38.3	14.7
	PM 10 (daily average)	30	6.7	30.2	14.7
<i>Metals (µg/kg)</i>					
	Antimony	4(3)	< 5.84E-04	< 2.43E-03	
	Arsenic	4(4)	< 4.04E-03	< 6.31E-03	
	Beryllium	4(4)	< 9.45E-05	< 1.36E-04	
	Cadmium	4(4)	< 6.87E-04	< 2.35E-03	
	Chromium	4(4)	< 6.65E-03	< 1.09E-02	
	Cobalt	4(3)	< 1.67E-04	1.30E-03	
	Lead	4(4)	< 4.54E-03	< 7.17E-03	
	Manganese	4(3)	< 2.08E-02	7.21E-02	
	Mercury	4(4)	< 1.50E-05	< 2.56E-05	
	Nickel	4(2)	< 2.30E-03	3.90E-02	
	Selenium	4(3)	< 8.87E-05	6.79E-04	
<i>VOCs (parts per billion by volume)</i>					
	1,1,1-Trichloroethane	3(3)	< 0.049	< 0.049	
	1,1,2-Trichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethene	3(3)	< 0.020	< 0.020	
	1,2-Dichloroethane	3(3)	< 0.025	< 0.025	
	1,4-Dioxane	3(3)	< 0.075	< 0.075	
	2-Butanone	3(1)	< 0.183	0.388	
	4-Methyl-2-pentanone	3(2)	< 0.135	0.400	
	Benzene	3(0)	0.132	0.279	0.202
	Carbon disulfide	3(2)	< 0.028	0.049	
	Carbon tetrachloride	3(0)	0.072	0.082	0.077
	Chloroethane	3(3)	< 0.072	< 0.072	
	Chloroform	3(1)	< 0.016	0.020	
	<i>cis</i> -1,2-Dichloroethene	3(3)	< 0.025	< 0.025	
	Methylene chloride	3(1)	< 0.97	3.59	
	Tetrachloroethene	3(3)	< 0.017	< 0.017	
	Toluene	3(1)	< 0.196	0.354	
	<i>trans</i> -1,2-Dichloroethene	3(3)	< 0.016	< 0.016	
	Trichloroethene	3(3)	< 0.015	< 0.015	
	Vinyl chloride	3(3)	< 0.066	< 0.066	
<i>Fibers/Asbestos (fibers per cubic cm)</i>					
	Fibers	4(4)	< 0.0002	< 0.0002	



**Table 2.11. Ambient air monitoring program summary for non-radionuclides – 2020 (continued)**

Sampling Location	Parameter	No. of measurements <sup>a</sup>	Minimum <sup>b, c</sup>	Maximum <sup>b, c</sup>	Average <sup>d</sup>
<i>Particulate matter (PM)<sup>e</sup> (µg/kg)</i>					
A54	PM 2.5 (hourly average)	566	1.2	26.9	10.1
	PM 2.5 (daily average)	23	5.0	18.2	10.1
	PM 10 (hourly average)	566	1.8	37.9	14.6
	PM 10 (daily average)	23	9.0	27.8	14.6
<i>Metals (µg/kg)</i>					
	Antimony	4(3)	< 4.70E-04	< 2.19E-03	
	Arsenic	4(4)	< 3.69E-03	< 5.72E-03	
	Beryllium	4(4)	< 9.12E-05	< 1.53E-04	
	Cadmium	4(4)	< 5.92E-04	< 7.77E-04	
	Chromium	4(4)	< 5.94E-03	< 9.19E-03	
	Cobalt	4(3)	< 1.24E-04	3.68E-04	
	Lead	4(4)	< 3.60E-03	< 6.60E-03	
	Manganese	4(4)	< 1.84E-02	< 2.11E-02	
	Mercury	4(4)	< 1.38E-05	< 2.36E-05	
	Nickel	4(3)	< 1.27E-03	9.51E-03	
	Selenium	4(2)	< 9.05E-05	4.69E-04	
<i>VOCs (parts per billion by volume)</i>					
	1,1,1-Trichloroethane	3(3)	< 0.049	< 0.049	
	1,1,2-Trichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethane	3(3)	< 0.018	< 0.018	
	1,1-Dichloroethene	3(3)	< 0.020	< 0.020	
	1,2-Dichloroethane	3(2)	< 0.025	0.061	
	1,4-Dioxane	3(3)	< 0.075	< 0.075	
	2-Butanone	3(0)	0.242	0.848	0.563
	4-Methyl-2-pentanone	3(3)	< 0.135	< 0.135	
	Benzene	3(0)	0.153	0.287	0.213
	Carbon disulfide	3(1)	0.031	< 0.126	
	Carbon tetrachloride	3(0)	0.072	0.085	0.078
	Chloroethane	3(2)	< 0.072	0.079	
	Chloroform	3(0)	0.020	0.032	0.024
	<i>cis</i> -1,2-Dichloroethene	3(3)	< 0.025	< 0.025	
	Methylene chloride	3(2)	< 0.97	1.68	
	Tetrachloroethene	3(2)	< 0.017	< 0.026	
	Toluene	3(1)	< 0.196	0.0441	
	<i>trans</i> -1,2-Dichloroethene	3(3)	< 0.016	< 0.016	
	Trichloroethene	3(3)	< 0.015	< 0.015	
	Vinyl chloride	3(2)	< 0.066	0.196	
<i>Fibers/Asbestos (fibers per cubic cm)</i>					
	Fibers	4(4)	< 0.0002	< 0.0002	

<sup>a</sup>Number in parentheses is the number of samples that were below the detection limit.

<sup>b</sup>If the analytical result for a sample was below the detection limit, the ambient air concentration was calculated based on the value for the undetected result. Values reported as less than (<) are based on an undetected result. In some cases, a detected result is between minimum and maximum results that are based on undetected results. This can happen because detection limits can vary for samples and because results can be qualified as undetected during data validation.

<sup>c</sup>Some results 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).

<sup>d</sup>Averages are 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 the value of the undetected result to calculate the average for the parameter. These criteria were adapted from *Data Quality Assessment: A Reviewer's Guide* (EPA 2006).

<sup>e</sup>Based on standard temperature and pressure.

**Table 2.12. External radiation monitoring program (mrem) – 2020**

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose <sup>a</sup>
<i>Off-site locations</i>					
A12	21	21	22	24	88
A15	21	23	23	25	92
A23	23	20	23	25	91
A24	22	21	23	28	94
A28	20	19	22	25	86
A3	21	19	21	25	86
A6	22	21	22	24	89
A9	21	20	22	24	87
<i>On-site locations</i>					
A29	22	20	22	27	91
A36	20	20	21	27	88
A40A	21	21	22	25	89
A8	24	24	25	27	100
UPOLE-1404A	20	21	22	24	87
UPOLE-518	19	20	21	24	84
UPOLE-862	27	31	30	32	120
UPOLE-874	131	176	137	185	629
UPOLE-906	19	18	18	22	77
UPOLE-933	20	18	19	24	81
X-230J2	22	22	22	26	92

<sup>a</sup>Although external radiation is reported as a "dose", it is simply a measure of the exposure to radiation that a person would receive if they were continuously present at the monitored location. No actual person is present at the monitoring locations for 24 hours per day, 365 days per year. This external radiation includes background radiation. Background radiation at the off-site monitoring locations ranged from 86 to 94 mrem/year in 2020.

**Table 2.13. External radiation monitoring (mrem) at locations near on-site cylinder storage yards – 2020**

Location	First quarter	Second quarter	Third quarter	Fourth quarter	Cumulative annual whole body dose <sup>a</sup>
UPOLE-41	135	156	131	159	581
UPOLE-868	257	329	275	325	1186
UPOLE-874	138	161	141	169	609
UPOLE-882	230	301	241	306	1078
UPOLE-890	59	71	62	72	264

<sup>a</sup>Although external radiation is reported as a "dose", it is simply a measure of the exposure to radiation that a person would receive if they were continuously present at the monitored location. No actual person is present at the monitoring locations for 24 hours per day, 365 days per year. This external radiation includes background radiation. Background radiation at the off-site monitoring locations ranged from 86 to 94 mrem/year in 2020.

**Table 2.14. Settleable solids monitoring results – 2020**

Sampling location	Parameter <sup>a</sup>	Unit	Results <sup>b</sup>		
			August	December	
<i>Little Beaver Creek</i>					
EDD-SW01 (FBP Outfalls 001 & 015)	Settleable solids	mg/L	7.2J	8.4J <sup>c</sup>	4U
	Suspended solids	mg/L	7.2J	8.4J <sup>c</sup>	4U
FBP Outfall 005	Settleable solids	mg/L	4.8J		4U
	Suspended solids	mg/L	4.8J		4U
FBP Outfall 009	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U
FBP Outfall 011	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U
<i>Big Run Creek</i>					
FBP Outfall 002	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U
<i>Scioto River</i>					
ACP NPDES Outfall 012	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U
WDD-SW03 (FBP Outfall 010 & ACP Outfall 013)	Settleable solids	mg/L	12.4		4U
	Suspended solids	mg/L	12.4		4U
FBP Outfall 003	Settleable solids	mg/L	8.8J	6J	4.4J <sup>c</sup>
	Suspended solids	mg/L	15.2	6J	4.4J <sup>c</sup>
FBP Outfall 004	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U
<i>Background locations</i>					
RW-6 (Scioto River)	Settleable solids	mg/L	24		4U
	Suspended solids	mg/L	49.2		4U
	Alpha activity	pCi/g	117J		
	Beta/gamma activity	pCi/g	1470U		
RW-5 (Big Beaver Creek)	Settleable solids	mg/L	52.8		4U
	Suspended solids	mg/L	62.8		4U
	Alpha activity	pCi/g	56.9J		
	Beta/gamma activity	pCi/g	1320U		
LBC-SW12 (Little Beaver Creek)	Settleable solids	mg/L	4U		4U
	Suspended solids	mg/L	4U		4U

<sup>a</sup>Suspended solids are the solids in a water sample (such as silt or clay particles) that can be trapped by a filter. Settleable solids are a component of suspended solids defined as the particles that settle out of suspension in water within a defined time period.

<sup>b</sup>Abbreviations and data qualifiers are as follows: J – estimated. U – undetected.

<sup>c</sup>This result is for the duplicate sample collected from this location. A duplicate sample is a sample collected from the same location at the same time and using the same sampling device (if possible) as the regular sample.

**Table 2.15. Local surface water monitoring program results – 2020**

Location	Parameter <sup>a</sup>	Second quarter <sup>b,c</sup>		Fourth quarter <sup>b,c</sup>
Scioto River RW-1A (downstream)	Americium-241	0.012U		0.022U
	Neptunium-237	-0.065U		-0.0234U
	Plutonium-238	-0.009U		0.22UJ
	Plutonium-239/240	0.04U		-0.049UJ
	Technetium-99	2.296UJ		0.116U
	Uranium	0.773*J		2.036J
	Uranium-233/234	0.917J		0.636J
	Uranium-235/236	0.034UJ		0.026UJ
Scioto River RW-6 (upstream)	Uranium-238	0.254*J		0.68
	Americium-241	0.025U	0.006U	0.029U
	Neptunium-237	-0.0052U	-0.028U	0U
	Plutonium-238	0.004U	0.012U	0.018U
	Plutonium-239/240	-0.007U	0.022U	0.015U
	Technetium-99	9.708UJ	2.471*QU	-0.796U
	Uranium	0.659*J	0.896*J	1.778J
	Uranium-233/234	0.885J	0.902J	0.619J
Little Beaver Creek RW-7 (downstream)	Uranium-235/236	0.026UJ	0.041UJ	0.023UJ
	Uranium-238	0.217*J	0.295*J	0.594
	Americium-241	0.035U		-0.004U
	Neptunium-237	-0.0049U		0.00807U
	Plutonium-238	0.002U		0.004U
	Plutonium-239/240	0U		0.015U
	Technetium-99	5.332*QUJ		0.983U
	Uranium	0.729J		0.503J
RW-8 (downstream)	Uranium-233/234	0.987J		0.626J
	Uranium-235/236	0.01UJ		0.022UJ
	Uranium-238	0.243		0.165
	Americium-241	-0.006U		0.023U
	Neptunium-237	0.052U		0.0151U
	Plutonium-238	-0.009U		0.029U
	Plutonium-239/240	0.003U		-0.007U
	Technetium-99	2.066*QU		3U
RW-12 (upstream)	Uranium	0.823J		2.274J
	Uranium-233/234	0.939J		2.97J
	Uranium-235/236	0.007UJ		0.12J
	Uranium-238	0.275		0.745
	Americium-241	0.014U		0U
	Neptunium-237	0.0099U		0.0236U
	Plutonium-238	0.013U		0.017U
	Plutonium-239/240	-0.003U		-0.02U
RW-12 (upstream)	Technetium-99	49.72QJ		-1.859U
	Uranium	-0.08*UJ		0.118UJ
	Uranium-233/234	0.006UJ		0.011UJ
	Uranium-235/236	0UJ		0.004UJ
	Uranium-238	-0.027*U		0.039U

**Table 2.15. Local surface water monitoring program results – 2020 (continued)**

Location	Parameter <sup>a</sup>	Second quarter <sup>b,c</sup>		Fourth quarter <sup>b,c</sup>		
Big Beaver Creek RW-13 (downstream)	Americium-241	0.01U		0.008U		
	Neptunium-237	-0.0094U		-0.0427UJ		
	Plutonium-238	-0.006U		0.01U		
	Plutonium-239/240	-0.006U		0.015U		
	Technetium-99	105.74QJ		1.973U		
	Uranium	0.804*J		0.664J		
	Uranium-233/234	0.965J		0.742J		
	Uranium-235/236	0.039UJ		0UJ		
	Uranium-238	0.264*J		0.223		
	RW-5 (upstream)	Americium-241	0.012U		0.002U	
		Neptunium-237	0U		-0.00423U	
		Plutonium-238	-0.005UJ		-0.003U	
		Plutonium-239/240	0.024UJ		0.012U	
		Technetium-99	20.339UJ		1.079U	
Uranium		0.296*UJ		0.082UJ		
Uranium-233/234		0.517J		0.027UJ		
Uranium-235/236		0.011UJ		0.002UJ		
Uranium-238		0.098*UJ		0.027U		
Big Run Creek RW-2 (downstream)		Americium-241	0U	0.032U <sup>d</sup>	0.002U	0.013U <sup>d</sup>
	Neptunium-237	-0.013U	-0.019U <sup>d</sup>	-0.0385U	-0.0233U <sup>d</sup>	
	Plutonium-238	-0.007U	-0.013U <sup>d</sup>	0.004U	-0.01U <sup>d</sup>	
	Plutonium-239/240	0.014U	0.013U <sup>d</sup>	0.008U	-0.008U <sup>d</sup>	
	Technetium-99	10.154QUJ	9.209 <sup>d</sup>	-2.542UJ	7.626J <sup>d</sup>	
	Uranium	0.129*UJ	0.163*UJ <sup>d</sup>	0.316UJ	0.288UJ <sup>d</sup>	
	Uranium-233/234	0.048UJ	0.012UJ <sup>d</sup>	0.149UJ	0.14J <sup>d</sup>	
	Uranium-235/236	0.004UJ	0.009UJ <sup>d</sup>	0.008UJ	0.005UJ <sup>d</sup>	
	Uranium-238	0.043*UJ	0.053*U <sup>d</sup>	0.105UJ	0.096UJ <sup>d</sup>	
	RW-3 (downstream)	Americium-241	0.036U		0.012U	
		Neptunium-237	-0.0089U		0.0142U	
		Plutonium-238	0.01U		-0.016U	
		Plutonium-239/240	-0.003U		-0.002U	
		Technetium-99	4.944U		0.093U	
Uranium		0.656*J		1.089J		
Uranium-233/234		0.432J		0.969J		
Uranium-235/236		0.01UJ		0.037UJ		
Uranium-238	0.219*J		0.36			

**Table 2.15. Local surface water monitoring program results – 2020 (continued)**

Location	Parameter <sup>a</sup>	Second quarter <sup>b,c</sup>	Fourth quarter <sup>b,c</sup>
Big Run Creek (continued) RW-33 (upstream)	Americium-241	-0.002U	0.049U
	Neptunium-237	0.01U	0.0133UJ
	Plutonium-238	-0.009U	0U
	Plutonium-239/240	-0.002U	0.012U
	Technetium-99	3.29U	-0.127U
	Uranium	0.248*UJ	0.169UJ
	Uranium-233/234	0.183J	0.032UJ
	Uranium-235/236	0.007UJ	0.023UJ
Background creeks RW-10N	Uranium-238	0.082*UJ	0.053U
	Americium-241	0.029U	0.02U
	Neptunium-237	0.0052U	-0.004U
	Plutonium-238	0U	0.027U
	Plutonium-239/240	0.016U	0.007U
	Technetium-99	6.805QUJ	2.007U
	Uranium	0.051*UJ	0.174UJ
	Uranium-233/234	0.035UJ	0.046UJ
RW-10S	Uranium-235/236	0.009UJ	0UJ
	Uranium-238	0.016*U	0.059UJ
	Americium-241	0.026U	0U
	Neptunium-237	0.046U	-0.0155U
	Plutonium-238	-0.013U	0.013U
	Plutonium-239/240	-0.008U	-0.008U
	Technetium-99	3.443QU	-3.526U
	Uranium	-0.007*UJ	0.225UJ
RW-10E	Uranium-233/234	0.004UJ	0.162UJ
	Uranium-235/236	0UJ	0UJ
	Uranium-238	-0.002*U	0.076U
	Americium-241	-0.002U	0.023U
	Neptunium-237	0.027U	0.012U
	Plutonium-238	0.001U	0.005U
	Plutonium-239/240	0.036U	-0.007U
	Technetium-99	0.88U	-2.159U
	Uranium	0.122*UJ	0.077UJ
	Uranium-233/234	0.068UJ	0.007UJ
	Uranium-235/236	0UJ	-0.003UJ
	Uranium-238	0.041*U	0.026U

**Table 2.15. Local surface water monitoring program results – 2020 (continued)**

Location	Parameter <sup>a</sup>	Second quarter <sup>b,c</sup>	Fourth quarter <sup>b,c</sup>
Background creeks	Americium-241	0.031U	0.007U
RW-10W	Neptunium-237	0.024U	0U
	Plutonium-238	-0.031U	-0.007U
	Plutonium-239/240	0.021U	0.006U
	Technetium-99	3.555QU	-1.788U
	Uranium	0.132*UJ	-0.247UJ
	Uranium-233/234	0.023UJ	0UJ
	Uranium-235/236	0UJ	-0.018UJ
	Uranium-238	0.045*UJ	-0.08UJ

<sup>a</sup>Results are reported in µg/L (uranium) and pCi/L (all other parameters).

<sup>b</sup>Abbreviations and data qualifiers are as follows: \* – laboratory control samples failed one or more duplicate criteria. J – the reported result is estimated. Q – one or more quality control criteria failed. U – undetected.

<sup>c</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

<sup>d</sup>This result is for the duplicate sample collected from this location. A duplicate sample is a sample collected from the same location at the same time and using the same sampling device (if possible) as the regular sample.

**Table 2.16. Sediment monitoring program results – 2020**

Parameter	Unit	Location/results <sup>a,b</sup>			
		<i>Scioto River and outfalls that discharge to the Scioto River</i>			
		<i>RM-6 Upstream @ Piketon</i>	<i>RM-1A Downstream @ Lucasville</i>	<i>RM-9 Outfall 012</i>	<i>RM-10 Outfall 010/Outfall 013</i>
Aluminum	mg/kg	5150DQ	7410DQ	8130DQ	8000DQ
Americium-241	pCi/g	-0.0015U	0.0069U	0.0046U	0.0016UJ
Antimony	mg/kg	0.616DJ	0.613DU	0.613DU	1.54DJ
Arsenic	mg/kg	6.7*DQ	7.1*DQ	7.04*DQ	27.5*DQ
Barium	mg/kg	27.7*BD	49.3*BD	106*BD	57.9*BD
Beryllium	mg/kg	0.331*DJ	0.447*DJ	0.653*DJ	0.844*DJ
Cadmium	mg/kg	0.337DJQ	0.261DJQ	0.341DJQ	0.273DJQ
Calcium	mg/kg	10600D	5240D	6960D	2730DJ
Chromium	mg/kg	7.9*BD	11.2*BD	13.8*BD	28.9*BD
Copper	mg/kg	8.87*BD	8.95*BD	14.8*BD	11.8*BD
Iron	mg/kg	18000*DQ	16200*DQ	15900*DQ	33100*DQ
Lead	mg/kg	7.04*DQ	10.7*DQ	12.2*DQ	15.7*DQ
Magnesium	mg/kg	3970DQ	3520DQ	3550DQ	1680DJQ
Manganese	mg/kg	245*BD	482*BD	383*BD	1100*BD
Mercury	mg/kg	0.0147*J	0.0243*	0.061*	0.0199*J
Neptunium-237	pCi/g	0.005U	0.00084U	0.0059U	0.0024U
Nickel	mg/kg	14.4D	16D	18D	23D
Plutonium-238	pCi/g	0.005U	0.0051U	0.0068U	0.0059U
Plutonium-239/240	pCi/g	0.0034U	0.0059U	0.0068U	0.0071U
PCB, total	µg/kg	6.73	9.99	0.016U	10.3
Selenium	mg/kg	0.305DJQU	0.488DJQU	0.63DJQU	0.81DJQU
Silicon	mg/kg	1120DJQ	1450DJQ	1500DJQ	1450DJQ
Silver	mg/kg	0.271DU	0.27DU	0.27DU	0.272DU
Technetium-99	pCi/g	0.958*QUJ	0.644QUJ	1.361*QUJ	0.219QUJ
Thallium	mg/kg	0.13*DJ	0.144*DJ	0.242*DJ	0.319*DJ
Uranium	µg/g	1.64J	2.05J	2.51J	4.41J
Uranium-233/234	pCi/g	0.91J	0.97J	1.3J	2.2J
Uranium-235/236	pCi/g	0.036UJ	0.059UJ	0.081UJ	0.11UJ
Uranium-238	pCi/g	0.54	0.68	0.83	1.5
Zinc	mg/kg	67*DQJ	68.2*DQJ	81.5*DQJ	139*DQJ



**Table 2.16. Sediment monitoring program results – 2020 (continued)**

Parameter	Unit	Location/results <sup>a,b</sup>		
		<i>Little Beaver Creek</i>		
		<i>RM-12 Upstream</i>	<i>RM-12 Upstream (duplicate sample)</i>	<i>RM-11 X-230J7 Discharge</i>
Aluminum	mg/kg	1600DQ	1550DQ	1660DQ
Americium-241	pCi/g	0.0078UJ	0.0015U	0.0042U
Antimony	mg/kg	0.819DJ	1.52DJ	0.904DJ
Arsenic	mg/kg	35.2*DQ	39.4*DQ	31*DQ
Barium	mg/kg	46.2*BD	41.2*BD	44.5*BD
Beryllium	mg/kg	1.09*D	0.931*DJ	0.921*DJ
Cadmium	mg/kg	0.102DJQ	0.125DJQ	0.086DJQ
Calcium	mg/kg	1910D	1680D	997DJ
Chromium	mg/kg	39*BD	33.7*BD	27.3*BD
Copper	mg/kg	14.8*BD	11.4*BD	12.5*BD
Iron	mg/kg	17400*DQJ	11000*DQJ	10500*DQ
Lead	mg/kg	28.3*DQ	25.6*DQ	21.5*DQ
Magnesium	mg/kg	602DJQ	1670DJQ	588DJQ
Manganese	mg/kg	908*BD	837*BD	778*BD
Mercury	mg/kg	0.0147*J	0.019*J	0.0199*
Neptunium-237	pCi/g	0U	0.00091U	0.0041U
Nickel	mg/kg	20.9D	17.7D	15D
Plutonium-238	pCi/g	0.017UJ	0.0054U	0.0081U
Plutonium-239/240	pCi/g	0.0051U	0.0063U	0.01U
PCB, total	µg/kg	0.016U	0.016U	0.016U
Selenium	mg/kg	0.186DJQU	0.136DJQU	0.182DJQU
Silicon	mg/kg	282DJQ	248DJQ	276DJQ
Silver	mg/kg	0.272DU	0.27DU	0.27DU
Technetium-99	pCi/g	0.352*QUJ	0.106*QUJ	1QUJ
Thallium	mg/kg	0.0859*DJ	0.081*DJ	0.0935*DJ
Uranium	µg/g	1.96J	0.987J	2.03J
Uranium-233/234	pCi/g	0.71J	0.37J	0.68J
Uranium-235/236	pCi/g	0.033UJ	0.014UJ	0.025UJ
Uranium-238	pCi/g	0.65J	0.33J	0.68
Zinc	mg/kg	102*DJQ	102*DJQ	94*DJQ

**Table 2.16. Sediment monitoring program results – 2020 (continued)**

Parameter	Unit	Location/results <sup>a,b</sup>	
<i>Little Beaver Creek</i>			
		<i>RM-8</i>	<i>RM-7</i>
		<i>Downstream @</i>	<i>Downstream @</i>
		<i>Outfall 009</i>	<i>Confluence</i>
		<i>Discharge</i>	<i>Confluence</i>
Aluminum	mg/kg	8990DQ	7320DQ
Americium-241	pCi/g	0U	0.0047U
Antimony	mg/kg	1.28DJ	0.615DU
Arsenic	mg/kg	46.1*DQ	6.2*DQ
Barium	mg/kg	54.5*BD	54.9*BD
Beryllium	mg/kg	1.36*D	0.428*DJ
Cadmium	mg/kg	0.363DJQ	0.253DJQ
Calcium	mg/kg	6740D	4250D
Chromium	mg/kg	38.2*BD	9.79*BD
Copper	mg/kg	16.5*BD	8.39*BD
Iron	mg/kg	93100*DQ	14900*DQ
Lead	mg/kg	19.4*DQ	8.45*DQ
Magnesium	mg/kg	2560DQ	2960DQ
Manganese	mg/kg	1520*BD	394*BD
Mercury	mg/kg	0.0168*J	0.0211*
Neptunium-237	pCi/g	-0.0023U	-0.0021U
Nickel	mg/kg	29.1D	14.2D
Plutonium-238	pCi/g	0.0079U	0.0062UJ
Plutonium-239/240	pCi/g	-0.0023U	0.0021U
PCB, total	µg/kg	9.73	7.19
Selenium	mg/kg	0.772DJQU	0.403DJQU
Silicon	mg/kg	1410DJQ	1320DJQ
Silver	mg/kg	0.27DU	0.271DU
Technetium-99	pCi/g	0.328*QUJ	0.353*QUJ
Thallium	mg/kg	0.312*DJ	0.151*DJ
Uranium	µg/g	2.99J	1.97J
Uranium-233/234	pCi/g	1.5J	0.82J
Uranium-235/236	pCi/g	0.097UJ	0.033UJ
Uranium-238	pCi/g	0.99	0.66
Zinc	mg/kg	667*DQJ	65.5*DQJ

**Table 2.16. Sediment monitoring program results – 2020 (continued)**

Parameter	Unit	Location/results <sup>a,b</sup>			
		<i>Big Beaver Creek</i>			
		<i>RM-15 Upstream</i>	<i>RM-5 Confluence with Little Beaver Creek</i>	<i>RM-5 Confluence with Little Beaver Creek (duplicate sample)</i>	<i>RM-13 Downstream</i>
Aluminum	mg/kg	4710DQJ	6340DQ	6240DQ	1320DQ
Americium-241	pCi/g	0.0061U	0.00084U	0.0049U	0.007U
Antimony	mg/kg	0.615DU	0.616DU	0.614DU	0.613DU
Arsenic	mg/kg	18.7*DQ	5.7*DQ	6.21*DQ	6.62*DQ
Barium	mg/kg	54.3*BD	47.2*BD	45.9*BD	47.3*BD
Beryllium	mg/kg	0.911*DJ	0.413*DJ	0.403*DJ	0.466*DJ
Cadmium	mg/kg	0.431DJQ	0.261DJQ	0.226DJQ	0.238DJQ
Calcium	mg/kg	31200DJ	4120DJ	7850DJ	1260D
Chromium	mg/kg	15.8*BD	9.28*BD	10.1*BD	10.5*BD
Copper	mg/kg	14.4*BDJ	7.67*BD	8.13*BD	10.3*BD
Iron	mg/kg	26700*DQJ	13700*DQJ	19000*DQJ	2810*DQ
Lead	mg/kg	840*DQJ	7.86*DQ	9.14*DQ	11.7*DQ
Magnesium	mg/kg	11000DQ	2870DQJ	4150DQJ	658DJQ
Manganese	mg/kg	914*BDJ	369*BD	472*BD	398*BD
Mercury	mg/kg	0.0119*J	0.0177*J	0.0259*	0.0219*
Neptunium-237	pCi/g	0.038	0.0035U	-0.00088U	0.0062U
Nickel	mg/kg	35.5D	14.9D	15.4D	15.7D
Plutonium-238	pCi/g	0.011UJ	0.007U	0.00087U	0.0099U
Plutonium-239/240	pCi/g	0.013UJ	0.0053U	0.00088U	0U
PCB, total	µg/kg	5.13	8.79J	14.6J	0.016U
Selenium	mg/kg	0.452DJQU	0.337DJQU	0.368DJQU	0.318DJQU
Silicon	mg/kg	1520DJQ	1180DJQ	1230DJQ	246DJQ
Silver	mg/kg	0.27DU	0.271DU	0.27DU	0.27DU
Technetium-99	pCi/g	1.174*QUJ	0.655*QUJ	0.609*QUJ	0.298*QUJ
Thallium	mg/kg	0.197*DJ	0.134*DJ	0.135*DJ	0.159*DJ
Uranium	µg/g	2.24J	2.64J	3.45J	1.95J
Uranium-233/234	pCi/g	1.1J	1.1J	1.3J	0.76J
Uranium-235/236	pCi/g	0.075UJ	0.066UJ	0.033UJ	0.064UJ
Uranium-238	pCi/g	0.74	0.88J	1.2J	0.64
Zinc	mg/kg	181*DJQ	63.7*DQJ	77.7*DJQ	74.9*DQJ

**Table 2.16. Sediment monitoring program results – 2020 (continued)**

Parameter	Unit	Location/results <sup>a,b</sup>		
		<i>RM-33 Upstream</i>	<i>RM-3 Downstream</i>	<i>RM-2 Downstream @ Wakefield</i>
Aluminum	mg/kg	7770DQ	9360DQ	11100DQ
Americium-241	pCi/g	0.0041U	0.0064U	0.0081U
Antimony	mg/kg	0.618DU	0.647DJ	3.25DJ
Arsenic	mg/kg	8.74*DQ	25.6*DQ	44.2*DQ
Barium	mg/kg	53.5*BD	58.3*BD	28.9*BD
Beryllium	mg/kg	0.551*DJ	0.764*DJ	1.43*D
Cadmium	mg/kg	0.422DJQ	0.246DJQ	0.449DJQ
Calcium	mg/kg	21800D	2790D	607DJU
Chromium	mg/kg	10.9*BD	19.3*BD	44.1*BD
Copper	mg/kg	10.1*BD	12.1*BD	12.6*BD
Iron	mg/kg	17400*DQ	30100*DQ	173000*DQ
Lead	mg/kg	20.2*DQ	15.6*DQ	20*DQ
Magnesium	mg/kg	10700DQ	1930DJQ	1060DQ
Manganese	mg/kg	631*BD	760*BD	697*BD
Mercury	mg/kg	0.0262*	0.0252*	0.0126*J
Neptunium-237	pCi/g	-0.0027U	0.00089U	0.00085U
Nickel	mg/kg	20.4D	19.1D	36.5D
Plutonium-238	pCi/g	0.0045U	0.0097U	0.0059U
Plutonium-239/240	pCi/g	0.0072U	0.0027U	0.0068UJ
PCB, total	µg/kg	0.016U	24.2	0.016U
Selenium	mg/kg	0.648DJQU	0.594DJQU	0.431DJQU
Silicon	mg/kg	1200DJQ	1480DJQ	1030DJQ
Silver	mg/kg	0.272DU	0.272DU	0.27DU
Technetium-99	pCi/g	0.162*QUJ	0.263*QUJ	-0.009*QUJ
Thallium	mg/kg	0.207*DJ	0.324*DJ	0.137*DJ
Uranium	µg/g	2.81J	4.51J	2.32J
Uranium-233/234	pCi/g	0.9J	2.4J	0.85J
Uranium-235/236	pCi/g	0.072UJ	0.12UJ	0.043UJ
Uranium-238	pCi/g	0.93	1.5	0.77
Zinc	mg/kg	117*DJQ	111*DJQ	156*DJQ

**Table 2.16. Sediment monitoring program results – 2020 (continued)**

Parameter	Unit	Location/results <sup>a,b</sup>			
		<i>Background creeks</i>			
		<i>RM-10N North background</i>	<i>RM-10S South background</i>	<i>RM-10E East background</i>	<i>RM-10W West background</i>
Aluminum	mg/kg	7830DQ	1240DQ	7330DQ	1720DQ
Americium-241	pCi/g	0.0065UJ	-0.00098U	0.003UJ	0.0018U
Antimony	mg/kg	0.62DU	3.19DJ	1.44DJ	1.55DJ
Arsenic	mg/kg	46.5*DQ	55*DQ	190*DQJ	52.9*DQ
Barium	mg/kg	49*BD	33.1*BD	42*BD	38.4*BD
Beryllium	mg/kg	1.53*D	0.973*DJ	1.41*D	1.27*D
Cadmium	mg/kg	0.39DJQ	0.333DJQ	0.433DJQ	0.366DJQ
Calcium	mg/kg	604DJU	1720D	595	564DJU
Chromium	mg/kg	38.2*BD	44.6*BD	61.2*BD	44.2*BD
Copper	mg/kg	21.3*BD	10.3*BDJ	14.5*BD	14.4*BD
Iron	mg/kg	117000*DQ	14000*DQ	95900*DQJ	25600*DQ
Lead	mg/kg	66*DQ	27.9*DQ	98.1*DQJ	27.2*DQ
Magnesium	mg/kg	972DJQ	2280DQ	935QJ	954DJQ
Manganese	mg/kg	912*BD	738*BD	801*BD	934*BD
Mercury	mg/kg	0.0184*J	0.0117*J	0.00832*J	0.00868*J
Neptunium-237	pCi/g	0.0009U	-0.0027U	0.0017U	0U
Nickel	mg/kg	40.2D	27.4D	61.7D	34.5D
Plutonium-238	pCi/g	0.0072UJ	0.0063U	0.0051U	0.0046U
Plutonium-239/240	pCi/g	0.0018U	0.0054U	0.0025U	0.0062U
PCB, total	µg/kg	0.016U	0.016U	0.016U	0.016U
Selenium	mg/kg	0.219DJQU	0.0863DJQU	0.605DJQU	0.162DJQU
Silicon	mg/kg	1010DQ	200DJQ	854DJQ	249DJQ
Silver	mg/kg	0.273DU	0.27DU	0.269DU	0.27DU
Technetium-99	pCi/g	0.075QUJ	0.209QUJ	-0.007QUJ	0.012QUJ
Thallium	mg/kg	0.177*DJ	0.137*DJ	0.146*DJ	0.193*DJ
Uranium	µg/g	3.43J	4.2J	3.17J	2.55J
Uranium-233/234	pCi/g	1.3J	1.4J	1.1J	1J
Uranium-235/236	pCi/g	0.052UJ	0.036UJ	0.052UJ	0.063UJ
Uranium-238	pCi/g	1.1	1.4	1.1	0.85
Zinc	mg/kg	209*DQJ	114*DJQ	292*DQJ	164*DJQ

<sup>a</sup>Abbreviations and data qualifiers are as follows: \* – laboratory control samples failed one or more duplicate criteria. B – the analyte was detected in an associated blank. D – the result is reported from a dilution. J – the reported result is estimated. Q – one or more quality control criteria failed. U – undetected.

<sup>b</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

**Table 2.17. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2020**

Parameter <sup>a</sup>	Location/results <sup>b,c</sup>			
	<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	-0.0009U	-0.0013U	-0.0016U	-0.0005U
Neptunium-237	0.0016UJ	0.006U	0.001U	0.002U
Plutonium-238	0.00019U	0.0039UJ	0.0017UJ	0.003U
Plutonium-239/240	0.00037U	0.0039UJ	0.0012UJ	0.0101UJ
Technetium-99	0.02U	-0.012U	-0.03UJ	0.004U
Uranium	0.119J	2.58J	0.041J	1.29J
Uranium-233/234	0.0409UJ	0.99J	0.0149UJ	0.465J
Uranium-235/236	0.0027UJ	0.034J	0.0012UJ	0.0264J
Uranium-238	0.0397	0.86	0.0135	0.428
	<i>A10 – On site on northwest segment of Perimeter Road</i>		<i>A29 – On site at OVEC</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.0008U	-0.0009U	-0.0005U	0.0002U
Neptunium-237	0.0005U	-0.004U	0.0001U	0.013UJ
Plutonium-238	0.0011UJ	0.0075UJ	0.0007U	0.0027UJ
Plutonium-239/240	0.0017UJ	0.0021U	0.0008U	0.0091UJ
Technetium-99	-0.048U	-0.044U	-0.087UJ	0.096UJ
Uranium	0.118J	0.81J	0.009UJ	0.95J
Uranium-233/234	0.042UJ	0.33J	0.0072UJ	0.317J
Uranium-235/236	0.0013UJ	0.0136UJ	0.0024UJ	0.0198J
Uranium-238	0.039	0.27	0.0027UJ	0.315
	<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	-0.0007U	0.0033U	-0.0001U	-0.0007U
Neptunium-237	0.0006U	0.011UJ	0.0008U	0.021UJ
Plutonium-238	0.0011UJ	0.0051UJ	0.0031UJ	0.0021U
Plutonium-239/240	0.0023UJ	0.026UJ	0.002UJ	0.0114UJ
Technetium-99	-0.041U	0.1UJ	0.021U	-0.018U
Uranium	0.054J	0.75J	0.054J	1.26J
Uranium-233/234	0.0242UJ	0.373J	0.0179UJ	0.326J
Uranium-235/236	0.0023UJ	0.0119UJ	0.0021UJ	0.0227J
Uranium-238	0.0176	0.249	0.0177	0.421

**Table 2.17. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2020 (continued)**

Parameter <sup>a</sup>	Location/results <sup>b,c</sup>			
	<i>A24 – North of PORTS at Schuster Road</i>		<i>A41A - North of PORTS at Zahns Corner</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.0005U	0.0018U	-0.001U	0.0008U
Neptunium-237	0.0014UJ	0.011UJ	0.0007U	0.011U
Plutonium-238	0.0042UJ	-0.0024U	0.0007U	0.0016U
Plutonium-239/240	0.0021UJ	0.0048U	0.0027UJ	0.0054UJ
Technetium-99	-0.026U	0.07UJ	-0.03U	0.043U
Uranium	0.0021UJ	0.92J	0.0088UJ	1.1J
Uranium-233/234	0.0041UJ	0.288J	0.0065UJ	0.387J
Uranium-235/236	0.0013UJ	0.0169UJ	0.0021UJ	0.0133UJ
Uranium-238	0.0005UJ	0.306	0.0026UJ	0.369
	<i>A23 – Northeastern PORTS boundary</i>		<i>A12 – Eastern PORTS boundary</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.0005U	0.0031U	-0.0001U	0.0028U
Neptunium-237	0.0008U	0.015UJ	0.0003U	0.015UJ
Plutonium-238	-0.0003U	0.0028UJ	0.001U	0.001U
Plutonium-239/240	0.0021UJ	0.0113UJ	0.0009UJ	0.0176UJ
Technetium-99	-0.032U	0.13UJ	-0.078U	-0.022U
Uranium	0.0046UJ	0.92J	0.004UJ	0.9J
Uranium-233/234	0.0084UJ	0.307J	0.0035UJ	0.362J
Uranium-235/236	-0.0001UJ	0.0099UJ	0.0017UJ	0.0206J
Uranium-238	0.0016UJ	0.308	0.0011UJ	0.3
	<i>A15 – Southeast of PORTS on Loop Road</i>		<i>A3 – Southern PORTS boundary</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.0001U	0.0067UJ	-0.0004U	0.0053UJ
Neptunium-237	0.0007U	0.009UJ	-0.0001U	0.009UJ
Plutonium-238	0.0007UJ	0.0009U	0.0016UJ	0.0041U
Plutonium-239/240	-0.0004UJ	0.0071UJ	0.0012U	0.0173UJ
Technetium-99	-0.041U	-0.009U	0.001UJ	-0.009U
Uranium	0.0086UJ	1J	0.0091UJ	0.92J
Uranium-233/234	0.0044UJ	0.352J	0.0075UJ	0.395J
Uranium-235/236	0.0008UJ	0.015UJ	0.0017UJ	0.0184UJ
Uranium-238	0.0027UJ	0.333	0.0028UJ	0.305

**Table 2.17. Soil and biota (vegetation) monitoring at ambient air monitoring stations – 2020 (continued)**

Parameter <sup>a</sup>	Location/results <sup>b,c</sup>			
	<i>A9 – South of PORTS</i>		<i>A28 – Southwest of PORTS on Camp Creek Road</i>	
	Vegetation	Soil	Vegetation	Soil
Americium-241	-0.0012U	0.0061UJ	-0.0004U	-0.0016U
Neptunium-237	0.0003U	0.033UJ	0.0001U	0.0091UJ
Plutonium-238	0.0023UJ	0.0068UJ	-0.0005U	0.0023UJ
Plutonium-239/240	0.0023UJ	0.023UJ	0.0014UJ	0.0039UJ
Technetium-99	0.013U	0.15UJ	-0.055U	-0.09U
Uranium	0.035J	1.11J	0.023UJ	0.8J
Uranium-233/234	0.013UJ	0.309J	0.0159UJ	0.432J
Uranium-235/236	0.0009UJ	0.021J	0.0012UJ	0.0202J
Uranium-238	0.0117J	0.371	0.0077UJ	0.267
	<i>A37 – Background station near Otway</i>			
	Vegetation	Soil		
Americium-241	0.001U	0U		
Neptunium-237	0.0004U	0U		
Plutonium-238	0.0007U	0.0054UJ		
Plutonium-239/240	0.0013U	0.0063UJ		
Technetium-99	-0.036U	0.014U		
Uranium	0.0297J	0.96J		
Uranium-233/234	0.014UJ	0.369J		
Uranium-235/236	0.0013UJ	0.0112UJ		
Uranium-238	0.0098J	0.321		
	<i>Duplicate vegetation samples</i>		<i>Duplicate soil samples</i>	
	A29	A41A	A12	A6
Americium-241	0.0001U	-0.0013U	0.0024U	-0.0021U
Neptunium-237	0.0009U	0.0006U	0.014UJ	0.013UJ
Plutonium-238	0.0002U	0.0014UJ	0.0038UJ	0.0016U
Plutonium-239/240	0.0008U	0.0003U	0.0086UJ	0.0183J
Technetium-99	0.26UJ	0U	0.087UJ	0.007U
Uranium	0.048J	0.0064UJ	0.96J	1.25J
Uranium-233/234	0.0183J	0.0041UJ	0.377J	0.306J
Uranium-235/236	0.0016UJ	0.00056UJ	0.0166J	0.0118UJ
Uranium-238	0.016J	0.0021UJ	0.318	0.42

<sup>a</sup>All parameters are measured in pCi/g with the exception of uranium which is measured in µg/g.

<sup>b</sup>Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.

<sup>c</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.



**Table 2.18. Biota (fish) monitoring program results – 2020**

Parameter	Unit	Location/fish/results <sup>a,b</sup>		
		<i>Scioto River (RW-1A) drum</i>	<i>Scioto River (RW-6) catfish</i>	<i>Big Beaver Creek (RW-15) large mouth bass</i>
Americium-241	pCi/g	-0.00014U	-0.000599U	0.000215U
Neptunium-237	pCi/g	0.000629U	0.00104U	0.000732U
Plutonium-238	pCi/g	-0.000696U	0U	0.000394U
Plutonium-239/240	pCi/g	0.0000578U	0.00129UJ	0.000786U
PCB, total	µg/kg	63.1	63.3	124
Technetium-99	pCi/g	-0.0173U	-0.0942U	-0.1U
Uranium	µg/g	0.000231U	-0.000896UJ	0.00164UJ
Uranium-233/234	pCi/g	0.00349UJ	0.00426UJ	0.00234UJ
Uranium-235/236	pCi/g	0.0014UJ	0.000224UJ	0.000151UJ
Uranium-238	pCi/g	-0.00014U	-0.000336U	0.000528U
		<i>Big Beaver Creek (RW-13) large mouth bass</i>	<i>Little Beaver Creek (RW-8) large mouth bass</i>	<i>Little Beaver Creek (RW-8) large mouth bass (duplicate sample)</i>
Americium-241	pCi/g	-0.000496U	-0.000171UJ	-0.000144U
Neptunium-237	pCi/g	-0.000404U	0.000578UJ	0.000501U
Plutonium-238	pCi/g	0.000986UJ	0.000217U	-0.000527UJ
Plutonium-239/240	pCi/g	0.000983UJ	0.000795U	0UJ
PCB, total	µg/kg	862	3170	149
Technetium-99	pCi/g	-0.051U	-0.076U	-0.0878U
Uranium	µg/g	0.00556UJ	0.00227UJ	0.00439UJ
Uranium-233/234	pCi/g	0.00478UJ	0.00219UJ	0.00385UJ
Uranium-235/236	pCi/g	0.000465UJ	0.00151UJ	0.00122UJ
Uranium-238	pCi/g	0.00179UJ	0.000529U	0.00128UJ

<sup>a</sup>Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.

<sup>b</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

**Table 2.19. Biota (crops) monitoring program results – 2020**

Parameter	Unit	Location/crop/results <sup>a,b</sup>		
		<i>Off-site #2 corn</i>	<i>Off-site #2 tomatoes</i>	<i>Off-site #5 corn</i>
Americium-241	pCi/g	-0.0007U	-0.001U	-0.001U
Neptunium-237	pCi/g	0.0003U	-0.0001U	0.001U
Plutonium-238	pCi/g	0.0016UJ	0.0013UJ	0.0025UJ
Plutonium-239/240	pCi/g	0.002UJ	0.0007U	0.0001U
Technetium-99	pCi/g	-0.013U	-0.006U	-0.09U
Uranium	µg/g	0.00461UJ	0.00394UJ	0.00902UJ
Uranium-233/234	pCi/g	0.0068UJ	0.0004UJ	0.0037UJ
Uranium-235/236	pCi/g	0.0008UJ	-0.0002UJ	0.0024UJ
Uranium-238	pCi/g	0.0014UJ	0.0014UJ	0.0027UJ
		<i>Off-site #5 tomatoes</i>	<i>Off-site #6 corn</i>	<i>Off-site #6 peppers</i>
Americium-241	pCi/g	-0.0029U	-0.0003U	-0.0006U
Neptunium-237	pCi/g	0.0027U	0.001U	0.0008U
Plutonium-238	pCi/g	0.0038UJ	0.002UJ	0.0016UJ
Plutonium-239/240	pCi/g	0.0038UJ	0.0018UJ	0.0018UJ
Technetium-99	pCi/g	-0.095U	-0.063U	-0.079U
Uranium	µg/g	0.00762UJ	0.0039UJ	0.0133UJ
Uranium-233/234	pCi/g	0.014UJ	0.0074UJ	0.0106UJ
Uranium-235/236	pCi/g	0.0031UJ	0.0021UJ	0.0036UJ
Uranium-238	pCi/g	0.0021UJ	0.001U	0.0039UJ
		<i>Off-site #6 tomatoes</i>	<i>Off-site #6 tomatoes (duplicate sample)</i>	
Americium-241	pCi/g	-0.0007U	-0.0016U	
Neptunium-237	pCi/g	0.0006U	0.0002U	
Plutonium-238	pCi/g	0.0019UJ	0.0014UJ	
Plutonium-239/240	pCi/g	0.0013UJ	0.0024UJ	
Technetium-99	pCi/g	0.086UJ	0.007U	
Uranium	µg/g	0.00743UJ	0.011UJ	
Uranium-233/234	pCi/g	0.0157UJ	0.0185UJ	
Uranium-235/236	pCi/g	0.0012UJ	0.0035UJ	
Uranium-238	pCi/g	0.0023UJ	0.0032UJ	

**Table 2.19. Biota (crops) monitoring program results – 2020 (continued)**

Parameter	Unit	Location/crop/results <sup>a,b</sup>		
		<i>Off-site #8 corn</i>	<i>Off-site #8 tomatoes</i>	
Americium-241	pCi/g	-0.0009U	-0.0009U	
Neptunium-237	pCi/g	0.0011UJ	0.0006U	
Plutonium-238	pCi/g	0.0012UJ	0.0023UJ	
Plutonium-239/240	pCi/g	0.0011U	0.0019UJ	
Technetium-99	pCi/g	-0.09U	-0.036U	
Uranium	µg/g	0.00158UJ	0.00838UJ	
Uranium-233/234	pCi/g	0.0025UJ	0.0108UJ	
Uranium-235/236	pCi/g	0.0005UJ	0.0001UJ	
Uranium-238	pCi/g	0.0005U	0.0028UJ	
		<i>Off-site #9 beans</i>	<i>Off-site #9 cucumbers</i>	<i>Off-site #9 tomatoes</i>
Americium-241	pCi/g	-0.0035U	-0.0015U	-0.001U
Neptunium-237	pCi/g	0.0012U	0.0012UJ	0.0004U
Plutonium-238	pCi/g	0.0063UJ	0.0001U	0.0013UJ
Plutonium-239/240	pCi/g	0.0047UJ	-0.0004U	0.0003U
Technetium-99	pCi/g	0.08U	-0.043U	-0.038U
Uranium	µg/g	0.046UJ	0.0093UJ	0.0091UJ
Uranium-233/234	pCi/g	0.032J	0.0117UJ	0.0093UJ
Uranium-235/236	pCi/g	0.0086UJ	0.0034UJ	0.0011UJ
Uranium-238	pCi/g	0.0141UJ	0.0026UJ	0.0029UJ

<sup>a</sup>Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.

<sup>b</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

**Table 2.20. Biota (deer) monitoring program results – 2020**

Parameter	Unit	February (2/20/2020) <sup>a,b</sup>	February (2/27/2020) <sup>a,b</sup>	November <sup>a,b</sup>
<i>kidney</i>				
Americium-241	pCi/g	0.00143U	-0.00122U	-0.000874U
Neptunium-237	pCi/g	-0.000481U	-0.000507U	0.0013U
Plutonium-238	pCi/g	-0.000309U	0.000973U	-0.00109U
Plutonium-239/240	pCi/g	0.00309U	0.0026U	0.00327UJ
Technetium-99	pCi/g	0.0522U	-0.0721U	0.169UJ
Uranium	µg/g	0.000322UJ	0.00201UJ	0.0053UJ
Uranium-233/234	pCi/g	-0.00028UJ	0.00227UJ	0.0056UJ
Uranium-235/236	pCi/g	0.000696UJ	0.000705UJ	0.0023UJ
Uranium-238	pCi/g	0U	0.000567U	0.0014U
<i>liver</i>				
Americium-241	pCi/g	0.00151U	-0.000297U	-0.000498U
Neptunium-237	pCi/g	-0.000272U	0U	0.000482U
Plutonium-238	pCi/g	-0.00153U	0.00155U	0.00199U
Plutonium-239/240	pCi/g	0.00184U	0.000622U	0.00199U
Technetium-99	pCi/g	-0.0825U	-0.0466U	0.495
Uranium	µg/g	0.000305UJ	-0.000156UJ	0.0021UJ
Uranium-233/234	pCi/g	0.00132UJ	0.00272UJ	0.0083UJ
Uranium-235/236	pCi/g	0.000659UJ	-0.000338UJ	0.0018UJ
Uranium-238	pCi/g	0U	0U	0.0004U
<i>muscle</i>				
Americium-241	pCi/g	-0.000339U	-0.000331U	-0.00181U
Neptunium-237	pCi/g	-0.000522U	0U	0U
Plutonium-238	pCi/g	-0.000706U	0.000302U	0.000978U
Plutonium-239/240	pCi/g	0.000706U	0.00181U	0.00147U
Technetium-99	pCi/g	0.00161U	-0.0811U	0.062UJ
Uranium	µg/g	0.000000147UJ	0.00422UJ	0.0012UJ
Uranium-233/234	pCi/g	0.000917UJ	0.00124UJ	0.01UJ
Uranium-235/236	pCi/g	0UJ	0.00115UJ	0UJ
Uranium-238	pCi/g	0U	0.00124U	0.0004U

<sup>a</sup>Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.

<sup>b</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

**Table 2.21. Biota (milk and eggs) monitoring program results – 2020**

Parameter	Unit	Milk <sup>a,b</sup>	Milk <sup>a,b</sup> (duplicate sample)	Eggs <sup>a,b</sup>
Americium-241	pCi/g	-0.0005U	0.0003U	0.0003U
Neptunium-237	pCi/g	-0.00014U	-0.0005U	0.0011UJ
Plutonium-238	pCi/g	0.00126UJ	0.00064U	0.00049U
Plutonium-239/240	pCi/g	0U	0.00079UJ	0.00033U
Technetium-99	pCi/g	-0.042U	-0.017U	-0.03U
Uranium	µg/g	0.001U	-0.0009UJ	0UJ
Uranium-233/234	pCi/g	0.0027UJ	0.0016UJ	0.0029UJ
Uranium-235/236	pCi/g	0.00015UJ	0.00036UJ	0UJ
Uranium-238	pCi/g	0.0003U	-0.00036U	0U

<sup>a</sup>Abbreviations and data qualifiers are as follows: U – undetected. J – the reported result is estimated.

<sup>b</sup>A negative concentration of radioactivity is reported by the laboratory when the sample count rate minus the laboratory background count rate is negative (i.e., the background count rate was greater than the sample count rate). When the background activity is subtracted from the sample activity to obtain a net value, a negative value results.

This page intentionally left blank.

### 3. AIR DOSE

This section provides summary tables of air emissions and dose assessments completed by DOE for compliance with 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 air emission sources – 2020
- Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2020
- Table 3.3. Dose calculations for ambient air monitoring stations – 2020.

**Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2020**

Radionuclide	Group 1 <sup>a</sup>	Group 2 <sup>b</sup>	Group 3 <sup>c</sup>	DUF <sub>6</sub> facility <sup>d</sup>
Americium-241	2.813E-06	-	2.821E-06	-
Neptunium-237	9.003E-08	-	2.991E-05	-
Plutonium-238	5.320E-11	-	4.839E-07	-
Plutonium-239/240	4.329E-07	-	1.538E-05	-
Technetium-99	5.243E-05	9.731E-04	2.756E-02	-
Uranium-233/234	3.989E-06	2.370E-05	5.226E-03	4.79E-07
Uranium-235	3.991E-06	7.905E-06	2.213E-04	2.19E-08
Uranium-238	2.408E-05	2.129E-05	7.388E-04	1.18E-06
Thorium-228	2.924E-11	0	4.217E-06	-
Thorium-230	1.558E-09	1.926E-07	1.091E-05	-
Thorium-231	6.215E-10	7.905E-06	1.719E-04	1.59E-07
Thorium-232	5.922E-12	2.755E-08	3.615E-06	-
Thorium-234	3.969E-09	2.129E-05	6.763E-04	1.45E-05
Total	8.78E-05	1.06E-03	3.47E-02	1.63E-05

<sup>a</sup>Group 1 consists of the X-710 Vents and X-622 Groundwater Treatment Facility.

<sup>b</sup>Group 2 consists of the X-344A Gulper Vent and X-344A Cold Trap Vent.

<sup>c</sup>Group 3 consists of the X-330 Vents, X-333 Vents, X-705 Vents, X-623 Groundwater Treatment Facility, X-624 Groundwater Treatment Facility, and X-627 Groundwater Treatment Facility.

<sup>d</sup>DUF<sub>6</sub> – depleted uranium hexafluoride.

Note: 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).

**Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2020**

Effective dose to:	
Maximally exposed individual (mrem/year)	0.068
Population <sup>a</sup> (person-rem/year)	0.35

<sup>a</sup>Population within 50 miles (80 kilometers) of plant site.

**Table 3.3. Dose calculations for ambient air monitoring stations – 2020**

Station	Parameter <sup>a</sup>	Dose <sup>b</sup> (mrem/year)	Total dose for station <sup>c</sup>
A3	Americium-241	4.9E-04	0.012
	Neptunium-237	1.1E-04	
	Plutonium-238	0	
	Plutonium-239/240	9.2E-04	
	<b>Technetium-99</b>	3.3E-03	
	Thorium-228	2.3E-03	
	Thorium-230	1.7E-03	
	Thorium-232	9.1E-04	
	<b>Uranium-233/234</b>	1.2E-03	
	Uranium-235/236	9.8E-05	
A6	<b>Uranium-238</b>	6.1E-04	0.013
	Americium-241	8.5E-04	
	Neptunium-237	1.6E-04	
	Plutonium-238	5.9E-04	
	Plutonium-239/240	1.1E-03	
	<b>Technetium-99</b>	3.0E-03	
	<b>Thorium-228</b>	4.0E-03	
	Thorium-230	1.1E-03	
	Thorium-232	1.0E-03	
	Uranium-233/234	4.4E-04	
A8	Uranium-235/236	5.5E-05	0.013
	<b>Uranium-238</b>	7.4E-04	
	Americium-241	6.0E-04	
	Neptunium-237	2.3E-04	
	Plutonium-238	7.9E-04	
	Plutonium-239/240	1.0E-03	
	<b>Technetium-99</b>	4.3E-03	
	Thorium-228	1.6E-03	
	Thorium-230	1.1E-03	
	Thorium-232	1.1E-03	
<b>Uranium-233/234</b>	1.3E-03		
Uranium-235/236	9.9E-05	0.013	
<b>Uranium-238</b>	7.8E-04		



**Table 3.3. Dose calculations for ambient air monitoring stations – 2020 (continued)**

Station	Parameter <sup>a</sup>	Dose <sup>b</sup> (mrem/year)	Total dose for station
A9	Americium-241	8.5E-04	0.014
	Neptunium-237	1.1E-04	
	Plutonium-238	4.6E-04	
	Plutonium-239/240	8.3E-04	
	<b>Technetium-99</b>	1.9E-03	
	<b>Thorium-228</b>	6.1E-03	
	Thorium-230	1.5E-03	
	Thorium-232	1.3E-03	
	Uranium-233/234	2.8E-04	
	Uranium-235/236	6.2E-05	
	<b>Uranium-238</b>	4.5E-04	
A10	Americium-241	5.0E-04	0.012
	Neptunium-237	2.0E-04	
	Plutonium-238	8.5E-05	
	Plutonium-239/240	6.0E-04	
	<b>Technetium-99</b>	3.0E-03	
	<b>Thorium-228</b>	4.3E-03	
	Thorium-230	1.0E-03	
	Thorium-232	1.1E-03	
	<b>Uranium-233/234</b>	8.0E-04	
	Uranium-235/236	3.7E-05	
	<b>Uranium-238</b>	5.2E-04	
A12	Americium-241	8.9E-04	0.022
	Neptunium-237	3.6E-05	
	Plutonium-238	1.6E-04	
	Plutonium-239/240	3.8E-04	
	<b>Technetium-99</b>	8.3E-03	
	<b>Thorium-228</b>	4.8E-03	
	Thorium-230	9.6E-04	
	<b>Thorium-232</b>	2.9E-03	
	<b>Uranium-233/234</b>	2.2E-03	
	Uranium-235/236	9.9E-05	
	<b>Uranium-238</b>	1.7E-03	
A15	<b>Americium-241</b>	6.4E-04	0.036
	Neptunium-237	2.5E-04	
	Plutonium-238	2.8E-04	
	Plutonium-239/240	6.0E-04	
	<b>Technetium-99</b>	5.0E-03	
	<b>Thorium-228</b>	2.3E-02	
	Thorium-230	1.1E-03	
	Thorium-232	1.2E-03	
	<b>Uranium-233/234</b>	2.6E-03	
	Uranium-235/236	7.8E-05	
	<b>Uranium-238</b>	4.9E-04	

**Table 3.3. Dose calculations for ambient air monitoring stations – 2020 (continued)**

Station	Parameter <sup>a</sup>	Dose <sup>b</sup> (mrem/year)	Total dose for station
A23	Americium-241	5.1E-04	0.020
	Neptunium-237	4.6E-04	
	Plutonium-238	4.5E-04	
	Plutonium-239/240	1.4E-03	
	<b>Technetium-99</b>	4.2E-03	
	<b>Thorium-228</b>	6.1E-03	
	Thorium-230	1.5E-03	
	<b>Thorium-232</b>	3.6E-03	
	<b>Uranium-233/234</b>	1.0E-03	
	Uranium-235/236	7.0E-05	
A24	<b>Uranium-238</b>	5.5E-04	0.028
	Americium-241	5.1E-04	
	Neptunium-237	1.3E-04	
	Plutonium-238	4.1E-04	
	Plutonium-239/240	7.7E-04	
	<b>Technetium-99</b>	3.1E-03	
	<b>Thorium-228</b>	6.9E-03	
	Thorium-230	1.9E-03	
	Thorium-232	1.0E-03	
	<b>Uranium-233/234</b>	6.8E-03	
A28	<b>Uranium-235/236</b>	4.3E-04	0.013
	<b>Uranium-238</b>	5.9E-03	
	Americium-241	6.5E-04	
	Neptunium-237	1.9E-04	
	Plutonium-238	1.0E-03	
	Plutonium-239/240	1.1E-03	
	<b>Technetium-99</b>	2.6E-03	
	<b>Thorium-228</b>	5.1E-03	
	Thorium-230	9.5E-04	
	Thorium-232	9.8E-04	
A29	Uranium-233/234	2.5E-04	0.049
	Uranium-235/236	3.7E-05	
	<b>Uranium-238</b>	4.1E-04	
	Americium-241	7.6E-04	
	Neptunium-237	3.7E-05	
	Plutonium-238	3.3E-04	
	Plutonium-239/240	8.1E-04	
	<b>Technetium-99</b>	2.9E-03	
	<b>Thorium-228</b>	3.9E-02	
	Thorium-230	1.9E-03	
Thorium-232	2.4E-03		
Uranium-233/234	3.7E-04		
Uranium-235/236	1.0E-04		
<b>Uranium-238</b>	6.5E-04		

**Table 3.3. Dose calculations for ambient air monitoring stations – 2020 (continued)**

Station	Parameter <sup>a</sup>	Dose <sup>b</sup> (mrem/year)	Total dose for station
A36	Americium-241	1.4E-03	0.016
	Neptunium-237	5.8E-04	
	Plutonium-238	8.6E-05	
	Plutonium-239/240	7.7E-04	
	<b>Technetium-99</b>	3.1E-03	
	<b>Thorium-228</b>	4.0E-03	
	Thorium-230	1.5E-03	
	Thorium-232	7.2E-04	
	<b>Uranium-233/234</b>	2.4E-03	
	Uranium-235/236	6.4E-05	
A37	<b>Uranium-238</b>	1.3E-03	0.017
	Americium-241	1.2E-03	
	Neptunium-237	2.3E-04	
	Plutonium-238	8.8E-05	
	Plutonium-239/240	1.3E-03	
	<b>Technetium-99</b>	2.4E-03	
	<b>Thorium-228</b>	8.5E-03	
	Thorium-230	1.0E-03	
	Thorium-232	1.0E-03	
	Uranium-233/234	3.8E-04	
Uranium-235/236	5.3E-05		
A41A	<b>Uranium-238</b>	7.2E-04	0.017
	Americium-241	7.8E-04	
	Neptunium-237	2.5E-04	
	Plutonium-238	3.1E-04	
	Plutonium-239/240	1.2E-03	
	<b>Technetium-99</b>	3.1E-03	
	<b>Thorium-228</b>	6.5E-03	
	Thorium-230	1.6E-03	
	Thorium-232	1.3E-03	
	<b>Uranium-233/234</b>	1.4E-03	
Uranium-235/236	5.4E-05		
A50	Uranium-238	2.3E-04	0.0095
	Americium-241	4.6E-04	
	Neptunium-237	0	
	Plutonium-238	2.9E-04	
	Plutonium-239/240	3.2E-04	
	Technetium-99	2.8E-04	
	Thorium-228	2.4E-03	
	Thorium-230	5.0E-04	
	<b>Thorium-232</b>	3.0E-03	
	<b>Uranium-233/234</b>	1.5E-03	
Uranium-235/236	5.6E-05		
	<b>Uranium-238</b>	8.3E-04	

**Table 3.3. Dose calculations for ambient air monitoring stations – 2020 (continued)**

Station	Parameter <sup>a</sup>	Dose <sup>b</sup> (mrem/year)	Total dose for station
A52	Americium-241	7.4E-04	
	Neptunium-237	6.1E-05	
	Plutonium-238	5.6E-04	
	Plutonium-239/240	7.7E-04	
	<b>Technetium-99</b>	7.8E-03	
	Thorium-228	4.2E-04	
	Thorium-230	0	
	Thorium-232	1.1E-03	
	<b>Uranium-233/234</b>	3.2E-03	
	Uranium-235/236	1.3E-04	
	<b>Uranium-238</b>	1.4E-03	0.016
A54	Americium-241	4.9E-04	
	Neptunium-237	0	
	Plutonium-238	0	
	Plutonium-239/240	0	
	Technetium-99	2.2E-04	
	Thorium-228	2.2E-03	
	Thorium-230	3.8E-04	
	Thorium-232	1.5E-03	
	<b>Uranium-233/234</b>	1.1E-03	
	Uranium-235/236	5.1E-05	
	Uranium-238	2.7E-04	0.0063
T7	Americium-241	1.0E-03	
	Neptunium-237	1.0E-04	
	Plutonium-238	7.4E-04	
	Plutonium-239/240	6.5E-04	
	Technetium-99	2.9E-03	
	Thorium-228	1.4E-03	
	Thorium-230	9.1E-04	
	Thorium-232	7.1E-04	
	<b>Uranium-233/234</b>	1.2E-03	
	Uranium-235/236	4.0E-05	
	Uranium-238	5.2E-04	0.010

<sup>a</sup>Parameters listed in **bold** type were detected at least once in the samples collected in 2020 (see Table 2.10).

<sup>b</sup>The 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).

## 4. GROUNDWATER

This section summarizes analytical results for routine groundwater monitoring at PORTS in 2020 at the following locations:

- X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility
- Peter Kiewit (PK) Landfill
- Quadrant I Groundwater Investigative (5-Unit) Area
- X-749A Classified Materials Disposal Facility
- Quadrant II Groundwater Investigative (7-Unit) Area
- X-701B Former Holding Pond
- X-633 Former Recirculating Cooling Water Complex
- X-616 Former Chromium Sludge Surface Impoundments
- X-740 Former Waste Oil Handling Facility
- X-611A Former Lime Sludge Lagoons
- X-735 Landfills
- X-734 Landfills
- X-533 Former Switchyard Complex
- X-344C Former Hydrogen Fluoride Storage Building
- 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 2020. Sampling for radionuclides is not part of the monitoring programs for PK Landfill, X-633 Former Recirculating Cooling Water Complex, X-616 Former Chromium Sludge Surface Impoundments, X-740 Former Waste Oil Handling Facility, X-611A Former Lime Sludge Lagoons, X-533 Former Switchyard Complex, and X-344C Former Hydrogen Fluoride Storage Building.

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

Acetone was frequently detected in both environmental and blank samples (field and trip blanks) collected in 2020. Acetone is a common laboratory contaminant that is not typically detected in the PORTS groundwater plumes. Detections of acetone can be 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. TCE, 2-butanone, and m,p-xylenes were also detected in laboratory blanks in 2020.

Other VOCs were detected in more than two trip and/or field blanks during 2020. These VOCs are 1,1,1-trichloroethane, 1,2-dichlorobenzene, 2-butanone, bromomethane, carbon disulfide, *cis*-1,2-dichloroethene, styrene, and TCE. 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 (such as vials for VOC samples), and storage areas after samples are collected (such as refrigerators or sample shipping containers).

The primary purpose of the groundwater data is to determine the nature and extent of contamination in groundwater and associated surface water at PORTS. Data collected in 2020 meet this purpose.

Complete groundwater monitoring results for sampling completed as required by the *Integrated Groundwater Monitoring Plan* (DOE 2017) are provided in the *2020 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant* (DOE 2021a). The *2020 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant* also provides the following information not included in this Data Report:

- Results for special studies conducted during 2020 at the X-701B Holding Pond/Little Beaver Creek, X-633 Former Recirculating Cooling Water Complex, and X-630 Former Recirculating Cooling Water Complex.
- Results for duplicate samples (samples collected from the same location, at the same time, and from the same sampling device as the regular sample), which are collected at a frequency of one per 20 sampling locations per groundwater monitoring area. Duplicate samples are analyzed for the same parameters as the regular sample associated with the sampling location.

The following tables are included in this section:

- Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020
- Table 4.2. VOCs detected at the PK Landfill – 2020
- Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2020
- Table 4.4. VOCs detected at the X-749A Classified Materials Disposal Facility – 2020
- Table 4.5. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2020
- Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020
- Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020
- Table 4.8. Results for chromium at the X-633 Former Recirculating Cooling Water Complex – 2020
- Table 4.9. VOCs detected at the X-616 Former Chromium Sludge Surface Impoundments – 2020
- Table 4.10. Results for chromium at the X-616 Former Chromium Sludge Surface Impoundments – 2020
- Table 4.11. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2020
- Table 4.12. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2020
- Table 4.13. VOCs detected at the X-735 Landfills – 2020

- Table 4.14. Results for radionuclides at the X-735 Landfills – 2020
- Table 4.15. VOCs detected at the X-734 Landfills – 2020
- Table 4.16. Results for cadmium and nickel at the X-533 Former Switchyard Complex – 2020
- Table 4.17. VOCs detected at the X-344C Former Hydrogen Fluoride Storage Building – 2020
- Table 4.18. VOCs detected at surface water monitoring locations – 2020
- Table 4.19. Results for radionuclides at surface water monitoring locations – 2020.

Results for exit pathway monitoring locations sampled during 2020 (that are part of the monitoring programs for other areas) are provided in the tables for their respective monitoring areas as follows:

- Table 4.1: VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility (wells X749-14B, X749-44G, X749-45G, X749-64B, X749-68G, X749-96G, X749-97G and X749-98G).
- Tables 4.6 and 4.7: Results for radionuclides and VOCs detected at X-701B Former Holding Pond area well X701-48G.
- Tables 4.18 and 4.19: VOCs and radionuclides detected at surface water monitoring locations BRC-SW02, LBC-SW04, UND-SW02, and WDD-SW03.

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

Data qualifier	Meaning
*	Quality control samples failed one or more duplicate criteria.
B	The analyte was detected in the laboratory blank sample.
D	The reported result is from a dilution.
J	The reported value is estimated.
Q	One or more quality control criteria failed.
U	Undetected

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
PK-09G	cis-1,2-Dichloroethene	µg/L			9 D	
	Trichloroethene	µg/L			340 D	
STSW-101G	1,1,1-Trichloroethane	µg/L		2.06 UJ		2.48
	1,1,2-Trichloroethane	µg/L		0.602 U		0.291 J
	1,1-Dichloroethane	µg/L		8.86		12.3
	1,1-Dichloroethene	µg/L		20.6		26.7
	1,2-Dichloroethane	µg/L		1.8 J		2.08
	Chloroform	µg/L		0.61 U		0.734 J
	cis-1,2-Dichloroethene	µg/L		4.49		5.12
	Tetrachloroethene	µg/L		0.763 U		0.813 J
	Trichloroethene	µg/L		23.4 QJ		34.9
	STSW-102G	1,1,1-Trichloroethane	µg/L		2.64 UJ	
1,1-Dichloroethane		µg/L		30.1		34.8
1,1-Dichloroethene		µg/L		18.2		22.8
1,2-Dichloroethane		µg/L		10.6		10.8
Chloroform		µg/L		1.2 J		1.46
cis-1,2-Dichloroethene		µg/L		9.78		10.1
trans-1,2-Dichloroethene		µg/L		0.586 U		0.385 J
Trichloroethene		µg/L		64.5 QJ		80.8
WP-01G	cis-1,2-Dichloroethene	µg/L		0.37 U		1.17
	Trichloroethene	µg/L		0.638 U		0.827 J
X120-05G	1,1-Dichloroethene	µg/L			0.44 J	
	Trichloroethene	µg/L			4.8	
X120-08G	1,1,1-Trichloroethane	µg/L			2.5	
	1,1,2-Trichloroethane	µg/L			0.36 J	
	1,1-Dichloroethane	µg/L			6.1	
	1,1-Dichloroethene	µg/L			25	
	Chloroform	µg/L			0.67 J	
	cis-1,2-Dichloroethene	µg/L			0.66 J	
	Trichloroethene	µg/L			12	
X120-10G	1,1,1-Trichloroethane	µg/L			2.5	
	1,1,2-Trichloroethane	µg/L			0.69 J	
	1,1-Dichloroethane	µg/L			12	
	1,1-Dichloroethene	µg/L			37	
	Chloroform	µg/L			0.88 J	
	cis-1,2-Dichloroethene	µg/L			0.96 J	
X120-11G	Trichloroethene	µg/L			9.7	
	1,1-Dichloroethene	µg/L		0.86 U		0.663 J
	cis-1,2-Dichloroethene	µg/L		4.88		5.18
X749-04G	Trichloroethene	µg/L		179		88.1
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			0.29 J	
X749-05G	Tetrachloroethene	µg/L			2.4	
	Trichloroethene	µg/L			120	
	1,1-Dichloroethane	µg/L			0.85 J	
	Carbon tetrachloride	µg/L			0.25 J	
	Chloroform	µg/L			0.87 J	
	cis-1,2-Dichloroethene	µg/L			0.97 J	
	Tetrachloroethene	µg/L			1.4	
	Trichloroethene	µg/L			110	



**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-06G	1,1,1-Trichloroethane	µg/L		9.66		18 D
	1,1,2-Trichloroethane	µg/L		1.41 J		2.59 DJ
	1,1-Dichloroethane	µg/L		89.3		148 D
	1,1-Dichloroethene	µg/L		69.8		112 D
	1,2-Dichloroethane	µg/L		1.86 J		3.23 DJ
	2-Butanone	µg/L		1.26 *U		15.7 BDJ
	Chloroform	µg/L		8.61		14.2 D
	cis-1,2-Dichloroethene	µg/L		24.7		39.3 D
	Tetrachloroethene	µg/L		5.19 Q		15 D
	Trichloroethene	µg/L		299 DQ		561 D
X749-07G	1,1,1-Trichloroethane	µg/L		5.13		9.71
	1,1-Dichloroethane	µg/L		18.4		17.8
	1,1-Dichloroethene	µg/L		15		17.9
	1,2-Dichloroethane	µg/L		9.26		8.84
	2-Butanone	µg/L		1.26 U		4.25 BJ
	Chloroform	µg/L		0.858 J		1.26
	cis-1,2-Dichloroethene	µg/L		5.1		7.46
	Tetrachloroethene	µg/L		0.763 U		0.707 J
X749-08G	Trichloroethene	µg/L		46.9		75.7
	1,1,1-Trichloroethane	µg/L		3.21 UJ		4.02
	1,1-Dichloroethane	µg/L		0.801 J		0.842 J
	1,1-Dichloroethene	µg/L		3.92		4.22 J
	2-Butanone	µg/L		1.26 U		4.02 BJ
	cis-1,2-Dichloroethene	µg/L		0.919 J		0.89 J
X749-09GA	Trichloroethene	µg/L		6.47		6.92
	1,1,1-Trichloroethane	µg/L		3.01 UJ		2.87
	1,1-Dichloroethane	µg/L		0.734 J		0.59 J
	1,1-Dichloroethene	µg/L		2.28 J		2.08
	2-Butanone	µg/L		1.26 U		4.2 BJ
X749-10GA	cis-1,2-Dichloroethene	µg/L		0.724 J		0.465 J
	Trichloroethene	µg/L		6.61		4.27
	1,1-Dichloroethane	µg/L		0.641 U		0.547 J
	1,1-Dichloroethene	µg/L		0.86 U		1.87
X749-13G	2-Butanone	µg/L		1.26 U		3.99 BJ
	cis-1,2-Dichloroethene	µg/L		0.37 U		0.56 J
	1,1,1-Trichloroethane	µg/L		1.62 UJ		1.86
	1,1-Dichloroethane	µg/L		0.641 U		0.425 J
X749-14B	1,1-Dichloroethene	µg/L		1.97 J		2.45
	cis-1,2-Dichloroethene	µg/L		0.442 J		0.412 J
	Trichloroethene	µg/L		3.77 UJ		5.08
X749-20G	2-Butanone	µg/L		1.26 U		4.15 BJ
	1,1-Dichloroethane	µg/L			0.53 J	
	1,1-Dichloroethene	µg/L			0.41 J	
	1,2-Dichloroethane	µg/L			0.27 J	
	cis-1,2-Dichloroethene	µg/L			0.65 J	
X749-21G	Trichloroethene	µg/L			4.8	
	2-Butanone	µg/L		1.26 U		3.94 BJ
X749-22G	Trichloroethene	µg/L		0.638 QU		0.618 J
	1,1-Dichloroethane	µg/L		2.46		2.4
	1,1-Dichloroethene	µg/L		3.64		3.97

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-22G	2-Butanone	µg/L		1.26 U		4.28 BJ
	cis-1,2-Dichloroethene	µg/L		1.23 J		1.07
	Trichloroethene	µg/L		0.638 U		0.165 J
X749-23G	2-Butanone	µg/L		1.26 U		3.96 BJ
X749-24G	2-Butanone	µg/L		1.26 U		3.9 BJ
X749-26G	1,1-Dichloroethane	µg/L		3.22		0.699 J
	1,1-Dichloroethene	µg/L		3.77		0.926 J
	1,2-Dichloroethane	µg/L		1.44 J		0.301 J
	cis-1,2-Dichloroethene	µg/L		0.83 J		0.15 U
	Trichloroethene	µg/L		6.25		2.86
	1,1,1-Trichloroethane	µg/L		20.1		14.5
	1,1,2-Trichloroethane	µg/L		1.13 J		0.933 J
	1,1-Dichloroethane	µg/L		174		108
X749-27G	1,1-Dichloroethene	µg/L		241 D		147
	1,2-Dichloroethane	µg/L		100		55.2
	Bromomethane	µg/L		1.45 U		0.296 J
	Chloroform	µg/L		15.9		11.9
	cis-1,2-Dichloroethene	µg/L		27		19.9
	Tetrachloroethene	µg/L		1.25 J		1.64
	Trichloroethene	µg/L		243 D		198
	1,1,1-Trichloroethane	µg/L			5	
	1,1,2-Trichloroethane	µg/L			0.36 J	
	1,1-Dichloroethane	µg/L			8.3	
X749-28G	1,1-Dichloroethene	µg/L			30	
	1,2-Dichloroethane	µg/L			1.7	
	Chloroform	µg/L			1.3	
	cis-1,2-Dichloroethene	µg/L			1.1	
	Tetrachloroethene	µg/L			0.65 J	
	Trichloroethene	µg/L			45	
	Trichloroethene	µg/L			5.6	
	1,1-Dichloroethene	µg/L			0.66 J	
X749-29G	Chloroform	µg/L			0.22 J	
	cis-1,2-Dichloroethene	µg/L			2.5	
	Trichloroethene	µg/L			140 J	
X749-30G	1,1,1-Trichloroethane	µg/L		2.95 UJ		9.4
	1,1,2-Trichloroethane	µg/L		0.602 U		0.69 J
	1,1-Dichloroethane	µg/L		12.1		40.1
	1,1-Dichloroethene	µg/L		17.6		61.8
	1,2-Dichloroethane	µg/L		5.99		17.2
	Chloroethane	µg/L		0.84 U		0.619 J
	Chloroform	µg/L		1.18 J		4.33
	cis-1,2-Dichloroethene	µg/L		2 J		7.22
	Tetrachloroethene	µg/L		0.763 U		1.41
	Trichloroethene	µg/L		33 QJ		100
X749-33G	1,1,1-Trichloroethane	µg/L			33	
	1,1-Dichloroethane	µg/L			7.8	
	1,1-Dichloroethene	µg/L			25	
	Chloroform	µg/L			0.18 J	
	cis-1,2-Dichloroethene	µg/L			7	
	trans-1,2-Dichloroethene	µg/L			0.18 J	

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-35G	Trichloroethene	µg/L			70	
	Vinyl chloride	µg/L			0.9 J	
X749-36G	1,1-Dichloroethane	µg/L			0.86 J	
	1,1-Dichloroethene	µg/L			2.2	
	cis-1,2-Dichloroethene	µg/L			0.16 J	
	Trichloroethene	µg/L			2.6	
X749-37G	1,1-Dichloroethane	µg/L		2.41		3.57
	1,1-Dichloroethene	µg/L		5.05		9.04
	1,2-Dichloroethane	µg/L		0.406 U		0.417 J
	Chloroform	µg/L		0.61 U		0.194 J
	cis-1,2-Dichloroethene	µg/L		1.21 J		1.39
	Tetrachloroethene	µg/L		0.763 U		0.481 J
	Trichloroethene	µg/L		5.13		9.26
X749-38G	1,1,1-Trichloroethane	µg/L		1.93 UJ		2.74
	1,1,2-Trichloroethane	µg/L		0.602 U		0.331 J
	1,1-Dichloroethane	µg/L		6.53		9.92
	1,1-Dichloroethene	µg/L		15.3		23.5
	1,2-Dichloroethane	µg/L		0.739 J		1.11
	Bromodichloromethane	µg/L		1.28 J		0.17 U
	Chloroform	µg/L		0.61 U		0.557 J
	cis-1,2-Dichloroethene	µg/L		3.13		4.1
	Tetrachloroethene	µg/L		0.763 U		0.803 J
	Trichloroethene	µg/L		17		28.5
X749-40G	1,1-Dichloroethene	µg/L			2.3	
	Chloroform	µg/L			0.34 J	
	cis-1,2-Dichloroethene	µg/L			0.68 J	
	Trichloroethene	µg/L			18	
X749-41G	cis-1,2-Dichloroethene	µg/L		0.914 J		0.263 J
	Trichloroethene	µg/L		381 D		105
X749-42G	1,1-Dichloroethane	µg/L		0.641 U		0.453 J
	1,1-Dichloroethene	µg/L		1.41 J		1.77
	Trichloroethene	µg/L		2.9		4.05
X749-43G	1,1-Dichloroethene	µg/L			0.51 J	
	Trichloroethene	µg/L			0.29 J	
X749-45G	1,1,1-Trichloroethane	µg/L	0.16 U	0.73 J	0.16 U	0.16 U
	1,1-Dichloroethane	µg/L	5	4.1	2.8	0.906 J
	1,1-Dichloroethene	µg/L	4.6	3.56	2.2	0.67 J
	1,2-Dichloroethane	µg/L	1.2	1.15 J	0.88 J	0.13 U
	cis-1,2-Dichloroethene	µg/L	4.7	4.22	2.2	0.575 J
	Trichloroethene	µg/L	14	11.4	8.8	2.93
X749-50B	1,1-Dichloroethane	µg/L			1	
	cis-1,2-Dichloroethene	µg/L			0.35 J	
	Trichloroethene	µg/L			0.34 J	
X749-54B	1,1-Dichloroethane	µg/L		3.33		2.93
	2-Butanone	µg/L		1.26 U		4.44 BJ
	Trichloroethene	µg/L		2.11 QUJ		18.1
X749-67G	1,1,1-Trichloroethane	µg/L	3.9	2.85 UJ	3.5	3.65
	1,1-Dichloroethane	µg/L	47	41.9	46	48.6
	1,1-Dichloroethene	µg/L	35	28.1	37	37.3
	1,2-Dichloroethane	µg/L	14	12.6	13	14.4

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-67G	Chloroform	µg/L	2.5	1.86 J	2.4	2.43
	cis-1,2-Dichloroethene	µg/L	22	22.2	22	24
	trans-1,2-Dichloroethene	µg/L	0.19 J	0.586 U	0.15 U	0.261 J
	Trichloroethene	µg/L	130	104 QJ	130	143
X749-97G	1,1-Dichloroethane	µg/L	1.6	1.41 J	0.22 U	0.22 U
	1,1-Dichloroethene	µg/L	0.76 J	0.86 U	0.23 U	0.23 U
	cis-1,2-Dichloroethene	µg/L	0.71 J	0.676 J	0.15 U	0.15 U
	Trichloroethene	µg/L	2.9	2.33	0.32 J	0.16 U
X749-102G	1,1-Dichloroethene	µg/L	0.47 J	0.86 U	0.23 U	0.23 U
	Trichloroethene	µg/L	0.45 J	0.638 U	0.16 U	0.215 J
X749-103G	1,1-Dichloroethane	µg/L	0.22 U	0.641 U	0.22 U	0.587 J
	1,1-Dichloroethene	µg/L	0.23 U	0.86 U	0.54 J	0.907 J
	cis-1,2-Dichloroethene	µg/L	0.15 U	0.37 U	0.15 U	0.186 J
	Trichloroethene	µg/L	0.21 J	0.638 QU	0.23 J	0.891 J
X749-106G	1,1,1-Trichloroethane	µg/L		4.43		4.94
	1,1,2-Trichloroethane	µg/L		0.602 U		0.585 J
	1,1-Dichloroethane	µg/L		10.4		11.5
	1,1-Dichloroethene	µg/L		30.3		32.5
	1,2-Dichloroethane	µg/L		1.01 J		1.03
	Chloroform	µg/L		0.822 J		0.906 J
	cis-1,2-Dichloroethene	µg/L		2.04		2.24
	Tetrachloroethene	µg/L		0.763 U		0.847 J
X749-107G	Trichloroethene	µg/L		20.3		24.7
	1,1,1-Trichloroethane	µg/L		4.78		5.6
	1,1,2-Trichloroethane	µg/L		0.605 J		0.72 J
	1,1-Dichloroethane	µg/L		14.1		14.7
	1,1-Dichloroethene	µg/L		42		42.1
	1,2-Dichloroethane	µg/L		1.41 J		1.24
	Chloroform	µg/L		1.1 J		1.23
	cis-1,2-Dichloroethene	µg/L		3.1		2.98
X749-108G	Tetrachloroethene	µg/L		0.763 U		0.904 J
	Trichloroethene	µg/L		28.6		33.3
	1,1,1-Trichloroethane	µg/L		15.6		17.8
	1,1,2-Trichloroethane	µg/L		1.09 J		1.09
	1,1-Dichloroethane	µg/L		22.2		22.5
	1,1-Dichloroethene	µg/L		61.5		62.8
	1,2-Dichloroethane	µg/L		1.87 J		1.81
	Chloroform	µg/L		2.02 J		2.02
X749-109G	cis-1,2-Dichloroethene	µg/L		3.92		3.67
	Tetrachloroethene	µg/L		1.06 J		1.31
	Trichloroethene	µg/L		53		60.2
	1,1,1-Trichloroethane	µg/L		0.796 UJ		0.497 J
	1,1-Dichloroethane	µg/L		0.813 J		0.962 J
	1,1-Dichloroethene	µg/L		1.08 J		1.71 J
	cis-1,2-Dichloroethene	µg/L		0.572 J		0.516 J
	Trichloroethene	µg/L		1.74 JQU		2.56
X749-110G	1,1,1-Trichloroethane	µg/L		1.52 UJ		2.69 J
	1,1-Dichloroethane	µg/L		1.61 J		2.85
	1,1-Dichloroethene	µg/L		4.05		8.39 J
	1,2-Dichloroethane	µg/L		0.469 J		0.898 J

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-110G	2-Butanone	µg/L		1.26 *U		3.98 BJ
	Chloroform	µg/L		0.61 U		0.256 J
	cis-1,2-Dichloroethene	µg/L		1.89 J		3.43
	trans-1,2-Dichloroethene	µg/L		0.586 U		0.422 J
	Trichloroethene	µg/L		7.64		17.5 J
X749-112G	2-Butanone	µg/L		1.26 U		4.13 BJ
X749-113G	1,1,1-Trichloroethane	µg/L		7.33		12.4
	1,1-Dichloroethane	µg/L		16.7		19.9
	1,1-Dichloroethene	µg/L		24.1		29.1
	1,2-Dichloroethane	µg/L		10.6		12.1
	2-Butanone	µg/L		1.26 U		4.05 BJ
	Chloroform	µg/L		1.34 J		1.84
	cis-1,2-Dichloroethene	µg/L		2.6		3.08
	Tetrachloroethene	µg/L		0.763 U		0.619 J
	Trichloroethene	µg/L		29		40.8
	X749-114G	1,1,1-Trichloroethane	µg/L			0.184 J
1,1-Dichloroethane		µg/L			0.395 J	
Benzene		µg/L			0.201 J	
cis-1,2-Dichloroethene		µg/L			1.27	
X749-115G	cis-1,2-Dichloroethene	µg/L			3.9	
	Trichloroethene	µg/L			110 J	
X749-117G	Chloroform	µg/L			0.68 J	
	cis-1,2-Dichloroethene	µg/L			0.43 J	
	Tetrachloroethene	µg/L			1.2	
X749-118G	Trichloroethene	µg/L			130	
	1,1-Dichloroethane	µg/L			1.1	
	1,1-Dichloroethene	µg/L			0.35 J	
	1,2-Dichloroethane	µg/L			0.17 J	
	4-Methyl-2-pentanone	µg/L			1.6 J	
	Carbon disulfide	µg/L			0.31 J	
	Carbon tetrachloride	µg/L			0.83 J	
	cis-1,2-Dichloroethene	µg/L			2.5	
	Tetrachloroethene	µg/L			1.6	
	Trichloroethene	µg/L			95	
X749-119G	Chloroform	µg/L			0.97 J	
	cis-1,2-Dichloroethene	µg/L			0.17 J	
	Trichloroethene	µg/L			18 J	
X749-120G	1,1,1-Trichloroethane	µg/L			510 D	
	1,1,2-Trichloroethane	µg/L			73 D	
	1,1-Dichloroethane	µg/L			4800 D	
	1,1-Dichloroethene	µg/L			3500 D	
	1,2-Dichloroethane	µg/L			81 D	
	Chloroform	µg/L			250 D	
	cis-1,2-Dichloroethene	µg/L			1200 D	
	Methylene chloride	µg/L			80 DJ	
	Tetrachloroethene	µg/L			290 D	
	Trichloroethene	µg/L			6700 D	
X749-121G	Vinyl chloride	µg/L			69 D	
	1,1,1-Trichloroethane	µg/L			34 D	
	1,1,2-Trichloroethane	µg/L			0.95 DJ	

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter	
X749-121G	1,1-Dichloroethane	µg/L			16 D		
	1,1-Dichloroethene	µg/L			320 D		
	1,2-Dichloroethane	µg/L			1.9 DJ		
	Chloroethane	µg/L			4.2 D		
	Chloroform	µg/L			1.1 DJ		
	cis-1,2-Dichloroethene	µg/L			9.8 D		
	Trichloroethene	µg/L			71 D		
	Vinyl chloride	µg/L			2 D		
X749-122G	1,1,1-Trichloroethane	µg/L			250 D		
	1,1,2-Trichloroethane	µg/L			1.4 DJ		
	1,1-Dichloroethane	µg/L			74 D		
	1,1-Dichloroethene	µg/L			300 D		
	1,2-Dichloroethane	µg/L			3.6 DJ		
	Benzene	µg/L			5.2 D		
	Chloroform	µg/L			1.5 DJ		
	cis-1,2-Dichloroethene	µg/L			51 D		
	trans-1,2-Dichloroethene	µg/L			0.84 DJ		
	Trichloroethene	µg/L			920 D		
Vinyl chloride	µg/L			4 D			
X749-BG9G	2-Butanone	µg/L		1.26 U		4.02 BJ	
X749-PZ02G	2-Butanone	µg/L		1.26 U		3.91 BJ	
	Trichloroethene	µg/L		0.638 QU		0.192 J	
X749-PZ04G	1,1-Dichloroethane	µg/L	1.7	1.39 J	1	0.558 J	
	1,1-Dichloroethene	µg/L	0.97 J	0.86 U	0.39 J	0.23 U	
	cis-1,2-Dichloroethene	µg/L	0.59 J	0.398 J	0.24 J	0.15 U	
	Trichloroethene	µg/L	4.3	3.39 QUJ	2.7	1.63	
X749-PZ06G	1,1,1-Trichloroethane	µg/L		4.66		5.88	
	1,1,2-Trichloroethane	µg/L		0.7 J		0.686 J	
	1,1-Dichloroethane	µg/L		17.3		17.4	
	1,1-Dichloroethene	µg/L		51.5		56.8	
	1,2-Dichloroethane	µg/L		1.49 J		0.13 U	
	Chloroform	µg/L		1.16 J		1.36	
	cis-1,2-Dichloroethene	µg/L		3.05		3.02	
	Tetrachloroethene	µg/L		0.763 U		0.479 J	
X749-PZ07G	Trichloroethene	µg/L		32.3		37.9	
	1,1-Dichloroethene	µg/L			0.54 J		
X749-PZ10G	Trichloroethene	µg/L			1.5		
	1,1,1-Trichloroethane	µg/L		4.71		6.53 D	
	1,1-Dichloroethene	µg/L		101		0.92 U	
	1,2-Dichloroethane	µg/L		0.426 J		0.52 U	
	2-Butanone	µg/L		1.26 U		15.7 BDJ	
	Chloroform	µg/L		22.7		24.4 D	
	cis-1,2-Dichloroethene	µg/L		0.621 J		0.6 U	
	Trichloroethene	µg/L		353 D		390 D	
	X749-WPW	1,1,1-Trichloroethane	µg/L		33.5		53.9 D
		1,1,2-Trichloroethane	µg/L		0.717 J		0.888 DJ
1,1-Dichloroethane		µg/L		55.7		64.7 D	
1,1-Dichloroethene		µg/L		82		123 D	
1,2-Dichloroethane		µg/L		8.19		10.4 D	
Benzene		µg/L		1.34 J		0.407 DJ	

**Table 4.1. VOCs detected at the X-749 Contaminated Materials Disposal Facility/X-120 Former Training Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749-WPW	Chloroform	µg/L		8.33		14.5 D
	cis-1,2-Dichloroethene	µg/L		72.3		36.4 D
	Tetrachloroethene	µg/L		2.01 J		4.06 D
	Trichloroethene	µg/L		233 D		331 D
	Vinyl chloride	µg/L		3.71		5.33 DQ

**Table 4.2 VOCs detected at PK Landfill – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter	
PK-10G	Trichloroethene	µg/L		0.87 J		1.04	
PK-16G	cis-1,2-Dichloroethene	µg/L		0.37 U		0.43 J	
PK-17B	1,1-Dichloroethane	µg/L		2.01		3.93	
	1,1-Dichloroethene	µg/L		0.86 U		0.85 J	
	Benzene	µg/L		0.378 U		0.477 J	
	Chlorobenzene	µg/L		0.647 UJ		2.6	
	cis-1,2-Dichloroethene	µg/L		34.4		62.3	
	trans-1,2-Dichloroethene	µg/L		0.979 UJ		2.12	
	Trichloroethene	µg/L		0.923 JQU		0.996 J	
	Vinyl chloride	µg/L		11		24.2	
	PK-21B	1,1-Dichloroethane	µg/L		125		131 J
		1,1-Dichloroethene	µg/L		0.998 J		1.19
1,2-Dichloroethane		µg/L		0.519 J		0.13 U	
Benzene		µg/L		0.642 J		0.768 J	
cis-1,2-Dichloroethene		µg/L		9.6		10.9	
Vinyl chloride		µg/L		10.5		14 Q	
PK-PL6	1,1,1-Trichloroethane	µg/L	1.1	0.722 U	0.722 U	0.643 J	
	1,1-Dichloroethane	µg/L	2.1	2.5	5.01	1.85	
	1,1-Dichloroethene	µg/L	0.75 J	0.86 U	0.86 U	0.553 J	
	Acetone	µg/L	2.3 J	6.69 U	6.69 U	1.9 U	
	cis-1,2-Dichloroethene	µg/L	0.87 J	1.38 J	1.7 JQU	0.969 J	
PK-PL6A	Trichloroethene	µg/L	1	1.19 J	1.14 JQU	0.259 J	
	1,1,1-Trichloroethane	µg/L	1.5	0.722 U	0.722 U	1.45	
	1,1-Dichloroethane	µg/L	2.6	2.46	9.36 J	5.82	
	1,1-Dichloroethene	µg/L	1	0.86 U	1.5 J	0.939 J	
	Benzene	µg/L	0.16 U	0.378 U	0.837 J	0.16 U	
	cis-1,2-Dichloroethene	µg/L	1.2	0.37 U	2.74 Q	2.25	
	Trichloroethene	µg/L	1.7	1.53 J	1.29 JQU	1.04	
	Vinyl chloride	µg/L	0.1 U	0.741 U	0.841 J	0.1 QU	



**Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X230K-14G	Acetone	µg/L			2.2 J	
	cis-1,2-Dichloroethene	µg/L			0.35 J	
	Trichloroethene	µg/L			4.5	
X230K-15G	Bromomethane	µg/L			0.54 J	
	cis-1,2-Dichloroethene	µg/L			0.25 J	
	Trichloroethene	µg/L			1.8	
X231A-01G	Acetone	µg/L			2 J	
	cis-1,2-Dichloroethene	µg/L			0.37 J	
	Trichloroethene	µg/L			2.4	
X231A-02G	1,1,2-Trichloroethane	µg/L			0.6 J	
	1,1-Dichloroethane	µg/L			6.8	
	1,1-Dichloroethene	µg/L			97	
	Benzene	µg/L			0.28 J	
	Chloroform	µg/L			0.92 J	
	cis-1,2-Dichloroethene	µg/L			9	
	Tetrachloroethene	µg/L			0.47 J	
	trans-1,2-Dichloroethene	µg/L			0.38 J	
	Trichloroethene	µg/L			190	
X231A-04G	1,1-Dichloroethene	µg/L			0.52 J	
	Acetone	µg/L			2.1 J	
	Chloroform	µg/L			0.19 J	
	cis-1,2-Dichloroethene	µg/L			5.8	
	Trichloroethene	µg/L			32	
X231B-02G	Trichlorofluoromethane	µg/L			1 J	
	1,1,1-Trichloroethane	µg/L	0.68 J		0.16 U	
	1,1,2-Trichloroethane	µg/L	0.33 J		0.27 U	
	1,1-Dichloroethane	µg/L	0.62 J		0.22 U	
	1,1-Dichloroethene	µg/L	73		39	
	Chloroform	µg/L	1.6		2.8	
	cis-1,2-Dichloroethene	µg/L	7.4		6.6	
	trans-1,2-Dichloroethene	µg/L	1.3		0.64 J	
X231B-03G	Trichloroethene	µg/L	120		110	
	1,1,1-Trichloroethane	µg/L	1		0.87 J	
	1,1,2-Trichloroethane	µg/L	0.47 J		0.44 J	
	1,1-Dichloroethane	µg/L	1.1		1.9	
	1,1-Dichloroethene	µg/L	92		89	
	Benzene	µg/L	0.2 J		0.17 J	
	Chloroform	µg/L	0.16 U		0.32 J	
	cis-1,2-Dichloroethene	µg/L	3.1		4.5	
	trans-1,2-Dichloroethene	µg/L	0.47 J		0.44 J	
X231B-06G	Trichloroethene	µg/L	62		81	
	1,1,1-Trichloroethane	µg/L	3		1.5	
	1,1-Dichloroethane	µg/L	4.4		2.4	
	1,1-Dichloroethene	µg/L	7		13	
	Chloroform	µg/L	0.16 U		1.4	
	Trichloroethene	µg/L	3.3 J		9.2	
X231B-12G	Trichlorofluoromethane	µg/L	0.29 U		1.2 J	
	1,1,1-Trichloroethane	µg/L			1.1	
	1,1-Dichloroethene	µg/L			11	
	Trichloroethene	µg/L			2.3	

**Table 4.3. VOCs detected at the Quadrant I Groundwater Investigative (5-Unit) Area – 2020  
 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X231B-12G	Trichlorofluoromethane	µg/L			0.69 J	
X231B-14G	1,1,1-Trichloroethane	µg/L			0.74 J	
	1,1-Dichloroethane	µg/L			1.3	
	1,1-Dichloroethene	µg/L			23	
	Chloroform	µg/L			0.76 J	
	cis-1,2-Dichloroethene	µg/L			7.3	
	Trichloroethene	µg/L			110	
X231B-15G	1,1-Dichloroethene	µg/L			1.2	
	1,2-Dichlorobenzene	µg/L			0.18 J	
	1,4-Dichlorobenzene	µg/L			0.24 J	
	Carbon disulfide	µg/L			0.43 J	
	Chloroform	µg/L			1.1	
	cis-1,2-Dichloroethene	µg/L			0.25 J	
	Trichloroethene	µg/L			0.4 J	
X231B-16G	1,1,1-Trichloroethane	µg/L			0.28 J	
	1,1-Dichloroethene	µg/L			1.6	
	Chloroform	µg/L			0.38 J	
	Trichloroethene	µg/L			0.29 J	
X231B-20G	1,1-Dichloroethene	µg/L			1.3	
	Chloroform	µg/L			0.36 J	
	Trichloroethene	µg/L			9.9	
X231B-23G	1,1-Dichloroethene	µg/L			3	
	Trichloroethene	µg/L			1.4	
X231B-36G	Trichloroethene	µg/L			1100 D	
X231B-37G	1,1-Dichloroethane	µg/L			0.84 J	
	1,1-Dichloroethene	µg/L			1	
	Benzene	µg/L			0.21 J	
	cis-1,2-Dichloroethene	µg/L			8.8	
	trans-1,2-Dichloroethene	µg/L			0.72 J	
	Trichloroethene	µg/L			6.5	
	Vinyl chloride	µg/L			0.83 J	
X626-07G	1,1,1-Trichloroethane	µg/L	1.6 U		3.8 DJ	
	1,1-Dichloroethene	µg/L	330 D		590 DJ	
	cis-1,2-Dichloroethene	µg/L	3.6 DJ		1.5 U	
	Trichloroethene	µg/L	1200 D		410 DJ	
X749A-09G	Acetone	µg/L			2.1 J	
X760-03G	Acetone	µg/L			2.3 J	
	cis-1,2-Dichloroethene	µg/L			0.85 J	
	Trichloroethene	µg/L			60	
X760-07G	Chloroform	µg/L			0.33 DJ	
	cis-1,2-Dichloroethene	µg/L			3.9 D	
	Trichloroethene	µg/L			320 D	
X770-17GA	Acetone	µg/L	3.8 U		5.2 DJ	
	cis-1,2-Dichloroethene	µg/L	1.4 DJ		1.2 DJ	
	Trichloroethene	µg/L	460 D		380 D	

**Table 4.4 VOCs detected at the X-749A Classified Materials Disposal Facility – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X749A-12G	1,2-Dichlorobenzene	µg/L		0.612 J		
	cis-1,2-Dichloroethene	µg/L		3.25		
	Trichloroethene	µg/L		3.4		
X749A-18G	1,1,1-Trichloroethane	µg/L		0.739 J		
	Trichloroethene	µg/L		1.24 J		
X749A-19G	Trichloroethene	µg/L		6.34		

**Table 4.5. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X700-02G	1,1-Dichloroethane	µg/L	13 DJ			
	cis-1,2-Dichloroethene	µg/L	2000 D			
	Trichloroethene	µg/L	4100 DJ			
	Vinyl chloride	µg/L	81 D			
X700-04G	1,1-Dichloroethene	µg/L	32 DJ			
	cis-1,2-Dichloroethene	µg/L	5900 D			
	trans-1,2-Dichloroethene	µg/L	11 DJ			
	Trichloroethene	µg/L	320 D			
X700-05G	Vinyl chloride	µg/L	2500 D			
	Acetone	µg/L	4300 BDJ			
	cis-1,2-Dichloroethene	µg/L	41000 D			
	Trichloroethene	µg/L	78000 D			
X700-06G	Vinyl chloride	µg/L	2200 D			
	cis-1,2-Dichloroethene	µg/L	1800 DJ			
	Trichloroethene	µg/L	970000 D			
X701-26G	Acetone	µg/L	1.9 U		2 J	
	Tetrachloroethene	µg/L	0.98 J		1.1	
	Trichloroethene	µg/L	0.43 J		0.72 J	
X701-27G	1,1-Dichloroethane	µg/L	0.22 U		0.49 J	
	1,1-Dichloroethene	µg/L	1.1		0.94 J	
	cis-1,2-Dichloroethene	µg/L	3.9		3.4	
	Trichloroethene	µg/L	17		17	
X701-69G	1,1-Dichloroethene	µg/L	0.99 DJ			
	cis-1,2-Dichloroethene	µg/L	160 D			
	trans-1,2-Dichloroethene	µg/L	3.9 DJ			
	Trichloroethene	µg/L	570 D			
	Vinyl chloride	µg/L	1.6 DJ			
X705-02G	1,1-Dichloroethene	µg/L	0.29 J			
	cis-1,2-Dichloroethene	µg/L	0.44 J			
	Trichloroethene	µg/L	15			
X705-03G	1,1-Dichloroethane	µg/L	0.83 J			
	1,1-Dichloroethene	µg/L	4.6			
	cis-1,2-Dichloroethene	µg/L	4.3			
	Tetrachloroethene	µg/L	0.82 J			
	trans-1,2-Dichloroethene	µg/L	0.33 J			
	Trichloroethene	µg/L	15			
X705-04G	1,1-Dichloroethene	µg/L	0.56 J			
	Carbon tetrachloride	µg/L	8.4			
	Chloroform	µg/L	150			
	Tetrachloroethene	µg/L	1.8			
	Trichloroethene	µg/L	18			
X720-01G	1,1-Dichloroethane	µg/L	69 DJ			
	cis-1,2-Dichloroethene	µg/L	1200 D			
	Trichloroethene	µg/L	7500 DJ			
X720-08G	1,1-Dichloroethene	µg/L	56 D			
	cis-1,2-Dichloroethene	µg/L	18 DJ			
	Tetrachloroethene	µg/L	24 DJ			
	Trichloroethene	µg/L	5000 D			
X720-09G	1,1-Dichloroethane	µg/L	12000 D			
	cis-1,2-Dichloroethene	µg/L	19000 DJ			

**Table 4.5. VOCs detected at the Quadrant II Groundwater Investigative (7-Unit) Area – 2020  
(continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X720-09G	Trichloroethene	µg/L	460000 D			

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ06G	cis-1,2-Dichloroethene	µg/L	0.19 J		0.37 U	
	Trichloroethene	µg/L	1.4		0.638 U	
X230J7-01GA	1,1,2,2-Tetrachloroethane	µg/L	0.84 U		0.968 J	
	1,2-Dimethylbenzene	µg/L	0.76 U		0.718 J	
	cis-1,2-Dichloroethene	µg/L	3.6 DJ		4.99	
	m,p-Xylenes	µg/L	0.61 U		0.897 J	
	Trichloroethene	µg/L	370 D		189 DQ	
X230J7-02GA	1,1,1-Trichloroethane	µg/L	1.6 U		3.96	
	1,1,2,2-Tetrachloroethane	µg/L	2.1 U		25	
	1,1,2-Trichloroethane	µg/L	2.7 U		4.15	
	1,1-Dichloroethane	µg/L	2.2 U		0.794 J	
	1,1-Dichloroethene	µg/L	2.3 U		0.905 J	
	1,2-Dimethylbenzene	µg/L	1.9 U		0.718 J	
	Carbon tetrachloride	µg/L	1.9 U		1.32 J	
	Chloroform	µg/L	1.6 U		0.853 J	
	Chloromethane	µg/L	3 U		0.986 J	
	cis-1,2-Dichloroethene	µg/L	57 D		153	
	m,p-Xylenes	µg/L	1.5 U		0.864 J	
	Tetrachloroethene	µg/L	2 U		8.82 QJ	
	trans-1,2-Dichloroethene	µg/L	4.6 DJ		18.1	
	Trichloroethene	µg/L	810 D		2940 DQJ	
	Vinyl chloride	µg/L	1 U		2.61 J	
X230J7-03GA	1,1,1-Trichloroethane	µg/L	3.2 U		1.76 J	
	1,1,2,2-Tetrachloroethane	µg/L	4.2 U		9.25	
	1,1,2-Trichloroethane	µg/L	5.4 U		3.29	
	1,1-Dichloroethane	µg/L	4.6 U		1.26 J	
	1,2-Dimethylbenzene	µg/L	3.8 U		0.698 J	
	cis-1,2-Dichloroethene	µg/L	160 D		164 D	
	Tetrachloroethene	µg/L	7 DJ		2.79 Q	
	trans-1,2-Dichloroethene	µg/L	7.3 DJ		10.7	
	Trichloroethene	µg/L	2500 DJ		3160 DQ	
	Vinyl chloride	µg/L	2 JU		5.36	
X237-EPW	1,1,2,2-Tetrachloroethane	µg/L			39.2	
	1,1,2-Trichloroethane	µg/L			18	
	1,1-Dichloroethane	µg/L			1.57 J	
	1,1-Dichloroethene	µg/L			17.7	
	1,2-Dichloroethane	µg/L			0.925 J	
	Chloroform	µg/L			1.73 J	
	cis-1,2-Dichloroethene	µg/L			1140 DQ	
	Tetrachloroethene	µg/L			10.9	
	trans-1,2-Dichloroethene	µg/L			41.7	
	Trichloroethene	µg/L			2880 DQ	
	Vinyl chloride	µg/L			28.1	
X237-WPW	1,1,1-Trichloroethane	µg/L			8.08	
	1,1,2,2-Tetrachloroethane	µg/L			117	
	1,1,2-Trichloroethane	µg/L			41.8	
	1,1-Dichloroethane	µg/L			1.76 J	
	1,1-Dichloroethene	µg/L			16.4	
	1,2-Dichloroethane	µg/L			1.34 J	
	Benzene	µg/L			0.426 J	

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X237-WPW	Bromodichloromethane	µg/L			1.35 J	
	Carbon tetrachloride	µg/L			1.2 J	
	Chloroform	µg/L			5.55	
	cis-1,2-Dichloroethene	µg/L			369 DQ	
	Tetrachloroethene	µg/L			47.3	
	Toluene	µg/L			0.437 J	
	trans-1,2-Dichloroethene	µg/L			45.6	
	Trichloroethene	µg/L			11200 DQJ	
	Vinyl chloride	µg/L			113 D	
X701-01G	1,1-Dichloroethene	µg/L	1.3		3.26 DJ	
	cis-1,2-Dichloroethene	µg/L	29		73.3 D	
	trans-1,2-Dichloroethene	µg/L	1.2		3.45 DJ	
	Trichloroethene	µg/L	150		364 D	
	Vinyl chloride	µg/L	0.36 J		0.4 U	
X701-02G	1,1-Dichloroethene	µg/L	0.36 J		0.86 U	
	cis-1,2-Dichloroethene	µg/L	3.4		3.72	
	trans-1,2-Dichloroethene	µg/L	0.2 J		0.586 U	
	Trichloroethene	µg/L	17		12.5 Q	
X701-06G	1,1-Dichloroethene	µg/L	6.6 D		5.95	
	cis-1,2-Dichloroethene	µg/L	26 D		43	
	trans-1,2-Dichloroethene	µg/L	1.4 DJ		1.41 J	
	Trichloroethene	µg/L	230 DJ		161 DQ	
	Vinyl chloride	µg/L	0.4 U		1.25 J	
X701-15G	1,1,1-Trichloroethane	µg/L	0.16 U		0.926 J	
	1,1,2,2-Tetrachloroethane	µg/L	0.21 U		1.38 J	
	1,1,2-Trichloroethane	µg/L	0.27 U		2.13	
	1,1-Dichloroethene	µg/L	0.3 J		0.86 U	
	cis-1,2-Dichloroethene	µg/L	250 D		521 DQ	
	trans-1,2-Dichloroethene	µg/L	3.4		21	
	Trichloroethene	µg/L	4.3		25 Q	
	Vinyl chloride	µg/L	0.26 J		17.9	
X701-19G	Acetone	µg/L	1.9 U		21.8 J	
	cis-1,2-Dichloroethene	µg/L	0.33 J		0.476 J	
	Trichloroethene	µg/L	2.7		5.62 Q	
X701-20G	1,1,2,2-Tetrachloroethane	µg/L	100 DJ		102 DJQ	
	Acetone	µg/L	1200 BDJ		669 DQU	
	Carbon disulfide	µg/L	98 DJ		58.2 DU	
	cis-1,2-Dichloroethene	µg/L	730 D		289 DQJ	
	Tetrachloroethene	µg/L	140 DJ		76.3 DQU	
	trans-1,2-Dichloroethene	µg/L	73 DJ		58.6 DU	
	Trichloroethene	µg/L	60000 DJ		14700 DQJ	
X701-21G	1,1,1-Trichloroethane	µg/L	16 U		19.5	
	1,1,2,2-Tetrachloroethane	µg/L	21 U		120	
	1,1,2-Trichloroethane	µg/L	27 U		18.7	
	1,1-Dichloroethane	µg/L	22 U		2.96	
	1,1-Dichloroethene	µg/L	23 U		1.02 J	
	1,2-Dichloroethane	µg/L	13 U		0.521 J	
	2-Butanone	µg/L	200 U		2.95 J	
	Acetone	µg/L	190 U		47.7	
Benzene	µg/L	16 U		0.394 J		

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-21G	Carbon tetrachloride	µg/L	19 U		1.98 J	
	Chloroform	µg/L	16 U		3.16	
	Chloromethane	µg/L	30 U		5.27	
	cis-1,2-Dichloroethene	µg/L	420 D		222 D	
	Tetrachloroethene	µg/L	26 DJ		69.7	
	trans-1,2-Dichloroethene	µg/L	72 DJ		98.7	
	Trichloroethene	µg/L	5700 D		13600 DQ	
	Vinyl chloride	µg/L	10 U		3.57	
X701-23G	cis-1,2-Dichloroethene	µg/L			0.991 J	
	Trichloroethene	µg/L			10.8 Q	
X701-24G	1,1,1-Trichloroethane	µg/L	3.2 U		1.01 J	
	1,1,2,2-Tetrachloroethane	µg/L	4.2 U		1.32 J	
	1,1,2-Trichloroethane	µg/L	5.4 U		2.42	
	1,1-Dichloroethene	µg/L	8.9 DJ		7.98	
	1,2-Dichloroethane	µg/L	2.6 U		0.417 J	
	1,2-Dimethylbenzene	µg/L	3.8 U		0.705 J	
	cis-1,2-Dichloroethene	µg/L	2400 D		2260 D	
	trans-1,2-Dichloroethene	µg/L	14 DJ		19.3	
	Trichloroethene	µg/L	780 D		348 DQ	
	Vinyl chloride	µg/L	79 D		49.5	
X701-25G	Trichloroethene	µg/L	0.53 J		0.16 U	
X701-30G	Trichloroethene	µg/L	1.8		1.24	
	Trichlorofluoromethane	µg/L	0.29 U		0.409 J	
X701-38G	1,2-Dichlorobenzene	µg/L			0.17 J	
	Acetone	µg/L			2.1 J	
	Chloroform	µg/L			0.21 J	
X701-42G	1,1,1-Trichloroethane	µg/L			7.1 DJ	
	1,1,2,2-Tetrachloroethane	µg/L			11 DJ	
	Carbon disulfide	µg/L			6.7 DJ	
	Chloroform	µg/L			6.4 DJ	
	cis-1,2-Dichloroethene	µg/L			460 D	
	Tetrachloroethene	µg/L			11 DJ	
	trans-1,2-Dichloroethene	µg/L			56 D	
	Trichloroethene	µg/L			3600 D	
	Vinyl chloride	µg/L			16 DJ	
X701-48G	Acetone	µg/L			24.4 J	
X701-58B	1,2-Dimethylbenzene	µg/L			0.734 J	
	Ethylbenzene	µg/L			0.485 J	
	m,p-Xylenes	µg/L			0.94 J	
X701-61B	Trichloroethene	µg/L			0.7 JQ	
X701-66G	1,1-Dichloroethene	µg/L	2.3 U		2.9 DJ	
	1,2-Dichloroethane	µg/L	1.3 U		2.2 DJ	
	Carbon disulfide	µg/L	1.7 U		1.7 DJ	
	Chloroform	µg/L	1.6 U		1.8 DJ	
	cis-1,2-Dichloroethene	µg/L	150 D		190 D	
	Tetrachloroethene	µg/L	2 DJ		3.2 DJ	
	trans-1,2-Dichloroethene	µg/L	3.3 DJ		3.4 DJ	
	Trichloroethene	µg/L	990 D		1300 DJ	
		Vinyl chloride	µg/L	5.5 DJ		15 D
X701-77G	Acetone	µg/L			52 DJ	



**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter	
X701-77G	cis-1,2-Dichloroethene	µg/L			28 DJ		
	Tetrachloroethene	µg/L			3.4 DJ		
	Trichloroethene	µg/L			1800 DJ		
X701-79G	Acetone	µg/L			5.4 DJ		
	cis-1,2-Dichloroethene	µg/L			5.1 D		
	Tetrachloroethene	µg/L			0.43 DJ		
X701-127G	Trichloroethene	µg/L			430 D		
	1,1,1-Trichloroethane	µg/L	64 U		4.45		
	1,1,2,2-Tetrachloroethane	µg/L	84 U		54.6		
X701-127G	1,1,2-Trichloroethane	µg/L	110 U		37.3		
	1,1-Dichloroethane	µg/L	88 U		0.987 J		
	1,1-Dichloroethene	µg/L	92 U		5.68		
	1,2-Dichloroethane	µg/L	52 U		0.961 J		
	Carbon tetrachloride	µg/L	76 U		1.46 J		
	Chloroform	µg/L	64 U		4.21		
	cis-1,2-Dichloroethene	µg/L	370 DJ		97.2 DJ		
	Tetrachloroethene	µg/L	80 U		23.9		
	trans-1,2-Dichloroethene	µg/L	60 U		10.5		
	Trichloroethene	µg/L	24000 D		11500 DQ		
	Vinyl chloride	µg/L	40 U		0.954 J		
	X701-128G	1,1,1-Trichloroethane	µg/L	16 U		1.58 J	
		1,1,2,2-Tetrachloroethane	µg/L	21 U		2.74	
		1,1,2-Trichloroethane	µg/L	27 U		5.28	
		1,1-Dichloroethene	µg/L	23 U		2.92 J	
Chloroform		µg/L	16 U		0.652 J		
cis-1,2-Dichloroethene		µg/L	140 D		102		
Tetrachloroethene		µg/L	20 U		6.68		
trans-1,2-Dichloroethene		µg/L	15 U		2.36		
Trichloroethene		µg/L	11000 D		3690 DQJ		
Vinyl chloride		µg/L	10 U		1.17 J		
X701-130G	Chloroform	µg/L			140 DJ		
	cis-1,2-Dichloroethene	µg/L			400 D		
	Tetrachloroethene	µg/L			200 DJ		
	Trichloroethene	µg/L			73000 D		
X701-141G	cis-1,2-Dichloroethene	µg/L			1.74 J		
	Trichloroethene	µg/L			77.1 Q		
X701-142G	1,1,2,2-Tetrachloroethane	µg/L	8.4 U		1.3 J		
	1,1,2-Trichloroethane	µg/L	11 U		10.6		
	1,1-Dichloroethane	µg/L	8.8 U		0.749 J		
	1,1-Dichloroethene	µg/L	9.2 U		8.69		
	1,2-Dichloroethane	µg/L	5.2 U		0.778 J		
	cis-1,2-Dichloroethene	µg/L	2500 D		561 DQ		
	Tetrachloroethene	µg/L	8 U		1.52 J		
	trans-1,2-Dichloroethene	µg/L	28 DJ		46.1		
	Trichloroethene	µg/L	3500 D		3410 DQ		
	Vinyl chloride	µg/L	32 DJ		93		
X701-143G	1,1-Dichloroethene	µg/L	2.3 U		1.22 J		
	Carbon disulfide	µg/L	1.7 U		0.585 J		
	Chloroethane	µg/L	4.1 U		6.13		
	cis-1,2-Dichloroethene	µg/L	1100 D		710 DQ		

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-143G	trans-1,2-Dichloroethene	µg/L	2.9 DJ		2.23	
	Trichloroethene	µg/L	4.5 DJ		1.23 JQU	
	Vinyl chloride	µg/L	930 D		269 D	
X701-144G	1,1-Dichloroethene	µg/L	0.46 J			
	Carbon disulfide	µg/L	0.19 J			
	cis-1,2-Dichloroethene	µg/L	170			
	trans-1,2-Dichloroethene	µg/L	2.4			
	Trichloroethene	µg/L	1.2			
X701-BW2G	Vinyl chloride	µg/L	61			
	1,1,1-Trichloroethane	µg/L			4.21	
	1,1,2-Trichloroethane	µg/L			3.78	
	1,1-Dichloroethane	µg/L			3.81	
	1,1-Dichloroethene	µg/L			32.6	
	1,2-Dichloroethane	µg/L			0.653 J	
	Benzene	µg/L			0.969 J	
	Chloroform	µg/L			65.2	
	cis-1,2-Dichloroethene	µg/L			233 D	
	Tetrachloroethene	µg/L			17.5 Q	
	trans-1,2-Dichloroethene	µg/L			21.7	
	Trichloroethene	µg/L			14300 DQ	
	Vinyl chloride	µg/L			6.17	
	X701-BW3G	1,1-Dichloroethene	µg/L			1.18 J
Chloroethane		µg/L			0.908 J	
cis-1,2-Dichloroethene		µg/L			118	
Trichloroethene		µg/L			161 DQ	
X701-BW4G	Vinyl chloride	µg/L			8.38	
	Carbon disulfide	µg/L	0.17 U		0.18 J	
	cis-1,2-Dichloroethene	µg/L	6.4		11	
	trans-1,2-Dichloroethene	µg/L	0.35 J		0.82 J	
	Trichloroethene	µg/L	1.4		1.8	
X701-EW121G	Vinyl chloride	µg/L	0.1 U		0.6 J	
	cis-1,2-Dichloroethene	µg/L	340 D		128 DJQ	
	Tetrachloroethene	µg/L	92 DJ		76.3 DQU	
	trans-1,2-Dichloroethene	µg/L	30 DJ		58.6 DU	
X701-EW122G	Trichloroethene	µg/L	35000 D		14500 DQ	
	1,1,1-Trichloroethane	µg/L	160 U		34.1	
	1,1,2,2-Tetrachloroethane	µg/L	300 DJ		657 DJ	
	1,1,2-Trichloroethane	µg/L	270 U		65.6	
	1,1-Dichloroethane	µg/L	220 U		3.46	
	1,1-Dichloroethene	µg/L	230 U		4.77	
	1,2-Dichloroethane	µg/L	130 U		1.83 J	
	2-Butanone	µg/L	2000 U		18.1	
	Benzene	µg/L	160 U		0.889 J	
	Bromomethane	µg/L	210 U		1.88 J	
	Carbon tetrachloride	µg/L	190 U		2.72	
	Chloroform	µg/L	160 U		11.4	
	Chloromethane	µg/L	300 U		14.7	
	cis-1,2-Dichloroethene	µg/L	790 DJ		626 DJ	
Tetrachloroethene	µg/L	260 DJ		133		
Toluene	µg/L	170 U		0.428 J		

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-EW122G	trans-1,2-Dichloroethene	µg/L	150 U		113	
	Trichloroethene	µg/L	58000 D		47600 DQ	
	Vinyl chloride	µg/L	100 U		2.42 J	
X701-IRMPZ03G	1,1,2-Trichloroethane	µg/L	2 DJ		0.602 U	
	1,1-Dichloroethene	µg/L	1.3 DJ		1.77 J	
	cis-1,2-Dichloroethene	µg/L	560 D		586 D	
	trans-1,2-Dichloroethene	µg/L	5.8 D		5.7	
	Trichloroethene	µg/L	430 D		700 D	
	Vinyl chloride	µg/L	0.5 U		1.3 J	
X701-IRMPZ05G	1,1-Dichloroethene	µg/L	10 DJ			
	cis-1,2-Dichloroethene	µg/L	1900 D			
	trans-1,2-Dichloroethene	µg/L	12 DJ			
	Trichloroethene	µg/L	1700 D			
X701-IRMPZ06G	cis-1,2-Dichloroethene	µg/L	150		258 DQ	
	trans-1,2-Dichloroethene	µg/L	10		17.3	
	Trichloroethene	µg/L	4.9		2.63 Q	
	Vinyl chloride	µg/L	2.5		12.4	
X701-IRMPZ07G	cis-1,2-Dichloroethene	µg/L	8000 D			
	trans-1,2-Dichloroethene	µg/L	93 DJ			
	Trichloroethene	µg/L	52000 D			
	Vinyl chloride	µg/L	790 D			
X701-IRMPZ08G	1,1,2,2-Tetrachloroethane	µg/L	4.2 U		3.07	
	1,1,2-Trichloroethane	µg/L	5.4 U		2.47	
	cis-1,2-Dichloroethene	µg/L	1300 D		939 DQJ	
	Tetrachloroethene	µg/L	4 U		1.14 J	
	trans-1,2-Dichloroethene	µg/L	9.5 DJ		7.97	
	Trichloroethene	µg/L	2100 D		817 DQJ	
	Vinyl chloride	µg/L	2 U		1.8 J	
X701-TC01G	1,1,1-Trichloroethane	µg/L	32 DJ		72.2 DQU	
	cis-1,2-Dichloroethene	µg/L	4900 DJ		3290 DQ	
	trans-1,2-Dichloroethene	µg/L	94 DJ		95.5 DJ	
	Trichloroethene	µg/L	8500 DJ		8400 DQ	
	Vinyl chloride	µg/L	130 DJ		74.1 DQU	
X701-TC03G	1,1,2,2-Tetrachloroethane	µg/L	84 U		22 DJ	
	1,2-Dichloroethane	µg/L	52 U		23 DJ	
	Carbon disulfide	µg/L	67 U		29 DJ	
	Chloroform	µg/L	64 U		29 DJ	
	Chloromethane	µg/L	120 U		38 DJ	
	cis-1,2-Dichloroethene	µg/L	5700 D		6000 D	
	Tetrachloroethene	µg/L	80 U		45 DJ	
	trans-1,2-Dichloroethene	µg/L	750 D		400 D	
	Trichloroethene	µg/L	22000 D		19000 D	
	Vinyl chloride	µg/L	40 U		60 DJ	
X701-TC05G	1,1,1-Trichloroethane	µg/L	16 U		47 DJ	
	1,1,2,2-Tetrachloroethane	µg/L	57 DJ		40 DJ	
	Carbon disulfide	µg/L	17 U		13 DJ	
	Chloroform	µg/L	16 U		18 DJ	
	Chloromethane	µg/L	30 U		56 DJ	
	cis-1,2-Dichloroethene	µg/L	1600 D		1400 D	
	Tetrachloroethene	µg/L	27 DJ		22 DJ	

**Table 4.6. VOCs detected at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC05G	trans-1,2-Dichloroethene	µg/L	250 D		240 D	
	Trichloroethene	µg/L	9700 D		6800 D	
X701-TC10G	cis-1,2-Dichloroethene	µg/L	1100 D		340 D	
	Trichloroethene	µg/L	8000 DJ		3720 BDQJ	
X701-TC17G	1,1,1-Trichloroethane	µg/L	27 DJ		72.2 DQU	
	Chloroform	µg/L	28 DJ		61 DQU	
	cis-1,2-Dichloroethene	µg/L	230 D		113 DJ	
	Tetrachloroethene	µg/L	65 DJ		76.3 DQU	
X701-TC22G	Trichloroethene	µg/L	15000 D		8310 BDQ	
	1,1,2,2-Tetrachloroethane	µg/L	84 U		87.5 DJQ	
	cis-1,2-Dichloroethene	µg/L	420 D		221 DQ	
	Tetrachloroethene	µg/L	380 DJ		164 DJQ	
X701-TC28G	Trichloroethene	µg/L	62000 D		34500 DQ	
	1,1,2,2-Tetrachloroethane	µg/L	210 U		95.9 DJQ	
	cis-1,2-Dichloroethene	µg/L	510 DJ		165 DJ	
	Tetrachloroethene	µg/L	900 DJ		395 DQ	
X701-TC48G	Trichloroethene	µg/L	150000 D		18600 BDQ	
	1,1,2,2-Tetrachloroethane	µg/L	21 U		85.6 DJQ	
	Acetone	µg/L	540 DJ		669 DQU	
	cis-1,2-Dichloroethene	µg/L	78 DJ		74.9 DJ	
X701-TC54G	Tetrachloroethene	µg/L	37 DJ		76.3 DQU	
	Trichloroethene	µg/L	6200 D		7450 BDQ	
	1,1,2,2-Tetrachloroethane	µg/L	110 U		280 DJ	
	Carbon disulfide	µg/L	84 U		110 DJ	
	Chloroform	µg/L	80 U		120 DJ	
X701-TC61G	cis-1,2-Dichloroethene	µg/L	250 DJ		190 DJ	
	Tetrachloroethene	µg/L	100 U		200 DJ	
	Trichloroethene	µg/L	60000 DJ		48000 D	
	1,1,2,2-Tetrachloroethane	µg/L	450 DJ		400 DQ	
	Benzene	µg/L	200 DJ		37.8 DQU	
X701-TC67G	cis-1,2-Dichloroethene	µg/L	1100 D		628 DQ	
	Tetrachloroethene	µg/L	730 DJ		316 DQ	
	trans-1,2-Dichloroethene	µg/L	380 DJ		85.6 DJ	
	Trichloroethene	µg/L	120000 D		51500 DQ	
X744G-02G	cis-1,2-Dichloroethene	µg/L	1.8		1.97	
	Trichloroethene	µg/L	27		30.3	
X744G-03G	Trichlorofluoromethane	µg/L	2.6		3.09	
	cis-1,2-Dichloroethene	µg/L	0.97 J		0.959 J	
	Trichloroethene	µg/L	11		10.7	
	Trichlorofluoromethane	µg/L	0.4 J		0.657 J	

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-PZ06G	Technetium-99	pCi/L	-1.21 U			
	Uranium	µg/L	0.205 UJ			
	Uranium-233/234	pCi/L	0.128 UJ			
	Uranium-235/236	pCi/L	0.00923 UJ			
X230J7-01GA	Uranium-238	pCi/L	0.0675 U			
	Technetium-99	pCi/L	30.8			
	Uranium	µg/L	6.05 J			
	Uranium-233/234	pCi/L	1.91 J			
X230J7-02GA	Uranium-235/236	pCi/L	0.103 UJ			
	Uranium-238	pCi/L	2.02			
	Technetium-99	pCi/L	212			
	Uranium	µg/L	0.29 UJ			
X230J7-03GA	Uranium-233/234	pCi/L	0.259 UJ			
	Uranium-235/236	pCi/L	-0.00458 UJ			
	Uranium-238	pCi/L	0.0982 UJ			
	Americium-241	pCi/L	-0.00983 U			
X230J7-04GA	Neptunium-237	pCi/L	-0.0164 U			
	Plutonium-238	pCi/L	0.0205 U			
	Plutonium-239/240	pCi/L	0.00843 U			
	Technetium-99	pCi/L	118			
X230J7-04GA	Uranium	µg/L	0.397 UJ			
	Uranium-233/234	pCi/L	0.275 J			
	Uranium-235/236	pCi/L	0.0134 UJ			
	Uranium-238	pCi/L	0.131 UJ			
X230J7-04GA	Technetium-99	pCi/L			5.85 UJ	
	Uranium	µg/L			0.121 UJ	
	Uranium-233/234	pCi/L			0.029 UJ	
	Uranium-235/236	pCi/L			-0.002 UJ	
X701-01G	Uranium-238	pCi/L			0.041 U	
	Technetium-99	pCi/L	-0.793 U			
	Uranium	µg/L	4.38 J			
	Uranium-233/234	pCi/L	2.07 J			
X701-02G	Uranium-235/236	pCi/L	0.116 UJ			
	Uranium-238	pCi/L	1.45			
	Technetium-99	pCi/L	1.73 U			
	Uranium	µg/L	0.53 J			
X701-06G	Uranium-233/234	pCi/L	0.438 J			
	Uranium-235/236	pCi/L	0.0899 UJ			
	Uranium-238	pCi/L	0.164 UJ			
	Technetium-99	pCi/L	12			
X701-15G	Uranium	µg/L	2.11 J			
	Uranium-233/234	pCi/L	1.56 J			
	Uranium-235/236	pCi/L	0.0848 UJ			
	Uranium-238	pCi/L	0.695			
X701-16G	Technetium-99	pCi/L	0.507 U			
	Uranium	µg/L	0.115 UJ			
	Uranium-233/234	pCi/L	0.193 UJ			
	Uranium-235/236	pCi/L	0.0283 UJ			
X701-16G	Uranium-238	pCi/L	0.0342 U			
	Technetium-99	pCi/L	0.0394 U			

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-16G	Uranium	µg/L	0.0458 UJ			
	Uranium-233/234	pCi/L	0.196 UJ			
	Uranium-235/236	pCi/L	0.0145 UJ			
	Uranium-238	pCi/L	0.0131 U			
X701-18G	Technetium-99	pCi/L			1.116 QUJ	
	Uranium	µg/L			0.017 UJ	
	Uranium-233/234	pCi/L			0.008 UJ	
	Uranium-235/236	pCi/L			-0.002 UJ	
X701-19G	Uranium-238	pCi/L			0.006 U	
	Technetium-99	pCi/L	3.41 UJ			
	Uranium	µg/L	0.146 UJ			
	Uranium-233/234	pCi/L	0.131 UJ			
X701-20G	Uranium-235/236	pCi/L	0.0368 UJ			
	Uranium-238	pCi/L	0.0433 U			
	Americium-241	pCi/L	-0.00365 U		0.024 U	
	Neptunium-237	pCi/L	0.0853 UJ		-0.00477 U	
	Plutonium-238	pCi/L	0.0344 U		0.019 U	
	Plutonium-239/240	pCi/L	0.016 U		0.012 *QUJ	
	Technetium-99	pCi/L	141		129.57	
	Uranium	µg/L	0.221 UJ		0.261 J	
X701-21G	Uranium-233/234	pCi/L	0.179 UJ		0.073 J	
	Uranium-235/236	pCi/L	0.0342 UJ		0.017 UJ	
	Uranium-238	pCi/L	0.0691 U		0.085 J	
	Technetium-99	pCi/L	412			
	Uranium	µg/L	0.26 UJ			
	Uranium-233/234	pCi/L	0.188 UJ			
	Uranium-235/236	pCi/L	0.0161 UJ			
	Uranium-238	pCi/L	0.0849 UJ			
X701-23G	Technetium-99	pCi/L			28.256 QJ	
	Uranium	µg/L			-0.049 UJ	
	Uranium-233/234	pCi/L			-0.005 UJ	
	Uranium-235/236	pCi/L			0.002 UJ	
X701-24G	Uranium-238	pCi/L			-0.017 U	
	Americium-241	pCi/L	-0.00265 U			
	Neptunium-237	pCi/L	0.0668 U			
	Plutonium-238	pCi/L	0.0179 UJ			
	Plutonium-239/240	pCi/L	0.0226 U			
	Technetium-99	pCi/L	-1.81 U			
	Uranium	µg/L	0.169 UJ			
	Uranium-233/234	pCi/L	0.233 J			
X701-25G	Uranium-235/236	pCi/L	0.0175 UJ			
	Uranium-238	pCi/L	0.054 U			
	Technetium-99	pCi/L	0.107 U			
	Uranium	µg/L	0.085 UJ			
X701-30G	Uranium-233/234	pCi/L	0.0722 UJ			
	Uranium-235/236	pCi/L	0.00298 UJ			
	Uranium-238	pCi/L	0.0281 U			
	Technetium-99	pCi/L	-0.242 U			
X701-30G	Uranium	µg/L	0.538 J			
	Uranium-233/234	pCi/L	0.265 J			

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-30G	Uranium-235/236	pCi/L	0.0259 UJ			
	Uranium-238	pCi/L	0.177 J			
X701-31G	Technetium-99	pCi/L			1.437 QU	
	Uranium	µg/L			0.448 J	
	Uranium-233/234	pCi/L			0.276 J	
	Uranium-235/236	pCi/L			0.011 UJ	
	Uranium-238	pCi/L			0.149 J	
X701-38G	Technetium-99	pCi/L			1.212 U	
	Uranium	µg/L			0.067 UJ	
	Uranium-233/234	pCi/L			0.083 J	
	Uranium-235/236	pCi/L			-0.001 UJ	
	Uranium-238	pCi/L			0.023 U	
X701-42G	Technetium-99	pCi/L			407.069 QJ	
	Uranium	µg/L			0.16 UJ	
	Uranium-233/234	pCi/L			0.037 UJ	
	Uranium-235/236	pCi/L			0.012 UJ	
	Uranium-238	pCi/L			0.052 UJ	
X701-48G	Americium-241	pCi/L			0.003 U	
	Neptunium-237	pCi/L			0.0159 UJ	
	Plutonium-238	pCi/L			0.006 U	
	Plutonium-239/240	pCi/L			-0.006 U	
	Technetium-99	pCi/L			12.609 J	
	Uranium	µg/L			0.17 UJ	
	Uranium-233/234	pCi/L			-0.003 UJ	
	Uranium-235/236	pCi/L			0 UJ	
X701-58B	Uranium-238	pCi/L			0.057 U	
	Technetium-99	pCi/L			0.816 U	
	Uranium	µg/L			0.126 UJ	
	Uranium-233/234	pCi/L			0.109 J	
	Uranium-235/236	pCi/L			0 UJ	
X701-61B	Uranium-238	pCi/L			0.042 U	
	Technetium-99	pCi/L			1.126 U	
	Uranium	µg/L			0.323 UJ	
	Uranium-233/234	pCi/L			0.111 UJ	
	Uranium-235/236	pCi/L			0.032 UJ	
X701-66G	Uranium-238	pCi/L			0.104 UJ	
	Americium-241	pCi/L	-0.00136 U		0.023 U	
	Neptunium-237	pCi/L	0.106 UJ		0.00569 U	
	Plutonium-238	pCi/L	0.0239 U		0.01 UJ	
	Plutonium-239/240	pCi/L	0.00796 U		0.002 *QUJ	
	Technetium-99	pCi/L	53.8		78.235	
	Uranium	µg/L	0.433 UJ		0.766 J	
	Uranium-233/234	pCi/L	0.499 J		0.342 J	
X701-77G	Uranium-235/236	pCi/L	-0.00375 UJ		0.06 J	
	Uranium-238	pCi/L	0.146 UJ		0.248	
	Technetium-99	pCi/L			22.105	
	Uranium	µg/L			0.112 U	
	Uranium-233/234	pCi/L			0.056 U	
	Uranium-235/236	pCi/L			-0.005 U	
	Uranium-238	pCi/L			0.038 U	

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-79G	Technetium-99	pCi/L			26.991	
	Uranium	µg/L			-0.008 U	
	Uranium-233/234	pCi/L			-0.003 U	
	Uranium-235/236	pCi/L			0 U	
X701-127G	Uranium-238	pCi/L			-0.003 U	
	Americium-241	pCi/L	-0.0124 U		0.066 U	
	Neptunium-237	pCi/L	0.144 UJ		0.00207 U	
	Plutonium-238	pCi/L	0.0147 U		0.011 U	
	Plutonium-239/240	pCi/L	0.0332 U		0.002 *QUJ	
	Technetium-99	pCi/L	70.1		86.859	
	Uranium	µg/L	0.174 UJ		0.125 UJ	
	Uranium-233/234	pCi/L	0.145 UJ		0.081 J	
	Uranium-235/236	pCi/L	0.00964 UJ		0.017 UJ	
	Uranium-238	pCi/L	0.0569 U		0.039 UJ	
	X701-128G	Americium-241	pCi/L	0.0012 U		
Neptunium-237		pCi/L	0.0496 UJ			
Plutonium-238		pCi/L	0.0276 UJ			
Plutonium-239/240		pCi/L	0.00681 U			
Technetium-99		pCi/L	20.5			
Uranium		µg/L	0.278 UJ			
Uranium-233/234		pCi/L	0.216 J			
Uranium-235/236		pCi/L	0.00713 UJ			
X701-130G	Uranium-238	pCi/L	0.0922 UJ			
	Technetium-99	pCi/L			944.069 QJ	
	Uranium	µg/L			2.947 J	
	Uranium-233/234	pCi/L			4.063 J	
	Uranium-235/236	pCi/L			0.212 J	
X701-BW1G	Uranium-238	pCi/L			0.957	
	Technetium-99	pCi/L			1.263 U	
	Uranium	µg/L			0.062 UJ	
	Uranium-233/234	pCi/L			0.024 UJ	
	Uranium-235/236	pCi/L			0.003 UJ	
X701-BW2G	Uranium-238	pCi/L			0.02 U	
	Technetium-99	pCi/L			1348.654 QJ	
	Uranium	µg/L			0.11 UJ	
	Uranium-233/234	pCi/L			0.053 UJ	
	Uranium-235/236	pCi/L			-0.004 UJ	
X701-BW3G	Uranium-238	pCi/L			0.038 U	
	Technetium-99	pCi/L			163.454 QJ	
	Uranium	µg/L			-0.046 UJ	
	Uranium-233/234	pCi/L			0.028 UJ	
	Uranium-235/236	pCi/L			-0.014 UJ	
X701-BW4G	Uranium-238	pCi/L			-0.013 U	
	Technetium-99	pCi/L	170			
	Uranium	µg/L	-0.0198 UJ			
	Uranium-233/234	pCi/L	0.0647 UJ			
	Uranium-235/236	pCi/L	0.0142 UJ			
X701-EW121G	Uranium-238	pCi/L	-0.00886 U			
	Technetium-99	pCi/L	86.6		74.527	
	Uranium	µg/L	0.229 UJ		0.22 J	



**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-EW121G	Uranium-233/234	pCi/L	0.0859 UJ		0.08 J	
	Uranium-235/236	pCi/L	0.00812 UJ		0.013 UJ	
	Uranium-238	pCi/L	0.0757 UJ		0.072 J	
X701-EW122G	Technetium-99	pCi/L	266		204.304 QJ	
	Uranium	µg/L	0.478 J		0.547 J	
	Uranium-233/234	pCi/L	0.209 J		0.198 J	
	Uranium-235/236	pCi/L	0.005 UJ		-0.003 UJ	
X701-IRMPZ06G	Uranium-238	pCi/L	0.16 J		0.184 J	
	Technetium-99	pCi/L	0.233 U			
	Uranium	µg/L	1.42 J			
	Uranium-233/234	pCi/L	0.666 J			
X701-TC01G	Uranium-235/236	pCi/L	0.0581 UJ			
	Uranium-238	pCi/L	0.469			
	Americium-241	pCi/L	0.00104 U		-0.008 U	
	Neptunium-237	pCi/L	0.017 U		0.0277 UJ	
X701-TC03G	Plutonium-238	pCi/L	0.0131 U		0 U	
	Plutonium-239/240	pCi/L	0.0118 U		0.006 *QUJ	
	Technetium-99	pCi/L	85.8		175.798	
	Uranium	µg/L	8.28 J		5.927 J	
	Uranium-233/234	pCi/L	4.95 J		3.721 J	
	Uranium-235/236	pCi/L	0.25 J		0.18 J	
	Uranium-238	pCi/L	2.74		1.964	
	Americium-241	pCi/L	0.00477 U		0.023 U	
X701-TC05G	Neptunium-237	pCi/L	0.0774 UJ		0.00431 U	
	Plutonium-238	pCi/L	0 U		-0.011 UJ	
	Plutonium-239/240	pCi/L	0.00782 U		0.01 *QUJ	
	Technetium-99	pCi/L	564		467.078	
	Uranium	µg/L	3.96 J		4.905 J	
	Uranium-233/234	pCi/L	1.91 J		1.657 J	
	Uranium-235/236	pCi/L	0.0527 UJ		0.078 J	
	Uranium-238	pCi/L	1.32		1.636	
X701-TC10G	Americium-241	pCi/L	-0.0104 U		0.044 UJ	
	Neptunium-237	pCi/L	0.0492 U		0.00216 U	
	Plutonium-238	pCi/L	0.0326 UJ		0.032 UJ	
	Plutonium-239/240	pCi/L	0.0163 UJ		0.019 *QUJ	
	Technetium-99	pCi/L	596		477.674	
	Uranium	µg/L	27.9 J		25.091 J	
	Uranium-233/234	pCi/L	10.8 J		9.964 J	
	Uranium-235/236	pCi/L	0.65 J		0.62 J	
X701-TC17G	Uranium-238	pCi/L	9.28		8.336	
	Americium-241	pCi/L	-0.00768 U		0.015 U	
	Neptunium-237	pCi/L	0.137 UJ		0 U	
	Plutonium-238	pCi/L	0.0259 UJ		0.019 U	
	Plutonium-239/240	pCi/L	0.0155 U		0.005 U	
	Technetium-99	pCi/L	78.5		77.905 QJ	
	Uranium	µg/L	2.93 J		2.307 J	
	Uranium-233/234	pCi/L	1.05 J		0.833 J	
X701-TC17G	Uranium-235/236	pCi/L	0.0698 UJ		0.059 UJ	
	Uranium-238	pCi/L	0.974		0.766	
X701-TC17G	Americium-241	pCi/L	0.00529 U		0.039 U	

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC17G	Neptunium-237	pCi/L	0.115 UJ		-0.0123 U	
	Plutonium-238	pCi/L	0.0136 U		0.008 U	
	Plutonium-239/240	pCi/L	0.0272 U		0.06 UJ	
	Technetium-99	pCi/L	287		224.8 QJ	
	Uranium	µg/L	27.6 J		25.363 J	
	Uranium-233/234	pCi/L	11.2 J		9.797 J	
	Uranium-235/236	pCi/L	0.612 J		0.486 J	
	Uranium-238	pCi/L	9.18		8.448	
X701-TC22G	Americium-241	pCi/L	0.00198 U		0.021 U	
	Neptunium-237	pCi/L	0.102 U		0.00399 U	
	Plutonium-238	pCi/L	0.00149 U		0.012 U	
	Plutonium-239/240	pCi/L	0.0164 U		-0.005 *QUJ	
	Technetium-99	pCi/L	219		169.071	
	Uranium	µg/L	1.1 J		2.53 J	
	Uranium-233/234	pCi/L	0.505 J		0.963 J	
	Uranium-235/236	pCi/L	0.013 UJ		0.074 J	
X701-TC28G	Uranium-238	pCi/L	0.368		0.839	
	Americium-241	pCi/L	0.011 U		0.029 U	
	Neptunium-237	pCi/L	0.0263 UJ		-0.006 U	
	Plutonium-238	pCi/L	0.0257 U		0.011 U	
	Plutonium-239/240	pCi/L	0.00303 U		0.095 J	
	Technetium-99	pCi/L	298		245.969 QJ	
	Uranium	µg/L	9.93 J		10.952 J	
	Uranium-233/234	pCi/L	4.27 J		4.629 J	
X701-TC48G	Uranium-235/236	pCi/L	0.327 J		0.206 J	
	Uranium-238	pCi/L	3.28		3.649	
	Americium-241	pCi/L	-0.0014 U		0.009 UJ	
	Neptunium-237	pCi/L	0.0169 U		0.0292 U	
	Plutonium-238	pCi/L	0.0276 UJ		-0.023 U	
	Plutonium-239/240	pCi/L	0.00827 U		-0.009 U	
	Technetium-99	pCi/L	370		389.409 QJ	
	Uranium	µg/L	47.6 J		58.845 J	
X701-TC54G	Uranium-233/234	pCi/L	17.6 J		22.286 J	
	Uranium-235/236	pCi/L	0.937 J		0.943 J	
	Uranium-238	pCi/L	15.8		19.63	
	Americium-241	pCi/L	0.000174 U		0.025 U	
	Neptunium-237	pCi/L	0.0533 U		0.00193 U	
	Plutonium-238	pCi/L	-0.00187 U		0.01 UJ	
	Plutonium-239/240	pCi/L	0.0242 U		0.002 *QUJ	
	Technetium-99	pCi/L	330		269.198	
X701-TC61G	Uranium	µg/L	1.89 J		2.408 J	
	Uranium-233/234	pCi/L	0.779 J		0.883 J	
	Uranium-235/236	pCi/L	0.0456 UJ		0.112 J	
	Uranium-238	pCi/L	0.628		0.792	
	Americium-241	pCi/L	0.00743 U		0.003 U	
	Neptunium-237	pCi/L	0.0624 U		-0.00608 U	
	Plutonium-238	pCi/L	0.0219 U		0.012 U	
	Plutonium-239/240	pCi/L	0.00643 U		0.025 *QUJ	
	Technetium-99	pCi/L	334		235.917	
	Uranium	µg/L	1.2 J		0.743 J	

**Table 4.7. Results for radionuclides at the X-701B Former Holding Pond – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X701-TC61G	Uranium-233/234	pCi/L	0.46 J		0.293 J	
	Uranium-235/236	pCi/L	0.0304 UJ		0.026 UJ	
	Uranium-238	pCi/L	0.398		0.246	
X701-TC67G	Americium-241	pCi/L	0.00885 U		0.033 U	
	Neptunium-237	pCi/L	0.0758 U		-0.00412 U	
	Plutonium-238	pCi/L	-0.00145 U		0.002 U	
	Plutonium-239/240	pCi/L	0.013 U		-0.002 *QUJ	
	Technetium-99	pCi/L	45.5		40.785	
	Uranium	µg/L	0.144 UJ		0.226 J	
	Uranium-233/234	pCi/L	0.325 UJ		0.053 UJ	
	Uranium-235/236	pCi/L	-0.00358 UJ		0.009 UJ	
	Uranium-238	pCi/L	0.049 U		0.075 J	

**Table 4.8. Results for chromium at the X-633 Former Recirculating Cooling Water Complex – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X633-07G	Chromium	µg/L		93.3		355
X633-PZ04G	Chromium	µg/L		56.5		88.1

**Table 4.9. VOCs detected at the X-616 Former Chromium Sludge Surface Impoundments – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-02G	Acetone	µg/L	3.9 J			
X616-05G	Acetone	µg/L	4.3 J			
	Trichlorofluoromethane	µg/L	0.42 JQ			
X616-09G	1,1,1-Trichloroethane	µg/L	2.9		3 J	
	1,1-Dichloroethane	µg/L	3.1		3.3	
	1,1-Dichloroethene	µg/L	41		49 J	
	cis-1,2-Dichloroethene	µg/L	3.6		3 J	
	Trichloroethene	µg/L	28		33 J	
	Trichlorofluoromethane	µg/L	1.7 J		2.3	
X616-13G	1,1,1-Trichloroethane	µg/L	3.5		4.1	
	1,1-Dichloroethane	µg/L	1.3		1.7	
	1,1-Dichloroethene	µg/L	36		53	
	Chloroform	µg/L	0.16 U		0.19 J	
	cis-1,2-Dichloroethene	µg/L	0.76 J		1.1	
	Trichloroethene	µg/L	22		27	
	Trichlorofluoromethane	µg/L	12 Q		14	
X616-14G	1,1,1-Trichloroethane	µg/L	1.4		0.16 U	
	1,1-Dichloroethane	µg/L	0.22 U		0.5 J	
	1,1-Dichloroethene	µg/L	12		15	
	Acetone	µg/L	1.9 U		2.1 J	
	Trichloroethene	µg/L	4.2		4.2	
	Trichlorofluoromethane	µg/L	2.2		2.6	
X616-16G	1,1-Dichloroethene	µg/L	0.26 J			
	cis-1,2-Dichloroethene	µg/L	0.47 J			
	Trichloroethene	µg/L	0.78 J			
X616-20B	1,1,1-Trichloroethane	µg/L	0.62 J		0.16 U	
	1,1-Dichloroethane	µg/L	0.91 J		1.6	
	1,1-Dichloroethene	µg/L	15		24	
	cis-1,2-Dichloroethene	µg/L	0.98 J		1.2	
	Trichloroethene	µg/L	24		29	
X616-25G	1,1-Dichloroethane	µg/L	0.22 U		0.3 J	
	1,1-Dichloroethene	µg/L	0.23 U		0.34 J	
	cis-1,2-Dichloroethene	µg/L	0.54 J		0.61 J	
	Trichloroethene	µg/L	2		1.3	
X616-28B	1,1,1-Trichloroethane	µg/L	1			
	1,1-Dichloroethene	µg/L	0.59 J			
	Trichloroethene	µg/L	0.64 J			

**Table 4.10. Results for chromium at the X-616 Former Chromium Sludge Surface  
Impoundments – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X616-05G	Chromium	µg/L	2300 BJ			

**Table 4.11. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-02G	1,1-Dichloroethane	µg/L		1.66 J		
	1,1-Dichloroethene	µg/L		2.62 J		
	Trichloroethene	µg/L		3.5 Q		
X740-03G	1,1-Dichloroethane	µg/L		3.16		
	1,1-Dichloroethene	µg/L		39.3		
	1,2-Dichloroethane	µg/L		5.77		
	Chloroethane	µg/L		1.99 J		
	cis-1,2-Dichloroethene	µg/L		206 DQ		
	trans-1,2-Dichloroethene	µg/L		0.813 J		
	Trichloroethene	µg/L		1.03 JQ		
	Vinyl chloride	µg/L		7.32		
X740-08G	1,1-Dichloroethane	µg/L		11.5		
	1,1-Dichloroethene	µg/L		1.61 J		
	cis-1,2-Dichloroethene	µg/L		13.9 Q		
	trans-1,2-Dichloroethene	µg/L		3.86		
	Trichloroethene	µg/L		5.91 Q		
X740-09B	1,1,1-Trichloroethane	µg/L		3.34		
	1,1-Dichloroethane	µg/L		18.5		
	1,1-Dichloroethene	µg/L		185 D		
	1,2-Dichloroethane	µg/L		45.4		
	Chloroform	µg/L		0.628 J		
	cis-1,2-Dichloroethene	µg/L		1240 DQ		
	Tetrachloroethene	µg/L		3.94 Q		
	trans-1,2-Dichloroethene	µg/L		2.74		
	Trichloroethene	µg/L		208 DQ		
	Vinyl chloride	µg/L		6.2		
X740-10G	1,1-Dichloroethene	µg/L		3.51		
	1,2-Dichloroethane	µg/L		0.822 J		
	cis-1,2-Dichloroethene	µg/L		26.5 Q		
	Trichloroethene	µg/L		9.55 Q		
X740-11G	1,1-Dichloroethene	µg/L		5.86		
	1,2-Dichloroethane	µg/L		1.96 J		
	cis-1,2-Dichloroethene	µg/L		0.541 JQ		
	Trichloroethene	µg/L		22.8 Q		
X740-13G	cis-1,2-Dichloroethene	µg/L		0.396 JQ		
X740-14B	1,1-Dichloroethene	µg/L		1.11 J		
	Trichloroethene	µg/L		5.61 Q		
X740-18G	1,2-Dichloroethane	µg/L		0.552 J		
	cis-1,2-Dichloroethene	µg/L		11.1 Q		
	Vinyl chloride	µg/L		1.46 J		
X740-19G	1,1,1-Trichloroethane	µg/L		0.751 J		
	cis-1,2-Dichloroethene	µg/L		2.5		
	Trichloroethene	µg/L		1.81 J		
X740-20G	Trichloroethene	µg/L		0.688 J		
X740-21G	Trichloroethene	µg/L		0.922 J		
X740-22G	1,1-Dichloroethene	µg/L		2.77 J		
	1,2-Dichloroethane	µg/L		0.764 J		
	Bromodichloromethane	µg/L		1.28 J		
	cis-1,2-Dichloroethene	µg/L		4.25		
	Trichloroethene	µg/L		19.6		

**Table 4.11. VOCs detected at the X-740 Former Waste Oil Handling Facility – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X740-PZ10G	Trichloroethene	µg/L		1.88 J		
X740-PZ12G	1,1,1-Trichloroethane	µg/L		1.28 J		
	1,1-Dichloroethene	µg/L		2.66 J		
	1,2-Dichloroethane	µg/L		1.6 J		
	Trichloroethene	µg/L		35.4		
X740-PZ14G	1,1,1-Trichloroethane	µg/L		0.966 J		
	1,1-Dichloroethene	µg/L		3.99		
	1,2-Dichloroethane	µg/L		1.16 J		
	cis-1,2-Dichloroethene	µg/L		1.73 J		
	Trichloroethene	µg/L		27.5		
X740-PZ17G	1,1,1-Trichloroethane	µg/L		1.05 J		
	1,1-Dichloroethene	µg/L		2.3 J		
	1,2-Dichloroethane	µg/L		0.884 J		
	Trichloroethene	µg/L		12.5		



**Table 4.12. Results for beryllium and chromium at the X-611A Former Lime Sludge Lagoons – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-07G	Beryllium	µg/L	1.7		0.25 J	
	Chromium	µg/L	4.9		19	
F-08B	Beryllium	µg/L	0.08 U		0.14 J	
	Chromium	µg/L	0.5 U		0.5 U	
X611-01B	Beryllium	µg/L	0.08 U		0.08 U	
	Chromium	µg/L	1.7 J		2.2	
X611-02BA	Beryllium	µg/L	0.08 U		0.11 J	
	Chromium	µg/L	0.55 J		0.5 U	
X611-03G	Beryllium	µg/L	0.08 U		0.24 JQ	
	Chromium	µg/L	0.65 J		2.2 J	
X611-04BA	Beryllium	µg/L	0.27 J		0.11 J	
	Chromium	µg/L	0.5 U		1.9 J	

**Table 4.13. VOCs detected at the X-735 Landfills – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-02GA	1,1-Dichloroethane	µg/L		0.839 J		
X735-03G	Trichloroethene	µg/L		0.894 J		
X735-03GA	1,2-Dichlorobenzene	µg/L		0.592 J		
	trans-1,4-Dichloro-2-butene	µg/L		0.9 J		
X735-05GA	Styrene	µg/L		0.865 J		
X735-18B	Chloromethane	µg/L		0.739 J		

**Table 4.14. Results for radionuclides at the X-735 Landfills – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X735-03G	Technetium-99	pCi/L		-6.033 U		
	Uranium	µg/L		0.37 J		
	Uranium-233/234	pCi/L		0.167 J		
	Uranium-235/236	pCi/L		-0.002 UJ		
	Uranium-238	pCi/L		0.125 J		
X735-04G	Technetium-99	pCi/L		-3.286 U		
	Uranium	µg/L		0.13 UJ		
	Uranium-233/234	pCi/L		0.086 UJ		
	Uranium-235/236	pCi/L		0.011 UJ		
	Uranium-238	pCi/L		0.042 U		
X735-05G	Technetium-99	pCi/L		-0.697 U		
	Uranium	µg/L		0.474 J		
	Uranium-233/234	pCi/L		0.154 J		
	Uranium-235/236	pCi/L		0.003 UJ		
	Uranium-238	pCi/L		0.159 J		
X735-12G	Technetium-99	pCi/L		2.726 U		
	Uranium	µg/L		-0.001 UJ		
	Uranium-233/234	pCi/L		0.089 UJ		
	Uranium-235/236	pCi/L		-0.003 UJ		
	Uranium-238	pCi/L		0 U		

**Table 4.15. VOCs detected at the X-734 Landfills – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X734-05B	Benzene	µg/L		0.378 U		0.759 J
	Ethylbenzene	µg/L		0.464 U		0.275 J
	Toluene	µg/L		0.323 U		0.224 J
X734-14G	Chloromethane	µg/L		1.06 J		0.3 U
X734-16G	Acetone	µg/L		6.69 U		7.25 J
X734-18G	1,1,1-Trichloroethane	µg/L		0.74 J		0.16 U
X734-20G	1,1,1-Trichloroethane	µg/L		0.73 J		0.16 U
X734-23G	cis-1,2-Dichloroethene	µg/L		4.93		4.42
	trans-1,2-Dichloroethene	µg/L		0.586 U		0.332 J
	Vinyl chloride	µg/L		1.41 J		1.45

**Table 4.16. Results for cadmium and nickel at the X-533 Former Switchyard Complex – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
F-03G	Cadmium	µg/L		45.9		31.9 B
	Nickel	µg/L		528		361
TCP-01G	Cadmium	µg/L		12.7		8.41 B
	Nickel	µg/L		143		104
X533-03G	Cadmium	µg/L		30		36 B
	Nickel	µg/L		345		400

**Table 4.17. VOCs detected at the X-344C Former Hydrogen Fluoride Storage Building – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
X344C-01G	cis-1,2-Dichloroethene	µg/L	1.5			
	Trichloroethene	µg/L	0.51 J			

**Table 4.18. VOCs detected at surface water monitoring locations – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Acetone	µg/L	30	6.69 U	23.1 UJ	28.4
BRC-SW05	1,1,1-Trichloroethane	µg/L	0.16 U	0.767 J	0.722 JU	0.16 U
	1,4-Dichlorobenzene	µg/L	0.16 J	0.832 U	0.832 JU	0.16 U
	Acetone	µg/L	2.5 UJ	6.69 U	6.69 JU	2.39 J
EDD-SW01	1,1,2,2-Tetrachloroethane	µg/L	0.21 U	0.509 U	0.509 U	0.386 J
	1,1-Dichloroethene	µg/L	0.23 U	0.86 U	0.86 U	0.72 J
	Bromodichloromethane	µg/L	0.17 U	1.4 J	2.95	0.17 U
	Chloroform	µg/L	0.17 J	0.61 U	2 J	0.16 U
	cis-1,2-Dichloroethene	µg/L	4.1	2.45	0.439 J	101
	Dibromochloromethane	µg/L	0.17 U	1.23 J	2.84	0.17 U
	Tetrachloroethene	µg/L	0.2 U	0.763 U	0.763 U	0.521 J
	trans-1,2-Dichloroethene	µg/L	0.15 U	0.586 U	0.586 U	0.892 J
	Trichloroethene	µg/L	10	4.16	0.961 JQ	167
LBC-SW01	Bromodichloromethane	µg/L	0.17 U	0.369 U	2.49	0.17 U
	Chloroform	µg/L	0.16 U	0.61 U	1.3 J	0.16 U
	cis-1,2-Dichloroethene	µg/L	14	16.8	1.67 J	7.57
	Dibromochloromethane	µg/L	0.17 U	0.342 U	2.41	0.17 U
	Trichloroethene	µg/L	24	16.6	1.01 JQ	10.2
LBC-SW02	Bromodichloromethane	µg/L	0.17 U	0.369 U	1.99 J	0.17 U
	cis-1,2-Dichloroethene	µg/L	7.1	3.49	0.828 J	7.7
	Dibromochloromethane	µg/L	0.17 U	0.342 U	2.04	0.17 U
	Trichloroethene	µg/L	12	3.73	0.638 QU	10.7
LBC-SW03	Bromodichloromethane	µg/L	0.17 U	0.369 U	0.369 U	0.456 J
	Chloroform	µg/L	0.16 U	0.61 U	0.61 U	0.351 J
LBC-SW04	cis-1,2-Dichloroethene	µg/L	0.16 J	0.37 U	0.37 U	0.75 J
	Trichloroethene	µg/L	0.31 J	0.638 U	0.638 QU	0.825 J
NHP-SW01	Chloroform	µg/L	0.16 U	0.61 U	0.61 U	0.414 J
	Dibromochloromethane	µg/L	0.17 U	0.342 U	1.76 J	0.17 U
UND-SW01	1,1-Dichloroethene	µg/L	0.23 U	0.86 U	0.86 JU	0.542 J
	cis-1,2-Dichloroethene	µg/L	0.2 J	0.452 J	0.517 J	0.355 J
	Trichloroethene	µg/L	2.9	3.85	5.57 BUJ	3.41
UND-SW02	1,1-Dichloroethene	µg/L	0.23 U	0.86 U	0.86 JU	0.588 J
	cis-1,2-Dichloroethene	µg/L	0.15 U	0.37 U	0.37 JU	0.417 J
	Trichloroethene	µg/L	0.16 U	0.638 U	2.12 BUJ	3.41
WDD-SW01	Bromodichloromethane	µg/L	0.61 J	0.369 U	0.369 JQU	0.17 U
	Chloroform	µg/L	0.96 J	0.61 U	0.61 JU	0.16 U
	Dibromochloromethane	µg/L	0.94 J	0.342 U	0.342 JQU	0.17 U
WDD-SW02	2-Butanone	µg/L	2 U	1.26 U	1.63 J	2 U
WDD-SW03	Chloroform	µg/L	0.2 J	0.61 U	0.61 JU	0.16 U

**Table 4.19. Results for radionuclides at surface water monitoring locations – 2020**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
BRC-SW01	Americium-241	pCi/L		0 U		0.013 U
	Neptunium-237	pCi/L		0.022 *QU		0 U
	Plutonium-238	pCi/L		0.0043 U		0.044 U
	Plutonium-239/240	pCi/L		-0.0043 U		0.029 U
	Technetium-99	pCi/L	0.658 U	-0.34 U	1.904 QUJ	11.202 U
	Uranium	µg/L	1.45 J	0.767 J	0.222 J	0.827 J
	Uranium-233/234	pCi/L	1.22 J	0.684 J	0.322 J	0.696
	Uranium-235/236	pCi/L	0.0607 UJ	0.029 UJ	0.009 UJ	0.039 U
	Uranium-238	pCi/L	0.477	0.253	0.073 J	0.272
BRC-SW02	Americium-241	pCi/L		0.008 U		-0.011 U
	Neptunium-237	pCi/L		0.0073 *QU		0.00734 U
	Plutonium-238	pCi/L		0.0073 U		-0.018 U
	Plutonium-239/240	pCi/L		0.0073 U		0 U
	Technetium-99	pCi/L	1.14 U	-0.47 U	3.53 QUJ	0.622 U
	Uranium	µg/L	0.645 UJ	0.674 J	0.79 J	0.625 J
	Uranium-233/234	pCi/L	0.642 J	0.655 J	0.635 J	0.462
	Uranium-235/236	pCi/L	0.0464 UJ	0.033 UJ	0.039 J	0.023 U
	Uranium-238	pCi/L	0.21 J	0.221 J	0.259	0.206 J
BRC-SW05	Americium-241	pCi/L		-0.022 U		0.014 U
	Neptunium-237	pCi/L		-0.0077 *QU		-0.00238 U
	Plutonium-238	pCi/L		0.015 U		0.054 U
	Plutonium-239/240	pCi/L		0 U		0.027 U
	Technetium-99	pCi/L	-0.0559 U	-1 U	3.162 QUJ	2.058 U
	Uranium	µg/L	1.18 J	0.603 J	0.638 J	0.481 J
	Uranium-233/234	pCi/L	0.93 J	0.546 J	0.505 J	0.476
	Uranium-235/236	pCi/L	0.0647 UJ	0.008 UJ	0.019 UJ	0.015 U
	Uranium-238	pCi/L	0.387	0.202 J	0.212 J	0.159 J
EDD-SW01	Americium-241	pCi/L		0.002 U		-0.018 U
	Neptunium-237	pCi/L		0.018 U		-0.0085 U
	Plutonium-238	pCi/L		0.0087 U		0.002 U
	Plutonium-239/240	pCi/L		0 U		0.002 U
	Technetium-99	pCi/L	41.5	10	7.761 QJ	12.626
	Uranium	µg/L	4.97 J	1.306 J	0.396 J	2.441 J
	Uranium-233/234	pCi/L	8.71 J	3.023 J	0.833 J	3.744 J
	Uranium-235/236	pCi/L	0.6 UJ	0.117 UJ	0.047 UJ	0.166 J
	Uranium-238	pCi/L	1.58	0.421 J	0.126 J	0.794
LBC-SW01	Americium-241	pCi/L		0.006 U		0.022 U
	Neptunium-237	pCi/L		0.0037 *QU		-0.00909 U
	Plutonium-238	pCi/L		0 U		0.027 U
	Plutonium-239/240	pCi/L		0 U		0.002 U
	Technetium-99	pCi/L	9.77	7.8	5.049 *QUJ	1.378 U
	Uranium	µg/L	1.41 J	1.57 J	0.402 J	0.781 J
	Uranium-233/234	pCi/L	1.92 J	2.844 J	0.745 J	1.08 J
	Uranium-235/236	pCi/L	0.144 UJ	0.151 J	0.028 UJ	0.025 UJ
	Uranium-238	pCi/L	0.451	0.504	0.131 J	0.259
LBC-SW02	Americium-241	pCi/L		0.016 U		-0.011 U
	Neptunium-237	pCi/L		0.017 *QU		0.00398 U
	Plutonium-238	pCi/L		-0.0024 U		0.017 U
	Plutonium-239/240	pCi/L		-0.0024 U		0.019 U
	Technetium-99	pCi/L	8.68	8.4	4.971 *QUJ	3.579 U



**Table 4.19. Results for radionuclides at surface water monitoring locations – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
LBC-SW02	Uranium	µg/L	0.891 J	1.514 J	0.419 J	0.559 J
	Uranium-233/234	pCi/L	1.48 J	2.255 J	0.705 J	0.781 J
	Uranium-235/236	pCi/L	0.104 UJ	0.124 J	0.021 UJ	0.06 UJ
	Uranium-238	pCi/L	0.283	0.489	0.137 J	0.179 J
LBC-SW03	Americium-241	pCi/L		0.008 U		0.044 U
	Neptunium-237	pCi/L		0.013 *QU		-0.00853 U
	Plutonium-238	pCi/L		0.013 U		0.005 U
	Plutonium-239/240	pCi/L		0 U		0.008 U
	Technetium-99	pCi/L	-0.911 U	2.8 UJ	2.553 *QUJ	-0.459 U
	Uranium	µg/L	3.06 J	0.423 J	0.283 J	4.208 J
	Uranium-233/234	pCi/L	1.64 J	0.907 J	0.426 J	2.049 J
	Uranium-235/236	pCi/L	0.154 UJ	0.043 UJ	0.021 UJ	0.069 UJ
LBC-SW04	Uranium-238	pCi/L	1	0.136 J	0.092 J	1.403
	Americium-241	pCi/L		0.005 U		0.006 U
	Neptunium-237	pCi/L		0.0094 *QU		-0.0703 U
	Plutonium-238	pCi/L		0.0023 U		0.015 U
	Plutonium-239/240	pCi/L		-0.0047 U		0.008 U
	Technetium-99	pCi/L	5.62 J	2.2 UJ	4.823 *QUJ	-0.417 U
	Uranium	µg/L	1.44 J	0.564 J	0.968 J	1.072 J
	Uranium-233/234	pCi/L	1.52 J	0.984 J	0.615 J	0.843 J
	Uranium-235/236	pCi/L	0.127 UJ	0.022 UJ	0.024 UJ	0.036 UJ
	Uranium-238	pCi/L	0.465	0.186 J	0.322	0.355
NHP-SW01	Americium-241	pCi/L		0.004 U		0.002 U
	Neptunium-237	pCi/L		-0.003 *QU		-0.0668 U
	Plutonium-238	pCi/L		0.009 U		-0.015 U
	Plutonium-239/240	pCi/L		0.006 U		0.025 U
	Technetium-99	pCi/L	1.97 U	-0.89 U	1.227 *QUJ	1.043 U
	Uranium	µg/L	1.01 J	1.839 J	1.83 J	3.842 J
	Uranium-233/234	pCi/L	1.19 J	0.734 J	0.898 J	1.96 J
	Uranium-235/236	pCi/L	0.133 UJ	0.013 UJ	0.047 UJ	0.086 J
	Uranium-238	pCi/L	0.317	0.616	0.608	1.278
	UND-SW01	Americium-241	pCi/L		0.004 U	
Neptunium-237		pCi/L		-0.0092 *QU		0.00901 U
Plutonium-238		pCi/L		-0.014 U		0 U
Plutonium-239/240		pCi/L		-0.0046 U		-0.005 U
Technetium-99		pCi/L	-0.182 U	-0.49 U	0.503 QUJ	-1.271 U
Uranium		µg/L	2.19 J	2.515 J	1.789 J	1.855
Uranium-233/234		pCi/L	0.84 J	1.08 J	0.746 J	0.802
Uranium-235/236		pCi/L	0.13 UJ	0.04 UJ	0.023 UJ	0.021 U
Uranium-238		pCi/L	0.716	0.839	0.598	0.62
UND-SW02		Americium-241	pCi/L		0.007 U	
	Neptunium-237	pCi/L		0 U		0 U
	Plutonium-238	pCi/L		0 U		0.014 U
	Plutonium-239/240	pCi/L		-0.0028 U		-0.009 U
	Technetium-99	pCi/L	1.54 U	-0.85 U	1.739 QUJ	-0.355 U
	Uranium	µg/L	1.66 J	1.066 J	0.713 J	1.869
	Uranium-233/234	pCi/L	0.65 J	0.639 J	0.344 J	0.583
	Uranium-235/236	pCi/L	0.072 UJ	0.017 UJ	0.011 UJ	0.027 U
	Uranium-238	pCi/L	0.547	0.355	0.238 J	0.624
	WDD-SW01	Americium-241	pCi/L		0.038 U	

**Table 4.19. Results for radionuclides at surface water monitoring locations – 2020 (continued)**

Sampling Location	Parameter	Unit	First quarter	Second quarter	Third quarter	Fourth quarter
WDD-SW01	Neptunium-237	pCi/L		0.0076 *QU		-0.00532 U
	Plutonium-238	pCi/L		0.035 U		0.03 U
	Plutonium-239/240	pCi/L		-0.0051 U		-0.007 U
	Technetium-99	pCi/L	1.95 U	0.65 U	3.269 QUJ	-1.443 *U
	Uranium	µg/L	2.31 J	2.086 J	1.26 J	1.377 J
	Uranium-233/234	pCi/L	1.56 J	1.057 J	0.591 J	0.727 J
	Uranium-235/236	pCi/L	0.0723 UJ	0.037 UJ	0.032 J	0.032 UJ
	Uranium-238	pCi/L	0.763	0.695	0.419	0.458
WDD-SW02	Americium-241	pCi/L		0.032 U		0.009 U
	Neptunium-237	pCi/L		0.0024 *QU		0.00433 U
	Plutonium-238	pCi/L		0 U		-0.011 U
	Plutonium-239/240	pCi/L		0.0049 U		0.016 U
	Technetium-99	pCi/L	-0.775 U	-1.2 U	2.551 QUJ	-2.195 *U
	Uranium	µg/L	2.59 J	2.124 J	1.193 J	1.324 J
	Uranium-233/234	pCi/L	1.68 J	1.83 J	0.719 J	0.762 J
	Uranium-235/236	pCi/L	0.0823 UJ	0.085 UJ	0.058 J	0.02 UJ
WDD-SW03	Uranium-238	pCi/L	0.856	0.701	0.392	0.442
	Americium-241	pCi/L		0.023 U		0.007 U
	Neptunium-237	pCi/L		-0.006 U		0.0204 U
	Plutonium-238	pCi/L		-0.003 U		0.022 U
	Plutonium-239/240	pCi/L		0.012 U		0.009 U
	Technetium-99	pCi/L	1.29 U	-0.1 U	2.786 QUJ	4.016 U
	Uranium	µg/L	2.31 J	1.977 J	0.715 J	0.968 J
	Uranium-233/234	pCi/L	1.33 J	0.878 J	0.313 J	0.791 J
Uranium-235/236	pCi/L	0.0627 UJ	0.013 UJ	0.018 UJ	0.025 UJ	
Uranium-238	pCi/L	0.767	0.663	0.238 J	0.322	

## 5. REFERENCES

- DOE 2017. *Integrated Groundwater Monitoring Plan for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-0032&D10, U.S. Department of Energy, Piketon, OH, August.
- DOE 2021a. *2020 Groundwater Monitoring Report for the Portsmouth Gaseous Diffusion Plant, Piketon, Ohio*, DOE/PPPO/03-1018&D1, U.S. Department of Energy, Piketon, OH, March.
- DOE 2021b. *U.S. Department of Energy Portsmouth Gaseous Diffusion Plant Annual Site Environmental Report – 2020, Piketon, Ohio*, DOE/PPPO/03-1034&D1, U.S. Department of Energy, Piketon, OH, September.
- EPA 2006. *Data Quality Assessment: A Reviewer's Guide*, EPA QA/G-9R, U.S. EPA Office of Environmental Information, Washington D.C., February.

This page intentionally left blank.

DOE/PPPO/03-1035&D1

## **RECORD COPY DISTRIBUTION**

File—FBP RMDC—RC