REVISION 0

NORTH ST. LOUIS COUNTY SITES ANNUAL ENVIRONMENTAL MONITORING DATA AND ANALYSIS REPORT FOR CALENDAR YEAR 2018

ST. LOUIS, MISSOURI

JUNE 14, 2019

U.S. Army Corps of Engineers
St. Louis District Office
Formerly Utilized Sites Remedial Action Program

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prepared by

U.S. Army Corps of Engineers St. Louis District Office
Formerly Utilized Sites Remedial Action Program

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ACRONYMS AND ABBREVIATIONS

Ac	actinium
AEC	Atomic Energy Commission
Am	americium
amsl	above mean sea level
ARAR	applicable or relevant and appropriate requirement
ATD	alpha track detector
bgs	below ground surface
BOD	biological oxygen demand
BTOC	below top of casing
CEDE	committed effective dose equivalent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	*Code of Federal Regulations*
COC	contaminant of concern
COD	chemical oxygen demand
Cs	cesium
CSR	*Code of State Regulations*
CWC	Coldwater Creek
CY	calendar year
DCF	dose conversion factor
DHSS	Department of Health and Senior Services
DL	detection limit
DO	dissolved oxygen
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DQO	data quality objective
EDE	effective dose equivalent
EE/CA	engineering evaluation/cost analysis
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
EMDAR	Environmental Monitoring Data and Analysis Report
EMG	*Environmental Monitoring Guide for the St. Louis Sites*
EMICY18	*Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2018*
EMP	Environmental Monitoring Program
FUSRAP	Formerly Utilized Sites Remedial Action Program
Futura	Futura Coatings Company
HISS	Hazelwood Interim Storage Site
HZ	hydrostratigraphic zone
I	Interstate
IA	investigation area
ICP	inductively coupled plasma
ICRP	International Commission on Radiation Protection
K	potassium
KPA	kinetic phosphorescence analysis

ACRONYMS AND ABBREVIATIONS (Continued)

LCL_{95}	95 percent lower confidence limit
MARSSIM	*Multi-Agency Radiation Survey and Site Investigation Manual*
MDA	minimum detectable activity
MDC	minimum detectable concentration
MDL	method detection limit
MDNR	Missouri Department of Natural Resources
MED	Manhattan Engineer District
MSD	Metropolitan St. Louis Sewer District
NAD	normalized absolute difference
NC	North St. Louis County
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
ORNL	Oak Ridge National Laboratory
ORP	oxidation reduction potential
Pa	protactinium
PCB	polychlorinated biphenyl
PDI	pre-design investigation
QA	quality assurance
QAPP	quality assurance program plan
QC	quality control
QSM	*Department of Defense (DoD)/Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories*
Ra	radium
RA	remedial action
RCRA	Resource Conservation and Recovery Act
RG	remediation goal
RL	reporting limit
RME	reasonably maximally exposed
Rn	radon
ROD	*Record of Decision for the North St. Louis County Sites*
RPD	relative percent difference
S	test statistic
SAG	*Sampling and Analysis Guide for the St. Louis Sites*
SLAPS	St. Louis Airport Site
SLS	St. Louis Sites
SOP	standard operating procedure
SOR	sum of ratios
SS	settleable solid
SU	survey unit
SVP	St. Louis Airport Sites vicinity property (sample prefix designation)
TEDE	total effective dose equivalent
Th	thorium
TLD	thermoluminescent dosimeter
TPH	total petroleum hydrocarbon

ACRONYMS AND ABBREVIATIONS (Continued)

TSS	total suspended solid
U	uranium
UCL	upper confidence limit
UCL_{95}	95 percent upper confidence limit
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VQ	validation qualifier
VP	vicinity property
WRS	Wilcoxon Rank Sum

UNIT ABBREVIATIONS

Both English and metric units are used in this report. The units used in a specific situation are based on common unit usage or regulatory language (e.g., depths are given in feet, and areas are given in square meters). Units included in the following list are not defined at first use in this report.

°C	degree(s) Celsius (centigrade)
µCi/mL	microcurie(s) per milliliter
µg/L	microgram(s) per liter
µR	microRoentgen(s)
µS/cm	microSiemen(s) per centimeter
Ci	curie(s)
ft	foot/feet
g	gram(s)
L	liter(s)
m	meter(s)
m^2	square meter(s)
mg	milligram(s)
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MGD	million gallons per day
mL	milliliter(s)
mL/L/hour	milliliter(s) per liter per hour
mrem	millirem
mrem/pCi	millirem per picocurie
mV	millivolt(s)
NTU	nephelometric turbidity unit
pCi/µg	picocurie(s) per microgram
pCi/g	picocurie(s) per gram
pCi/L	picocurie(s) per liter
s.u.	standard unit
WL	working level
WLM	working level month
yd^3	cubic yard(s)

EXECUTIVE SUMMARY

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2018 applies to the North St. Louis County (NC) Sites, which are within the St. Louis Sites (SLS) (Figure 1-1) and under the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the implementation of the Environmental Monitoring Program (EMP) for the NC Sites. The NC Sites consist of the St. Louis Airport Site (SLAPS), SLAPS vicinity properties (VPs) (Figure 1-2), and the Latty Avenue Properties (i.e., the Hazelwood Interim Storage Site [HISS], Futura Coatings Company [Futura], and eight Latty Avenue VPs) (Figure 1-3). Additional environmental data were collected along Coldwater Creek (CWC), which flows adjacent to the SLAPS, near the HISS, and north of U.S. Interstate (I)-270 to the Missouri River. Environmental monitoring of various media at each of the NC Sites is required in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the commitments in the *Record of Decision for the North St. Louis County Sites* (ROD) (USACE 2005).

The purpose of this EMDAR is:

1. to document the environmental monitoring activities, and
2. to assess whether remedial actions (RAs) had a measurable environmental impact by:
    a. reporting the current condition of the NC Sites,
    b. summarizing the data collection effort for CY 2018, and
    c. providing an analysis of the environmental monitoring data to date.

The U.S. Army Corps of Engineers (USACE) St. Louis District collects comprehensive environmental data for decision-making and planning purposes. Environmental monitoring, performed as a Best Management Practice or as a component of RAs, serves as a critical component in the evaluation of the current status and potential future migration of residual contaminants.

All environmental monitoring required through implementation of the *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2018* (EMICY18) (USACE 2017) was conducted as planned during CY 2018. The evaluation of environmental monitoring data for all NC Sites demonstrates compliance with ROD (USACE 2005) goals and applicable or relevant and appropriate requirements (ARARs).

RADIOLOGICAL AIR MONITORING

Radiological air data were collected and evaluated at the NC Sites through airborne radioactive particulate, radon (indoor and outdoor), and gamma radiation monitoring, as required in the EMICY18 (USACE 2017). In addition to being used for environmental monitoring purposes, radiological air data were also used as inputs to calculate the total effective dose equivalent (TEDE) to the reasonably maximally exposed (RME) member of the public for the NC Sites.

Each TEDE calculated for the RME individual at each NC Site was 5.0 mrem or less per year. The calculated TEDEs are compliant with the 100 mrem per year limit provided in 10 *Code of Federal Regulations (CFR)* 20.1301.

The radiological air monitoring results conducted at the NC Sites demonstrate compliance with all ARARs for the NC Sites. The ARARs are described in Tables 2-1 through 2-4 of the EMICY18 (USACE 2017).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MONITORING

Discharge requirements for the NC Sites are currently set by the Missouri Department of Natural Resources (MDNR) National Pollutant Discharge Elimination System (NPDES) ARARs (permit-equivalent) document dated October 2, 1998 (MDNR 1998), and amended in a letter from the MDNR dated February 19, 2002 (MDNR 2002).

The storm-water sampling results for the NC Sites demonstrate compliance with the discharge limits described in Section 2.2.2 of the EMICY18 (USACE 2017).

EXCAVATION-WATER DISCHARGE MONITORING AT THE NORTH ST. LOUIS COUNTY SITES

CY 2018 was the 17th year excavation water was treated and discharged from the NC Sites. Excavation water discharged from the NC Sites to the sanitary sewer system is subject to the requirements stated in the July 23, 2001, Metropolitan St. Louis Sewer District (MSD) authorization letter (MSD 2001) and the selenium discharge variance letter for the SLAPS dated February 10, 2005 (MSD 2005). This authorization was extended for 2 years through the issuance of a letter dated June 11, 2018, from Mr. Steve Grace to Mr. Bruce Munholand. This authorization expires on July 23, 2020 (MSD 2018a). The selenium discharge variance for the SLAPS was not utilized in CY 2018 (MSD 2005 and 2012). There is no longer a requirement to analyze for barium, lead, or selenium after the first two batches from new investigative areas (MSD 2012).

Waste water from the USACE St. Louis District FUSRAP Radioanalytical Laboratory is discharged in accordance with the MSD discharge authorization letter dated February 7, 2018 (MSD 2018b). The special discharge authorization was extended to February 7, 2020.

The data collected at the NC Sites were compared to discharge limits described in Section 2.2.2 of the EMICY18 (USACE 2017). During CY 2018, no exceedances of the discharge limits occurred at the USACE St. Louis FUSRAP laboratory or the NC Sites.

COLDWATER CREEK MONITORING

The CY 2018 CWC surface-water and sediment sampling events, which were completed in April and October of 2018, evaluated the physical, radiological, and chemical conditions in the creek. During the April and October sampling events, samples were collected at each of the eight surface-water and sediment sampling locations (C002 through C009). These sampling locations are shown on Figure 3-3. The data collected were compared to the monitoring guidelines and/or remediation goals (RGs) described in Section 2.2.3 of the EMICY18 (USACE 2017).

The results of the surface-water and sediment sampling conducted in CWC demonstrate compliance with ARARs for the NC Sites.

GROUND-WATER MONITORING

Ground water was sampled during CY 2018 at the NC Sites following a protocol for individual wells and analytes. Ground water was analyzed for various radiological constituents and for inorganic parameters. Static ground-water elevations for all NC Site wells were measured quarterly.

The environmental sampling requirements and ground-water monitoring guidelines for each analyte are consistent with the EMICY18 (USACE 2017) and were used for comparison and discussion purposes. The ROD ground-water monitoring guidelines (henceforth referred to as ROD guidelines) for assessing ground-water sampling data at the NC Sites (Latty Avenue Properties and the SLAPS and SLAPS VPs) are presented in Section 2.2.4 of the EMICY18 (USACE 2017) and in Section 4.0 and Appendix F of this EMDAR. For those wells at which an analyte exceeded the ROD guidelines at least once during CY 2018 and sufficient data were available to evaluate trends, Mann-Kendall Trend Tests were completed to assess whether analyte concentrations were increasing or decreasing through time.

LATTY AVENUE PROPERTIES

Ground-water sampling was conducted at three hydrostratigraphic zone (HZ)-A ground-water monitoring wells at the Latty Avenue Properties during CY 2018. Contaminant of concern (COC) concentrations in one well (molybdenum and selenium in HISS-10) exceeded the ROD guideline in HZ-A ground water at the Latty Avenue Properties during CY 2018. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water.

Ground-water samples were collected from one HZ-C well (HW23) during CY 2018. Concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in CY 2018 ground-water samples from the HZ-C well HW23.

The Mann-Kendall Trend Test was performed for two COCs in one HZ-A well (molybdenum and selenium in HISS-10) during CY 2018. A statistically significant increasing trend was identified for molybdenum concentrations, and no statistically significant trend was identified for selenium concentrations in HISS-10.

Concentrations of all soil COCs were below the NC ROD ground-water criteria in CY 2018 ground-water samples from the HZ-C well HW23. Therefore, a trend analysis was not conducted for HZ-C ground water.

The potentiometric data indicate some mounding of HZ-A ground water at the HISS and Futura. Wells HISS-01 and HISS-10 have the highest potentiometric surface elevations, with lower ground-water elevations measured in the surrounding wells. At the western edge of the HISS and Futura, ground water in HZ-A flows to the west toward CWC.

The potentiometric surface of the HZ-C ground water at the Latty Avenue Properties is not well defined due to the limited data available for the deeper HZs. Based on measured ground-water elevations in the HZ-C monitoring well HW23 at the Latty Avenue Properties and several HZ-C wells located to the southwest at the SLAPS and SLAPS VPs, the flow direction in HZ-C ground water beneath the Latty Avenue Properties is generally toward the east-northeast.

ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES

At the SLAPS and SLAPS VPs, 13 ground-water wells were sampled for various parameters during CY 2018. Nine (9) wells, screened in HZ-A, were sampled at the SLAPS and the adjacent SLAPS VP ballfields. Three inorganic analytes (chromium, nickel, and vanadium) and one radiological contaminant (total uranium [U]) were detected in HZ-A ground water at concentrations in excess of the ROD guidelines. A comparison of the data indicates that only total U concentrations in PW46 exceeded the ROD guidelines for a period of at least 12 months. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and

SLAPS VPs in CY 2018. However, because total U levels exceeded the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent 5-year reviews.

During CY 2018, four wells screened across the deeper HZs (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs. Concentrations of all chemical and radiological COCs were below the ROD ground-water criteria in samples collected from HZ-C through HZ-E ground water in CY 2018. Therefore, the CY 2018 HZ-C through HZ-E ground-water data from the SLAPS and SLAPS VPs indicate that significant degradation of lower ground water is not occurring.

The Mann-Kendall Trend Test was performed for chromium (B53W09S), nickel (B53W06S and B53W09S), and total U (PW46). Statistically significant increasing trends were observed for chromium in B53W06S and chromium and nickel in B53W09S. No trend was observed for total U in PW46.

Potentiometric surface maps were created from ground-water elevations measured in May and February to illustrate ground-water flow conditions in wet and dry seasons. The potentiometric data indicate ground-water flow northwesterly toward CWC in the HZ-A at the SLAPS. The flow direction in the HZ-C ground water at the SLAPS is generally east or northeast.

1.0 HISTORICAL SITE BACKGROUND AND CURRENT SITE STATUS

1.1 INTRODUCTION

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2018 applies to the North St. Louis County (NC) Sites, which are within the St. Louis Sites (SLS) (Figure 1-1), and under the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the implementation of the Environmental Monitoring Program (EMP) for the NC Sites. The NC Sites consist of the St. Louis Airport Site (SLAPS), SLAPS vicinity properties (VPs) (Figure 1-2), and the Latty Avenue Properties (i.e., the Hazelwood Interim Storage Site [HISS], the Futura Coatings Company [Futura], and eight Latty Avenue VPs) (Figure 1-3). Additional environmental data were collected along Coldwater Creek (CWC), which flows adjacent to the SLAPS, near the HISS, and north of U.S. Interstate (I)-270 to the Missouri River. Environmental monitoring of various media at each of the NC Sites is required in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the *Record of Decision for the North St. Louis County Sites* (ROD) (USACE 2005).

1.2 PURPOSE

The purpose of this EMDAR is to document the environmental monitoring activities and to assess whether remedial actions (RAs) at the NC Sites had a measurable environmental impact. In addition, this EMDAR serves to enhance the reader's awareness of the current condition of the NC Sites, summarize the data collection efforts for CY 2018, and provide analysis of the CY 2018 environmental monitoring data results. This EMDAR presents the following information:

- Sample collection data for various media at each site and interpretation of CY 2018 EMP results;
- The compliance status of each site with federal and state applicable or relevant and appropriate requirements (ARARs) or other benchmarks (e.g., *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2018* [EMICY18] [USACE 2017]);
- Dose assessments for radiological contaminants as appropriate;
- A summary of trends based on changes in contaminant concentration, to support RAs, ensure public safety, and maintain surveillance monitoring requirements at each site; and
- The identification of data gaps and future EMP needs.

1.3 ST. LOUIS SITE PROGRAM AND SITE BACKGROUND

The FUSRAP was executed by the U.S. Atomic Energy Commission (AEC) in 1974 to identify, remediate, or otherwise control sites at which residual radioactivity remains from operations conducted for the Manhattan Engineer District (MED) and AEC during the early years of the nation's atomic energy program. The FUSRAP was continued by the follow-on agencies to the AEC until 1997, when the U.S. Congress transferred responsibility for the FUSRAP to the U.S. Army Corps of Engineers (USACE).

On October 4, 1989, the SLAPS, the HISS, and Futura were placed on the U.S. Environmental Protection Agency (USEPA) National Priorities List (NPL) under the site name "St. Louis

Airport/Hazelwood Interim Storage/Futura Coatings Co." (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] No. MOD980633176). The three NPL sites have been involved with the following: refinement of uranium ores, production of uranium metal and compounds, uranium recovery from residues and scrap, and the storage and disposal of associated process byproducts.

Detailed descriptions and histories for each site can be found in the *Remedial Investigation Report for the St. Louis Site* (U.S. Department of Energy [DOE] 1994), *Remedial Investigation Addendum for the St. Louis Site* (DOE 1995), *St. Louis Airport Site (SLAPS) Interim Action Engineering Evaluation/Cost Analysis (EE/CA)* (DOE 1997), *Engineering Evaluation/Cost Analysis (EE/CA) and Responsiveness Summary for the St. Louis Airport Site (SLAPS)* (USACE 1998a), *Environmental Evaluation/Cost Analysis (EE/CA) for the Hazelwood Interim Storage Site (HISS)* (USACE 1998b), the *Environmental Monitoring Guide for the St. Louis Sites* (EMG) (USACE 1999a), and the ROD (USACE 2005).

During CY 2018, the following USACE documents were finalized for the NC Sites:

- *CY 2017 Fourth Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (February);
- *CY 2018 First Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (May);
- *Pre-Design Investigation Summary Report and Final Status Survey Evaluation for Vicinity Properties Ford-1, Ford-2, Ford-3, Ford-4, Ford-5, Ford-6, Ford-7, Ford-8, and Ford-9* (June 7);
- *North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for CY 2017* (June 21);
- *Post-Remedial Action Report and Final Status Survey Evaluation for the Coldwater Creek (CWC)-Floodplain Property CWC-56 (Partial)* (August 1);
- *Remedial Design/Remedial Action Work Description, Eva Avenue Reconstruction, Supplement No. 8 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites* (August 16);
- *CY 2018 Second Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (August);
- *Pre-Design Investigation Summary Report and Final Status Survey Evaluation for Coldwater Creek (CWC) Floodplain Properties CWC 65-82, CWC-56 Partial and Palm Drive* (September 13)*;*
- *Remedial Design/Remedial Action Work Description, Ballfields – Phase 3 and IA-10 Properties, Supplement No. 6 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites* (September 24);
- *CY 2018 Third Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (October);
- *Remedial Design/Remedial Action Work Description, Futura – Ameren Poles Area, Supplement No. 9 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites* (November 21); and

- *Environmental Monitoring Implementation Plan for the North St. Louis Sites for Calendar Year 2019* (December 20).

1.3.1 Latty Avenue Properties Calendar Year 2018 Remedial Actions

In CY 2018, an RA was performed at Futura, a Latty Avenue VP (Figure 1-2). The RA at Futura (i.e., power poles) was started and completed in the fourth quarter.

During CY 2018, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)* (DOD 2000) Class 1 verifications were performed at Futura (i.e., power poles, survey unit [SU]-1). No MARSSIM Class 2 or Class 3 verifications were performed at the Latty Avenue Properties in CY 2018. Verifications are performed to confirm the ROD remediation goals (RGs) were achieved. No characterization/pre-design investigation (PDI) was performed on Latty Avenue in CY 2018.

1.3.2 St. Louis Airport Site and St. Louis Airport Site Vicinity Properties Calendar Year 2018 Remedial Actions

In CY 2018, RAs were performed at the following SLAPS-related VPs and investigation areas (IAs) (Figure 1-2): Eva Avenue, the IA-09 Ballfields, and the Chez Paree Properties. RAs at the Chez Paree Properties started in the first quarter and were completed in the second quarter. RAs at Eva Avenue started and were completed in the fourth quarter. RAs at IA-09 continued through the fourth quarter. During these RAs, 19,181 yd^3 of contaminated material were shipped from the SLAPS IAs and VPs via railcar to *EnergySolutions* in Utah.

During CY 2018, MARSSIM Class 1 verifications were performed at Eva Avenue Properties (SU-1), the Chez Paree Properties (SU-1), and IA-09 (SU-09 through SU-15). No MARSSIM Class 2 or Class 3 verifications were performed at SLAPS-related VPs and IAs during CY 2018. Verifications were performed to confirm that ROD RGs were achieved.

Characterizations/PDIs were performed at the following SLAPS IAs and VPs in CY 2018: CWC and adjacent floodplain properties and structures; Seeger Road Properties; and the I-170 Right-of-Way.

In CY 2018, no Resource Conservation and Recovery Act (RCRA) hazardous waste was shipped, and no monitoring wells were decommissioned.

In accordance with the Metropolitan St. Louis Sewer District (MSD) authorization letter, 1,090,492 gallons of excavation water were discharged from the NC Sites in CY 2018. Since the beginning of the project, 32,584,239 gallons have been treated and released to MSD from the NC Sites.

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2.0 EVALUATION OF RADIOLOGICAL AIR MONITORING DATA

This section documents environmental monitoring activities related to radiological air data. The radiological air monitoring conducted at the NC Sites is part of the EMP. Radiological air data are collected to evaluate the compliance status of each site with ARARs, to evaluate trends, and to perform dose assessments for radiological contaminants as appropriate at each site. Section 2.1 includes a description of the types of radiological air monitoring conducted at the NC Sites, potential sources of the contaminants to be measured (including natural background), and measurement techniques employed during CY 2018.

All radiological air monitoring required through implementation of the EMICY18 (USACE 2017) was conducted as planned in CY 2018. The evaluations of radiological air monitoring data for all NC Sites demonstrate compliance with ARARs.

A total effective dose equivalent (TEDE) for the reasonably maximally exposed (RME) member of the public at each of the NC Sites was calculated by summing the dose due to gamma radiation, radiological air particulates, and radon, as applicable. The TEDE calculated for the RME individual at each of the NC Sites was less than or equal to 5.0 mrem per year. The calculated TEDE is compliant with the 100 mrem per year limit prescribed in 10 *Code of Federal Regulations (CFR)* 20.1301. Details of the radiological dose assessment (TEDE calculation) are presented in Section 6.0.

2.1 RADIOLOGICAL AIR MEASUREMENTS

The three types of radiological air monitoring conducted at the NC Sites in CY 2018 were gamma radiation, airborne radioactive particulates, and airborne radon. Sections 2.2 and 2.3 provide details of the air monitoring conducted at the Latty Avenue Properties and the SLAPS and SLAPS VPs.

2.1.1 Gamma Radiation

Gamma radiation is emitted from natural, cosmic, and manmade sources. The earth naturally contains gamma radiation-emitting substances, such as the uranium decay series, the thorium decay series, and potassium (K)-40. Cosmic radiation originates in outer space and filters through the atmosphere to the earth. Together, these two sources comprise the majority of natural gamma background radiation. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) estimates that the total naturally occurring background radiation dose equivalent due to gamma exposure is 65 mrem per year, 35 mrem per year of which originates from sources on earth and 30 mrem per year of which originates from cosmic sources (UNSCEAR 1982). The background monitoring location for the NC Sites (Figure 2-1) is reasonably representative of background gamma radiation for the St. Louis metropolitan area.

Gamma radiation was measured at the NC Sites in CY 2018 using thermoluminescent dosimeters (TLDs). TLDs were placed at site boundaries or at locations representative of areas accessible to the public in order to provide input for calculation of TEDE.

The TLDs were placed at the monitoring location approximately 5 ft above the ground surface inside a housing shelter. The TLDs were collected quarterly and sent to a properly certified, off-site laboratory for analysis.

2.1.2 Airborne Radioactive Particulates

2.1.2.1 Air Sampling

Airborne radioactive particulates result from radionuclides in soil that becomes suspended in the air. The radionuclides in soil normally become airborne as a result of wind erosion of the surface soil or as a result of soil disturbance (e.g., excavation). This airborne radioactive material includes naturally occurring background concentrations (Appendix B, Table B-1), as well as above-background concentrations of radioactive materials present at the NC Sites.

Airborne radioactive particulates were measured at the NC Sites by drawing air through a filter membrane with an air sampling pump placed approximately 3 ft above the ground and then analyzing the material contained on the filter. The results of the analysis, when compared to the amount of air drawn through the filter, were reported as radioactive contaminant concentrations (i.e., µCi/mL). Particulate air monitors were located at excavation and loadout area perimeter locations, as appropriate, to provide input for the National Emissions Standards for Hazardous Air Pollutants (NESHAP) Report and calculation of TEDE to the critical receptor. Air particulate samples were typically collected daily or the first working day after a weekend.

2.1.2.2 Estimation of Emissions in Accordance with the National Emission Standard for Hazardous Air Pollutants

The NC Sites CY 2018 NESHAP report (Appendix A) presents calculation of the effective dose equivalent (EDE) from radionuclide emissions to critical receptors in accordance with the NESHAP. The report is prepared in accordance with the requirements and procedures contained in 40 *CFR* 61, Subpart I.

Emission rates calculated using air sampling data, activity fractions, and other site-specific information were used as inputs to the USEPA CAP88-PC Version 4.0 modeling code (USEPA 2014) to demonstrate compliance with the 10 mrem per year ARAR prescribed in 40 *CFR* 61, Subpart I.

CY 2018 monitoring results for the NC Sites demonstrate compliance with the 10 mrem per year ARAR prescribed in 40 *CFR* 61, Subpart I. See Appendix H for further details.

2.1.3 Airborne Radon

Uranium (U)-238 is a naturally occurring radionuclide commonly found in soil and rock. Radon (Rn)-222 is a naturally occurring radioactive gas found in the uranium decay series. A fraction of the radon produced from the radioactive decay of naturally occurring U-238 diffuses from soil and rock into the atmosphere, accounting for natural background airborne radon concentrations. In addition to this natural source, radon is produced from the above-background concentrations of radioactive materials present at the NC Sites.

Outdoor airborne radon concentration is governed by the emission rate and dilution factors, both of which are strongly affected by meteorological conditions. Surface soil is the largest source of radon. Secondary contributors include oceans, natural gas, geothermal fluids, volcanic gases, ventilation from caves and mines, and coal combustion. Radon levels in the atmosphere have been observed to vary with height above the ground, season, time of day, and location. The primary meteorological parameter governing airborne radon concentration is atmospheric stability; however, the largest variations in atmospheric radon occur spatially (USEPA 1987).

Radon alpha track detectors (ATDs) were used at the NC Sites to measure alpha particles emitted from radon and its associated decay products. Radon ATDs were co-located with environmental

TLDs approximately 5 ft above the ground surface in housing shelters at the site boundaries or at locations representative of areas accessible to the public. Outdoor ATDs were collected approximately every 6 months and sent to a properly certified off-site laboratory for analysis. Recorded radon concentrations are listed in pCi/L and are used to provide input for calculation of TEDE.

At the NC Sites, ATDs were also placed in locations within applicable structures to monitor for indoor radon exposure. The ATDs were placed in areas that represent the highest likely exposure from indoor radon. ATD locations were chosen with consideration given to known radium (Ra)-226 concentrations under applicable buildings and occupancy time at any one location within each building. Annual average indoor radon data in each applicable building were compared to the 40 *CFR* 192.12(b)(1) ARAR value of 0.02 working level (WL). In accordance with 40 *CFR* 192.12(b)(1), reasonable effort shall be made to achieve, in each habitable or occupied building, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. In any case, the radon decay product concentration shall not exceed 0.03 WL. Background indoor radon monitors were not necessary, because the regulatory standard of 0.02 WL includes background. Indoor ATDs were also collected approximately every 6 months and sent to a properly certified off-site laboratory for analysis.

CY 2018 monitoring results for the NC Sites demonstrate compliance with the 0.02 WL ARAR prescribed by 40 *CFR* 192.12(b)(1). See Section 2.2.4 for further details.

2.2 LATTY AVENUE PROPERTIES

Radiological air monitoring was conducted at Futura in CY 2018.

2.2.1 Evaluation of Gamma Radiation Data

External gamma radiation exposure from Latty Avenue Properties other than the VP-40A is considered negligible; therefore, environmental TLD monitoring was not conducted at Latty Avenue Properties other than VP-40A in 2018. Gamma radiation monitoring was performed at two locations along the railroad tracks on VP-40A (see Figure 2-2) and at the background location to compare on-site/off-site exposure and to provide input for calculation of TEDE to the critical receptor (Section 6.0) in CY 2018. A summary of TLD monitoring data for CY 2018 at VP-40A is shown in Table 2-1. TLD data are contained in Appendix B, Table B-3, of this EMDAR.

Table 2-1. Summary of VP-40A Gamma Radiation Data for CY 2018

Monitoring Location	Monitoring Station	First Quarter TLD Data		Second Quarter TLD Data		Third Quarter TLD Data		Fourth Quarter TLD Data		CY 2018 Net TLD Data (mrem/year)
		(mrem/quarter)								
		Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	
VP-40A	FA-2	22.0	3.7	23.5	4.0	23.2	1.9	22.1	1.4	11.0
	FA-3	16.7	0.0	19.1	0.0	20.3	0.0	17.5	0.0	0.0
Background	BA-1	18.8	---	19.8	---	21.5	---	20.8	---	---

[a] All quarterly data reported from the vendor have been normalized to exactly one quarter's exposure above background.
[b] CY 2018 net TLD data are corrected for background, shelter absorption (s/a = 1.075), and fade.
--- Result calculation not required for background data.
Cor. – Corrected
Rpt. – Reported

2.2.2 Evaluation of Airborne Radioactive Particulate Data

For the Latty Avenue Properties, air sampling for particulate radionuclides was conducted at the perimeter of the Futura excavation and loadout area during excavation activities. Air particulate data was used as inputs to the NESHAP Report (Appendix A) and calculation of TEDE to the critical receptor (Section 6.0). A summary of air particulate monitoring data for Latty Avenue Properties is shown in Table 2-2. Airborne radioactive particulate data are contained in Appendix B of this EMDAR.

Table 2-2. Summary of Latty Avenue Properties Airborne Radioactive Particulate Data for CY 2018

Monitoring Stations	Average Concentration (µCi/mL)[a]	
	Gross Alpha	Gross Beta
Futura	1.35E-15	4.78E-14
Background Concentration[b]	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided only for informational purposes.

2.2.3 Evaluation of Outdoor Airborne Radon Data

Outdoor exposure from Rn-222 from Latty Avenue Properties other than the VP-40A is considered negligible. Therefore, outdoor environmental Rn-222 monitoring was not conducted at Latty Avenue Properties other than VP-40A in 2018. For the Latty Avenue Properties, outdoor airborne radon monitoring was performed using ATDs placed along the railroad tracks on VP-40A. Two detectors were co-located with TLDs and an additional ATD was located just north of the other two ATDs, as identified on Figure 2-2. Background ATDs were used to compare on-site exposure and off-site background exposure. Outdoor airborne radon data was used as an input for calculation of TEDE to the critical receptor (Section 6). A summary of CY 2018 outdoor radon data at VP-40A is shown in Table 2-3. Outdoor ATD data are contained in Appendix B, Table B-2 of this EMDAR.

Table 2-3. Summary of VP-40A Outdoor Airborne Radon (Rn-222) Data for CY 2018

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)		
		01/09/18 to 07/03/18[a] (Uncorrected)	07/03/18 to 01/09/19[a] (Uncorrected)	Average Annual Concentration[b]
VP-40A	FA-1	0.3	0.2	0.05
	FA-2	0.5	0.2	0.15
	FA-3	0.2	0.5	0.15
Background	BA-1	0.2	0.2	---

[a] Detectors were installed and removed on the dates listed. Data are as reported from the vendor (gross data including background).
[b] Results reported from the vendor are typically time-weighted and averaged to estimate an annual average radon above-background concentration (in pCi/L).
--- Average annual concentration calculation not required for background.

2.2.4 Evaluation of Indoor Airborne Radon Data

Indoor radon monitoring was performed at Futura buildings using ATDs placed at several locations in each Futura building at a height of 5 ft (to approximate breathing zone conditions) to measure radon concentrations. The detectors were located as shown on Figure 2-2. The ATDs were installed in January of CY 2018 at each monitoring location, collected for analysis after approximately 6 months of exposure, and replaced with another set that represent radon exposure for the remainder of the year. Recorded radon concentrations (in pCi/L) were converted to a radon WL, and an indoor radon equilibrium factor of 0.4 (NCRP 1988) was applied.

The results (including background) were evaluated based on the criteria contained in 40 *CFR* 192.12(b)(1). The average annual radon concentration was less than the 40 *CFR* 192.12(b)(1) criterion of 0.02 WL in each building (Leidos 2019a). Table 2-4 includes additional details of the data and calculation methodology used to determine the indoor radon WL in the Futura buildings. Indoor ATD data are contained in Appendix B, Table B-2, of this EMDAR.

Table 2-4. Summary of Futura Indoor Airborne Radon (Rn-222) Data for CY 2018

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)				WL[d]
		01/09/18 to 07/03/18[a]	07/03/18 to 01/03/19[a]	Annual Average[b]	Building Average[c]	
Futura Building 1	HF-1	2.2	2.7	2.45	3.1	0.012
	HF-2	5.8	6.8	6.30		
	HF-3	0.6	0.4	0.5		
Futura Building 2/3	HF-4	1.0	0.9	0.95	1.0	0.004
	HF-5	0.8	0.8	0.80		
	HF-6	0.8	1.1	0.95		
	HF-7	1.2	1.4	1.30		
Futura Building 4	HF-8	0.9	1.3	1.10	1.2	0.005
	HF-9	1.1	1.2	1.15		
	HF-10	1.1	1.4	1.25		

[a] Detectors were installed and removed on the dates listed. Data are as reported from the vendor.
[b] Results reported from the vendor for two periods are averaged to estimate an annual average radon above-background concentration (in pCi/L).
[c] In each building, the average annual result for each monitoring station within the building was used to calculate a building average.
[d] The average annual WL is calculated by dividing the average pCi/L by 100 pCi/L per WL and multiplying by 0.4. The average annual WL must be less than 0.02 (40 *CFR* 192.12(b)).

2.3 SLAPS AND SLAPS VICINITY PROPERTIES

Radiological air monitoring was conducted at Eva Avenue, the Ballfields (IA-09), and the Chez Paree Properties at the SLAPS and SLAPS VPs in CY 2018.

2.3.1 Evaluation of Gamma Radiation Data

External gamma radiation exposure from the SLAPS VPs is considered negligible; therefore, environmental TLD monitoring was not conducted. Gamma radiation monitoring was performed at the SLAPS in CY 2018 at four site locations surrounding the SLAPS Loadout area (Figure 2-3) and at the background location (Figure 2-1) to compare on-site/off-site exposure and to provide input for calculation of TEDE to the critical receptor (Section 6.0). The EMP uses two TLDs at monitoring station PA-2 (for each monitoring period) to provide additional quality control (QC) of the monitoring data.

A summary of TLD monitoring results for CY 2018 at the SLAPS is shown in Table 2-5. TLD data are contained in Appendix B, Table B-3, of this EMDAR.

Table 2-5. Summary of SLAPS Gamma Radiation Data for CY 2018

Monitoring Location	Monitoring Station	First Quarter TLD Data		Second Quarter TLD Data		Third Quarter TLD Data		Fourth Quarter TLD Data		CY 2018 Net TLD Data (mrem/year)
		(mrem/quarter)								
		Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	
SLAPS Perimeter	PA-1	18.3	0.0	20.9	1.2	19.3	0.0	20.6	0.0	1.2
	PA-2	21.8	3.5	24.5	5.1	23.9	2.6	23.9	3.3	14.6
	PA-2[c]	20.7	2.2	23.5	4.0	24.4	3.2	23.5	2.9	12.3
	PA-3	19.9	1.3	20.7	1.0	21.0	0.0	21.9	1.2	3.4
	PA-4	22.9	4.8	24.9	5.5	27.2	6.3	26.6	6.2	22.8

Table 2-5. Summary of SLAPS Gamma Radiation Data for CY 2018 (Continued)

Monitoring Location	Monitoring Station	First Quarter TLD Data		Second Quarter TLD Data		Third Quarter TLD Data		Fourth Quarter TLD Data		CY 2018 Net TLD Data (mrem/year)
		(mrem/quarter)								
		Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	
Background	BA-1	18.8	---	19.8	---	21.5	---	20.8	---	---

[a] All quarterly data reported from the vendor have been normalized to exactly one quarter's exposure.
[b] CY 2018 net TLD data are corrected for background, shelter absorption (s/a = 1.075), and fade.
[c] A QC duplicate is collected at the same time and location, and is analyzed by the same method for evaluating precision in sampling and analysis. Duplicate sample results were not included in calculations.
--- Result calculations are not required.
Cor. – Corrected
Rpt. – Reported

2.3.2 Evaluation of Airborne Radioactive Particulate Data

For the SLAPS and SLAPS VPs, air sampling for particulate radionuclides was conducted at the perimeter of each active excavation and loadout area throughout CY 2018. Air particulate data were used as inputs to the NESHAP report (Appendix A) and calculation of TEDE to the critical receptor (Section 6.0).

A summary of air particulate monitoring data for the SLAPS and SLAPS VPs is shown in Table 2-6. Airborne radioactive particulate data are contained in Appendix B, Table B-4, of this EMDAR.

Table 2-6. Summary of SLAPS Airborne Radioactive Particulate Data for CY 2018

Monitoring Location	Average Concentration (μCi/mL)[a]	
	Gross Alpha	Gross Beta
Eva Avenue	2.50E-15	3.72E-14
Ballfields (IA-09)	4.87E-15	3.19E-14
Chez Paree	3.55E-15	2.73E-14
SLAPS Loadout	4.06E-15	2.97E-14
Background Concentration[b]	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only.

2.3.3 Evaluation of Outdoor Airborne Radon Data

Exposure to Rn-222 from the SLAPS VPs is considered negligible; therefore, outdoor environmental Rn-222 monitoring was not conducted. Outdoor airborne radon monitoring was performed at the SLAPS using ATDs placed around the loadout area to measure radon emissions from the site. Four detectors were co-located with TLDs, as identified on Figure 2-3. One additional detector was located at monitoring station PA-2 as a QC duplicate. A background ATD was used to compare on-site exposure and off-site background exposure. Outdoor airborne radon data were used as an input for calculation of TEDE to the critical receptor (Section 6.0).

A summary of CY 2018 outdoor radon data at the SLAPS is shown in Table 2-7. Outdoor ATD data are contained in Appendix B, Table B-2, of this EMDAR.

Table 2-7. Summary of SLAPS Outdoor Airborne Radon (Rn-222) Data for CY 2018

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)		
		01/09/18 to 07/03/18[a] (Uncorrected)	07/03/18 to 01/03/19[a] (Uncorrected)	Average Annual Concentration[b]
SLAPS Perimeter	PA-1	0.2	0.2	0.0
	PA-2	0.2	0.2	0.0
	PA-2[c]	0.4	0.2	---
	PA-3	0.2	0.2	0.0
	PA-4	0.2	0.2	0.0
Background	BA-1	0.2	0.2	---

[a] Detectors were installed and removed on the dates listed. Data are as reported from the vendor (gross data including background).

[b] Results reported from vendor for two periods are time-weighted and averaged to estimate an annual average radon above-background concentration (in pCi/L).

[c] A QC duplicate is collected at the same time and location, and is analyzed by the same method for evaluating precision in sampling and analysis.

--- Result calculations are not required.

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3.0 EVALUATION OF EXCAVATION-WATER, STORM-WATER, SURFACE-WATER, AND SEDIMENT MONITORING DATA

This section provides a description of the excavation-water, storm-water, surface-water, and sediment monitoring activities conducted at the NC Sites, including the monitoring of CWC, in CY 2018. The results obtained from these monitoring activities are presented and evaluated with respect to historical data and the appropriate discharge limits as described in the EMICY18 (USACE 2017).

Section 2.2.2 of the EMICY18 outlines the discharge limits for the storm-water and excavation-water discharged at each site (USACE 2017). The MSD has issued discharge authorization letters for the NC Sites that established discharge-limit-based criteria (MSD 1998, 2001, 2006, 2008, 2010, 2012, 2014, 2016 and 2018a). The pollutants addressed for all NC Sites are identified in Table 2-5 of the EMICY18 (USACE 2017). The pollutants addressed in the National Pollutant Discharge Elimination System (NPDES) permit equivalent for the SLAPS will be applied at all NC Sites and are identified in Table 2-6 of the EMICY18 (USACE 2017). For cases in which the regulatory authorities have not provided radiological contaminant of concern (COC) discharge limits, the 10 *CFR* 20, Appendix B, water effluent values are used to calculate the sum of ratios (SOR) value for each discharge. Additionally, the SOR aids in the establishment of water management protocols. The Missouri Department of Natural Resources (MDNR) has also issued an ARAR document outlining limits for the storm-water outfalls at the SLAPS (MDNR 1998).

3.1 LABORATORY DISCHARGE, EXCAVATION-WATER, AND STORM-WATER DISCHARGE MONITORING

This section provides a description of the laboratory discharge water, excavation-water, and storm-water monitoring activities conducted at the NC Sites in CY 2018. The monitoring results obtained from these activities are presented and compared with the various authorization letters or permit-equivalent limits as presented in the EMICY18 (USACE 2017). The purpose of discharge monitoring at the NC Sites is to maintain compliance with the specific discharge requirements for each respective site.

3.1.1 Metropolitan St. Louis Sewer District Special Discharge Approval for the On-Site USACE St. Louis District FUSRAP Radioanalytical Laboratory

The USACE owns the on-site laboratory located at 8945 Latty Avenue in Hazelwood, Missouri. The laboratory operates in accordance with an MSD special discharge approval. The USACE St. Louis FUSRAP laboratory waste-water is discharged to MSD manhole 10K2-075S, which is shown on Figure 3-1. The MSD special discharge approval requires compliance with applicable discharge regulations (Ordinance 8472) (MSD 1991). The current special discharge approval extension was renewed on February 7, 2018, and expires February 7, 2020 (MSD 2018b).

3.1.2 Evaluation of Storm-Water Discharge Monitoring Results

In CY 2018, storm-water monitoring at the SLAPS was conducted to verify compliance with NPDES permit-equivalent requirements. There is one NPDES outfall located at the SLAPS. This outfall has been assigned the station identification PN02 for Outfall 002. PN02 is located at the termination of a drainage feature that conveys storm water along the north side of James S. McDonnell Boulevard to CWC (Figure 3-2).

In conjunction with the construction of a sedimentation basin during CY 1998, the MDNR issued discharge sampling requirements for three outfalls (PN01 [now terminated], PN02, and PN03 [now terminated]). The ARAR permit-equivalent document (MDNR 1998) requires monthly monitoring for flow, oil and grease, total petroleum hydrocarbons (TPHs), pH, settleable solids (SSs), and polychlorinated biphenyls (PCBs), as well as total recoverable arsenic, chromium, and cadmium. In addition, effluent monitoring for gross alpha, gross beta, protactinium (Pa)-231, actinium (Ac)-227, total Ra, total thorium (Th), and total U is required for each discharge event. Effluent monitoring for radon is required twice per year, but no monitoring events were performed in CY 2018. As outlined in a letter from the USACE to the MDNR dated November 18, 2003, chemical oxygen demand (COD) monitoring has been modified from quarterly to annually (USACE 2003).

On February 19, 2002, the MDNR issued a letter to the USACE conditionally agreeing with a request to reduce the sampling frequency at PN02 to once per year, effective February of 2002 until the drainage area becomes affected by soil disturbance such as excavation (MDNR 2002). The condition of the agreement is that the MDNR be notified prior to the soil in the area being disturbed. Sampling frequency at PN02 was temporarily reduced to annually, per USACE email on February 8, 2018. On April 19, 2018, USACE notified MDNR that the sampling frequency at PN02 was increased from annually (MDNR 2002) to monthly because remediation resumed at IA-09 (Ballfields). These emails are contained in Appendix C.

During 2018, un-named moving pumping outfalls were not utilized for the management of storm water with regard to sediment control and pumped excavation water. Moving outfalls are necessary to pump excess excavation water, which cannot be contained due to geographic conditions, to CWC. The excess excavation water is pumped to CWC in accordance with agreements made during a March 12, 2007, meeting with Mr. Tom Siegel of the MDNR, and as described in a subsequent letter from the USACE dated April 20, 2007 (USACE 2007). Excavation water sampling is conducted to verify compliance with the NPDES permit-equivalent requirements. The discharge parameters for the un-named outfalls follow the same NPDES parameters as Outfall 002.

Analytical results for the NC Sites are contained in Appendix C, Table C-1. Quarterly summaries of the CY 2018 storm-water monitoring events for the NC Sites are presented in the following subsections. NC Site storm-water monitoring results for CY 2018 are contained in Tables 3-1.

During CY 2018, rainfall data were obtained for the National Weather Service Lambert – St. Louis International Weather Station (Weather Underground, Inc. 2017), which is located adjacent to the NC Sites. Daily flow and rainfall data are contained in Appendix C, Table C-2.

First Quarter

During the first quarter (January, February, and March) of CY 2018, no NPDES samples were collected because no water was pumped.

Second Quarter

During the second quarter (April, May, and June) of CY 2018, no NPDES samples were collected because no water was pumped.

Table 3-1. Fourth Quarter CY 2018 NPDES Sampling Event[a]

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results		
				Outfall 002		
				Chemical Parameters		
	Daily Maximum	Monthly Average		October	November	December
Flow	Monitor only	Monitor only	MGD	e	e	f
Oil and Grease	15	10	mg/L	e	e	f
TPHs	10	10	mg/L	e	e	f
pH-Units	6.0-9.0	NA	s.u.	e	e	f
COD[b]	120	90	mg/L	e	e	f
SSs[c]	1.5	1.0	mL/L/hour	e	e	f
Arsenic, Total Recoverable	100	100	µg/L	e	e	f
Lead, Total Recoverable[d]	190	190	µg/L	e	e	f
Chromium, Total Recoverable	280	280	µg/L	e	e	f
Copper, Total Recoverable[d]	84	84	µg/L	e	e	f
Cadmium, Total Recoverable	94	94	µg/L	e	e	f
PCBs	No release	No release	µg/L	e	e	f
Event Sampling Date				Radiological Parameters[g,h,i]		
				Event 1	Event 2	
				12/15/18	12/31/18	
Total U[j,k]	Monitor only	Monitor only	µg/L	-7.E-01	-8.E-01	
Total Ra[j,k]	Monitor only	Monitor only	µg/L	-1.E-07	4.E-07	
Total Th[j,k]	Monitor only	Monitor only	µg/L	1.E+00	4.E+00	
Gross Alpha[j]	Monitor only	Monitor only	pCi/L	9.E+00	3.E+00	
Gross Beta[j]	Monitor only	Monitor only	pCi/L	6.E-01	5.E+00	
Pa-231[j]	Monitor only	Monitor only	pCi/L	-2.E+01	-2.E+01	
Ac-227[j]	Monitor only	Monitor only	pCi/L	-2.E+01	-1.E+01	
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	l	l	

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch or more of liquid in a 24-hour period that may also exceed the duration of 24 hours; two events experienced within 48 hours may be reported together.
[b] Per the USACE letter dated November 18, 2003, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[c] DL = 0.1 mL/L/hour.
[d] Lead and copper sampling are no longer necessary per the ROD.
[e] No sample is required, because no rain events producing measurable flow offsite occurred, and no pumping activities were performed.
[f] No pumping activities occurred in December, so only radiological samples were collected during natural flow.
[g] Value reported is based on a volume-weighted average of analyte activity concentrations for samples collected during the defined event. Corresponding radiological samples were collected on the same date as chemical samples; however, the radiological results are incorporated into the volume-weighted average for the specified event.
[h] Negative results are less than the laboratory system's background level.
[i] Ra-228 and Th-228 are assumed to be in secular equilibrium with Th-232; therefore, Th-232 results are used to estimate Ra-228 and Th-228 values.
[j] As specified in the permit-equivalent, radionuclides require monitoring only, and limits are not permit-specified.
[k] Total nuclide values (in µg/L) were calculated using the activity concentration values reported by the laboratory and values for specific activity listed in Table 8.4.1 of *The Health Physics and Radiological Health Handbook* (Shleien 1992).
[l] Semi-annual reporting requirement only.
NA – not applicable

Third Quarter

During the third quarter (July, August, and September) of CY 2018, no NPDES samples were collected because no water was pumped.

Fourth Quarter

During the fourth quarter (October, November, and December) of CY 2018, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-1). During the fourth quarter, two sampling events were conducted at Outfall PN02.

3.1.3 Evaluation of Excavation-Water Monitoring Results at the North St. Louis County Sites

On July 23, 2001, the MSD conditionally approved the discharge of treated excavation water to an MSD sanitary sewer manhole located at the SLAPS (MSD 2001). The current extension to the special discharge approval expires on July 23, 2020 (MSD 2018a). The primary condition of the approval requires a treatment system be installed, maintained, and operated to produce an effluent meeting the following standards: MSD ordinances 8472, 10177, and 10082 (MSD 1991, 1994, 1997); the U.S. Nuclear Regulatory Commission (NRC) requirements prescribed in 10 *CFR* 20, Appendix B; and the Missouri Department of Health and Senior Services (DHSS) requirements prescribed in 19 *Code of State Regulations (CSR)* 20-10. In addition, the MSD limits the annual allocation for radioactivity from the NC Sites to the MSD CWC treatment plant. The MSD establishes the maximum volume of excavation water discharge allowed in a 24-hour period and requires that the analytical results of the treated excavation water comply with applicable standards and limits prior to discharge. The evaluation of monitoring data demonstrates that all ARARs have been met. The selenium discharge variance for the SLAPS was not utilized in CY 2018 (MSD 2005, 2008, 2010, 2012, 2014, 2016, 2018a). There is no longer a requirement to analyze for barium, lead, or selenium after the first two batches from new investigative areas (MSD 2012). Analytical results of the treated water are contained in Appendix C, Table C-3.

In CY 2018, approximately 1,090,492 gallons of treated excavation water from 6 treatment batches were released to MSD manhole 10L3-043S, 09K2-007S, and 10K4-049S (Table 3-2). The discharge location is illustrated on Figure 3-2. Batches of treated excavation water were sampled and analyzed for MSD effluent criteria (Appendix C, Table C-3).

Table 3-2. Excavation Water Discharged at the NC Sites in CY 2018

Quarter	Number of Discharges	Number of Gallons Discharged[a]	Total Activity (Ci)		
			Thorium[b]	Uranium (KPA)[c]	Radium[d]
1	3	570,299	4.08E-06	2.64E-06	2.66E-06
2	1	139,374	7.49E-07	6.46E-07	5.17E-07
3	1	56,983	7.05E-07	1.32E-06	1.94E-07
4	1	323,836	1.72E-06	1.50E-06	9.93E-07
Total	6	1,090,492	7.25E-06	6.11E-06	4.37E-06

[a] Quantities based on actual quarterly discharges from NC Sites.
[b] Calculated value based on the addition of isotopic analyses for Th-228 and Th-230.
[c] Value based on total U results (kinetic phosphorescence analysis [KPA]).
[d] Calculated value based on the addition of isotopic analyses for Ra-226 and Ra-228.

3.2 COLDWATER CREEK MONITORING

RA monitoring of surface water and sediment in CWC is required until the creek has been remediated. The purpose of the monitoring is to document that RAs are having a positive effect on the creek and to provide additional data to assess whether CWC is being measurably affected by COC migration from hydrostratigraphic zone (HZ)-A.

The EMP for CWC evaluates the water quality and the radiological and chemical parameters present in surface water and sediment. Surface water and sediment are monitored for the radiological and chemical parameters specified as List 2 of Table 3-3 of the EMICY18 (USACE 2017). The water quality parameters are measured for surface water only.

The water quality parameters measured include pH, temperature, dissolved oxygen (DO), specific conductivity, oxidation reduction potential (ORP), and turbidity. The objectives of the EMP are as follows:

- to assess the quality of surface water and sediment in CWC;
- to compare the results with monitoring guidelines and/or ROD RGs as established for these media in the EMICY18 (USACE 2017); and
- to evaluate/determine if runoff from the SLAPS, the HISS, the SLAPS VPs, and the Latty Avenue Properties affects the quality of surface water and sediment in CWC.

The MDNR has designated CWC as a metropolitan no-discharge stream. Therefore, discharges are prohibited, except as specifically permitted under the water quality standard (10 *CSR* 20-7.031) and non-contaminated storm-water flows (10 *CSR* 20-7.015.1.A.4). CWC, from its crossing of U.S. Highway 67 (i.e., Lindbergh Boulevard) to its mouth at the Missouri River (a distance of roughly 5.5 miles), is a Class C stream. Class C streams may cease flow during dry periods but maintain permanent pools that support aquatic life (10 *CSR* 20-7.031.1.F.6). The upper reach of CWC south of U.S. Highway 67, which includes the SLAPS/HISS reach, is an unclassified water of the state.

Surface-water and sediment samples are collected from CWC on a semi-annual basis as part of the EMP (USACE 2017). The sampling events are conducted at eight CWC monitoring stations (C002 through C009). Locations of the eight monitoring stations are shown on Figure 3-3. Monitoring station C004, located between the SLAPS and the HISS, is used to monitor the potential water quality impacts from the SLAPS to CWC. Monitoring station C005 is used to monitor water quality downstream from the HISS and the Latty Avenue VPs. Monitoring station C009, located just upstream from the St. Denis Bridge in Coldwater Commons Park, is the farthest downstream monitoring station on CWC.

Note that other non-FUSRAP industrial discharges are relatively common along the sampled reaches of CWC; therefore, sample parameters could be influenced by existing industrial sources other than former MED/AEC operations.

3.2.1 Coldwater Creek Surface-Water Monitoring Results

Sampling of surface water at CWC was conducted at or below base flow elevation during the months of April and October in CY 2018. The base flow elevation for CWC at the McDonnell Boulevard Bridge is 508.2 ft above mean sea level (amsl). The base flow also may be approximated by a depth measurement of 3.2 ft or less at an “average cross section.” CWC surface-water monitoring included obtaining water quality parameters, as well as obtaining samples for metals and radionuclides listed in Table 3-3 of the EMICY18 (USACE 2017). Grab samples were collected and analyzed according to the protocol defined in the *Sampling and Analysis Guide for the St. Louis Sites* (SAG) (USACE 2000). In addition, isotopic U results were used to evaluate total U concentrations in surface water for comparison to the 30 µg/L monitoring guideline described in the ROD (USACE 2005).

All surface-water monitoring required through implementation of the EMICY18 was conducted as planned during CY 2018 (USACE 2017). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The sample results are contained in Appendix D, Table D-1, of this EMDAR.

Water Quality Parameters

Water quality data are collected as part of the routine performance of surface-water sampling and are used as part of the overall evaluation of water quality. The water quality results for each surface-water monitoring station are summarized in Table 3-3. The average surface-water temperatures during the April and October sampling events were 7.9 and 23.1 °C, respectively. The average surface-water pH values were 6.92 and 7.11, respectively. The average pH values for both sampling events were within the acceptance range (6.0 to 9.0) and thus provide suitable conditions for aquatic life.

Table 3-3. Water Quality Results for CY 2018 CWC Surface-Water Sampling

Monitoring Parameter	Unit	Monitoring Station								Average
		C002	C003	C004	C005	C006	C007	C008	C009	
First Sampling Event (04/09/18-04/10/18)										
Temperature	°C	8.7	9.2	8.1	7.4	7.4	7.6	7.8	7.1	7.9
pH	s.u.	7.37	7.35	7.05	6.75	6.31	6.90	6.95	6.69	6.92
DO	mg/L	9.80	10.71	10.57	10.82	12.53	13.50	13.85	14.40	12.02
Specific Conductivity	µS/cm	0.135	0.135	0.140	0.145	0.144	0.130	0.132	0.129	0.136
ORP	mV	197	203	204	214	233	212	202	205	209
Turbidity	NTU	11.9	4.7	7.8	7.9	29.3	28.7	18.3	32.1	18.0
Second Sampling Event (10/09/18)										
Temperature	°C	22.9	24.1	23.1	23.0	22.9	23.0	23.0	22.9	23.1
pH	s.u.	7.66	7.69	7.38	7.34	6.96	6.80	6.73	6.29	7.11
DO	mg/L	10.19	10.34	9.25	9.00	7.90	7.49	7.64	6.65	8.56
Specific Conductivity	µS/cm	72.5	82.4	77.0	68.8	60.0	49.5	44.4	34.9	61.2
ORP	mV	751	166	195	205	217	229	219	272	282
Turbidity	NTU	49.1	19.9	19.7	25.3	45.0	26.4	19.3	19.1	28.0

Note: Water quality data are used as part of the overall evaluation of water quality, but no ROD-defined monitoring criteria exist.

Average DO levels were 12.02 mg/L in April and 8.56 mg/L in October. Specific conductivity values were higher for the October event compared to the April event. The average specific conductivity for the April sampling event was 0.136 µS/cm, and the average specific conductivity for the October sampling event was 61.2 µS/cm. The average ORP value during the April sampling event (209 mV) was lower than that of the October sampling event (282 mV). The average turbidity value during the April sampling event (18.0 NTUs) was less than the October sampling event (28.0 NTUs).

Radiological Parameters

The radiological monitoring results for the CY 2018 CWC surface-water sampling events are summarized in Table 3-4. Historically, FUSRAP surface-water analysis has included unfiltered water samples for the following radiological parameters: Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. Unfiltered surface-water samples from CWC were not analyzed for Ra-228 during CY 2018, because Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.

Table 3-4. Radiological Results for CY 2018 CWC Surface-Water Sampling

Monitoring Parameter	Monitoring Stations							
	C002	**C003**	**C004**	**C005**	**C006**	**C007**	**C008**	**C009**
Radionuclide Concentration (pCi/L)								
First Sampling Event (04/09/18-04/10/18)								
Ra-226	<1.12[a]	<1.12[a]	<1.17[a]	<1.91[a]	<1.21[a]	<1.50[a]	<1.48[a]	<1.47[a]
Th-228[b]	<0.54[a]	<0.61[a]	<0.63[a]	<0.56[a]	<0.50[a]	<0.66[a]	<0.34[a]	<0.51[a]
Th-230	<0.40[a]	<0.38[a]	<0.36[a]	0.56	<0.33[a]	<0.54[a]	0.69	<0.48[a]
Th-232	<0.45[a]	<0.53[a]	<0.43[a]	<0.51[a]	<0.46[a]	<0.44[a]	<0.47[a]	<0.48[a]
U-234	0.974	1.12	0.912	1.01	0.721	1.02	1.26	0.776
U-235	<0.46[a]	<0.80[a]	<0.60[a]	<1.15[a]	<0.52[a]	<0.67[a]	<0.83[a]	<0.51[a]
U-238	<0.45[a]	0.59	1.29	1.64	0.76	1.07	1.18	0.44
Second Sampling Event (10/9/18)								
Ra-226	<1.59[a]	<0.96[a]	<1.12[a]	<1.09[a]	<0.33[a]	<1.13[a]	<1.21[a]	<1.05[a]
Th-228[b]	<0.46[a]	<0.48[a]	<0.42[a]	<0.45[a]	<0.46[a]	<0.65[a]	0.37	<0.53[a]
Th-230	0.45	<0.36[a]	<0.42[a]	<0.31[a]	0.41	<0.40[a]	<0.26[a]	<0.40[a]
Th-232	<0.38[a]	<0.30[a]	<0.39[a]	<0.34[a]	<0.28[a]	<0.37[a]	<0.38[a]	<0.45[a]
U-234	<0.36[a]	0.68	0.61	<0.58[a]	0.35	<0.34[a]	<0.35[a]	0.41
U-235	<0.32[a]	<0.23[a]	<0.21[a]	<0.48[a]	<0.24[a]	<0.22[a]	<0.43[a]	<0.82[a]
U-238	0.46	0.58	0.30	0. 78	<0.37[a]	<0.37[a]	<0.72[a]	<0.41[a]

[a] Reported result is less than the minimum detectable concentration (MDC) and is therefore set equal to the MDC.
[b] Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.
Note: Total U (30 µg/L) is the only ROD monitoring guideline for surface water. Radiological monitoring parameter data are collected to monitor COC migration and to calculate total U.

Surface-water data for U-234, U-235, and U-238 (reported in pCi/L) were converted to µg/L and compared to the 30 µg/L criterion for total U described in the ROD. The total U concentrations in surface water were significantly less than the 30 µg/L ROD criterion. A summary of the surface-water radiological data collected from CWC since April of 2008 is presented in Table 3-5.

Table 3-5. Comparison of Historical Radiological Surface-Water Results for CWC

Stations	Radionuclide	Units	04/08	11/08	04/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15	03/16	10/16	03/17	10/17	04/18	10/18
C002	Total U[a]	µg/L	3.2	2.2	1.6	3.3	2.4	2.3	2.3	3.8	1.9	2.0	2.43	2.64	4.11	1.53	3.33	2.04	3.15	3.96	3.23	2.40	1.70	1.14
	Ra-226	pCi/L	0.81	0.34	<0.39[b]	<0.48[b]	<0.17[b]	<1.51[b]	<2.14[b]	0.87	<1.47[b]	<1.44[b]	2.15	<2.50[b]	<2.04[b]	<1.30[b]	<1.21[b]	<1.11[b]	<1.35[b]	<1. 25[b]	<1.84[b]	1.33	<1.12[a]	<1.59[a]
	Th-228[c]	pCi/L	<0.20[a]	<0.40[a]	<0.59[b]	0.21	0.46	<0.78[b]	<0.52[b]	<0.55[b]	<0.59[b]	<0.45[b]	<0.87[b]	<0.53[b]	<0.55[b]	0.25	<0. 46[b]	<0.51[b]	<0.55[b]	<0.45[b]	<0. 30[b]	<0.42[b]	<0.54[a]	<0.46[a]
	Th-230	pCi/L	0.59	<0.40[a]	0.69	0.41	0.28	<0.68[b]	<0.52[b]	0.37	0.46	<0.45[b]	1.19	<0.65[b]	0.40	<0.38[b]	<0.46[b]	0.63	0.45	0.37	0.42	<0.42[b]	<0.40[a]	0.45
	Th-232	pCi/L	<0.20[a]	<0.18[a]	<0.59[b]	<0.41[b]	<0.19[b]	<0.68[b]	<0.17[b]	<0.20[b]	<0.42[b]	<0.20[b]	<0.32[b]	<0.24[b]	<0.18[b]	<0.17[b]	<0.21[b]	<0.19[b]	<0.20[b]	<0.20[b]	<0.13[b]	<0.19[b]	<0.45[a]	<0.38[a]
C003	Total U[a]	µg/L	4.4	3.6	3.9	3.4	5.4	2.3	6.0	3.4	2.8	2.8	4.09	1.97	2.49	1.68	1.80	2.95	4.91	1.82	2.91	1.71	2.52	1.87
	Ra-226	pCi/L	1.32	<0.49[a]	0.29	<.0.65[b]	<0.54[b]	<1.8[b]	<1.3[a]	<1.3[b]	<1.09[b]	<1.50[b]	1.62	<1.41[b]	<2.03[b]	<0.89[b]	<1.23[b]	<1.63[b]	<1.48[b]	<1.55[b]	<0.38[b]	<0.38[b]	<1.12[a]	<0.96[a]
	Th-228[c]	pCi/L	<0.44[a]	<0.33[a]	<0.50[b]	<0.48[b]	<0.63[b]	<0.60[b]	<0.53[a]	<0.50[b]	0.43	<0.54[b]	<0.38[b]	<0.44[b]	<0.26[b]	<0.56[b]	0.43	<0.41[b]	<0.73[b]	<0.54[b]	<0.41[b]	<0.19[b]	<0.61[a]	<0.48[a]
	Th-230	pCi/L	1.32	0.58	<0.41[b]	<0.67[b]	0.60	<0.61[b]	0.52	0.48	<0.23[b]	0.70	<0.38[b]	0.70	0.85	0.50	0.36	<0.18[b]	0.39	0.44	<0.29[b]	<0.19[b]	<0.38[a]	<0.36[a]
	Th-232	pCi/L	<0.20[a]	<0.15[a]	0.20	<0.48[b]	<0.23[b]	<0.22[b]	<0.43[b]	<0.18[b]	<0.51[b]	<0.20[b]	<0.38[b]	<0.54[b]	<0.26[b]	<0.18[b]	<0.53[b]	<0.50[b]	<0.58[b]	<0.20[b]	<0.29[b]	<0.19[b]	<0.53[a]	<0.30[a]
C004	Total U[a]	µg/L	2.4	2.6	3.4	2.1	6.4	3.0	3.0	2.3	3.4	2.2	1.17	2.48	3.13	1.19	2.48	2.58	2.81	2.61	3.26	1.88	3.32	1.35
	Ra-226	pCi/L	<0.63[a]	<0.71[a]	0.64	<0.52[b]	<0.49[b]	<1.5[b]	<1.9[b]	0.64	<1.59[b]	<1.98[b]	<1.93[b]	<1.93[b]	1.52	<1.46[b]	<1.22[b]	<1.47[b]	1.7	<1.34[b]	<1.09 [b]	<0.40[b]	<1.17[a]	<1.12[a]
	Th-228[c]	pCi/L	0.31	<0.50[a]	<0.51[b]	0.32	0.52	<0.65[b]	<0.52[b]	<0.49[b]	0.65	<0.18[b]	<0.65[b]	<0.18[b]	<0.97[b]	<0.52[b]	<0.55[b]	<0.64[b]	<0.22[b]	<0.62[b]	<0.32[b]	<0.60[b]	<0.63[a]	<0.42[a]
	Th-230	pCi/L	0.79	<0.50[a]	<0.51[b]	0.83	0.55	0.58	0.43	<0.49[b]	0.65	0.67	<0.65[b]	0.33	0.68	<0.42[b]	<0.48[b]	0.76	0.91	<0.44[b]	0.69	0.50	<0.36[a]	<0.42[a]
	Th-232	pCi/L	<0.21[a]	<0.18[a]	<0.51[b]	<0.38[b]	<0.20[b]	<0.24[b]	<0.20[b]	0.25	<0.49[b]	<0.18[b]	<0.29[b]	<0.39[b]	<0.63[b]	<0.42[b]	<0.18[b]	<0.46[b]	<0.49[b]	<0.44[b]	<0.32[b]	<0.15[b]	<0.43[a]	<0.39[a]
C005	Total U[a]	µg/L	4.0	3.2	1.8	3.9	3.1	3.0	2.1	2.6	1.7	1.8	2.31	1.42	2.51	1.14	3.15	2.23	2.99	1.71	3.56	1.83	4.14	2.44
	Ra-226	pCi/L	<0.74[a]	<0.20[a]	<0.42[b]	<0.40[b]	0.26	<0.64[b]	<1.8[b]	0.68	<1.48[b]	<2.39[b]	<1.60[b]	<1.76[b]	<1.84[b]	<1.19[b]	<1.05[b]	<0.74[b]	<1.81[b]	<1.18[b]	<1.23[b]	<1.32[b]	<1.91[a]	<1.09[a]
	Th-228[c]	pCi/L	<0.46[a]	<0.68[a]	0.21	<0.72[b]	0.33	<0.19[b]	<0.39[b]	0.32	<0.44[b]	<0.41[b]	<0.69[b]	<0.42[b]	<0.72[b]	0.37	<0.64[b]	<0.64[b]	<0.79[b]	<0.44[b]	<0.53[b]	<0.64[b]	<0.56[a]	<0.45[a]
	Th-230	pCi/L	1.7	0.32	0.41	<0.23[b]	0.27	0.42	<0.39[b]	<0.64[b]	0.44	0.76	0.69	0.63	0.65	<0.55[b]	<0.64[b]	0.69	<0.58[b]	<0.54[b]	<0.53[b]	<0.57[b]	0.56	<0.31[a]
	Th-232	pCi/L	<0.21[a]	<0.17[a]	0.34	<0.23[b]	<0.18[b]	<0.51[b]	<0.18[b]	<0.3[b]	<0.20[b]	<0.41[b]	<0.31[b]	<0.42[b]	<0.23[b]	<0.25[b]	<0.45[b]	<0.38[b]	<0.66[b]	<0.44[b]	<0.48[b]	<0.21[b]	<0.51[a]	<0.34[a]
C006	Total U[a]	µg/L	2.9	3.2	3.2	2.5	2.8	2.6	2.8	1.9	2.8	1.2	1.29	3.11	2.09	1.44	2.77	1.73	4.65	1.68	2.85	1.46[b]	2.29	0.91
	Ra-226	pCi/L	<0.66[a]	0.91	5.26	<0.56[b]	<0.42[b]	<0.64[b]	<1.82[b]	<1.26[a]	<2.00[b]	<0.57[b]	<1.20[b]	<1.44[b]	0.95	<1.39[b]	<1.09[b]	<1.67[b]	<0.80[b]	0.98	<1.11[b]	<0.94[b]	<1.21[a]	<0.33[a]
	Th-228[c]	pCi/L	<0.56[a]	<0.39[a]	0.56	<0.42[b]	<0.42[b]	<0.19[b]	<0.44[b]	<0.57[b]	<0.24[b]	<0.46[b]	<0.25[b]	<0.17[b]	<0.70[b]	<0.41[b]	<0.20[b]	<0.84[b]	<0.53[b]	<0.45[b]	<0.34[b]	<0.36[b]	<0.50[a]	<0.46[a]
	Th-230	pCi/L	0.60	0.53	<0.48[b]	0.50	0.35	0.42	0.45	0.38	<0.54[b]	<0.53[b]	0.74	<0.17[b]	0.53	<0.33[b]	<0.67[b]	<0.62[b]	0.65	0.48	0.26	<0.16[b]	<0.33[a]	0.41
	Th-232	pCi/L	<0.20[a]	<0.39[a]	<0.22[b]	<0.19[b]	<0.42[b]	<0.51[b]	<0.21[b]	<0.26[b]	<0.24[b]	<0.17[b]	<0.25[b]	<0.17[b]	<0.45[b]	<0.15[b]	<0.43[b]	<0.20[b]	<0.43[b]	<0.20[b]	<0.14[b]	<0.36 [b]	<0.46[a]	<0.28[a]
C007	Total U[a]	µg/L	2.7	1.8	2.3	3.0	2.5	2.8	2.6	1.6	1.9	1.3	2.15	5.65	2.06	1.84	4.29	1.69	2.39	2.25	3.25	1.59	3.09	0.89
	Ra-226	pCi/L	<0.81[a]	<0.18[a]	<0.51[b]	0.22	<0.19[b]	<2.24[b]	<1.2[b]	<1.4[b]	<1.53[b]	<1.61[b]	1.42	<2.01[b]	<1.54[b]	<0.98[b]	<1.35[b]	0.61	<1.52[b]	<1.06[b]	<0.85[b]	<1.50[b]	<1.50[a]	<1.13[a]
	Th-228[c]	pCi/L	0.51	0.18	<0.23[b]	<0.46[b]	<0.47[b]	0.53	<0.43[b]	<0.40[b]	<0.20[b]	<0.37[b]	<0.80[b]	<0.19[b]	<0.42[b]	<0.89[b]	<0.63[b]	<0.42[b]	<0.49[b]	<0.55[b]	<0.35[b]	<0.50[b]	<0.66[a]	<0.65[a]
	Th-230	pCi/L	1.03	0.47	0.25	<0.46[b]	0.51	<0.49[b]	0.59	0.40	0.59	0.59	<0.29[b]	0.90	0.67	<0.57[b]	<0.20[b]	<0.42[b]	<0.49[b]	<0.16[b]	<0.44[b]	<0.61[b]	<0.54[a]	<0.40[a]
	Th-232	pCi/L	<0.41[a]	<0.16[a]	<0.23[b]	<0.21[b]	<0.21[b]	<0.40[b]	<0.20[b]	<0.18[b]	<0.19[b]	<0.37[b]	<0.29[b]	<0.51[b]	<0.19[b]	<0.26[b]	<0.45[b]	<0.34[b]	<0.49[b]	<0.16[b]	<0.15[b]	<0.23[b]	<0.44[a]	<0.37[a]
C008[d]	Total U[a]	µg/L														1.32	2.82	1.79	3.07	1.71	3.02	1.82	3.60	0.46
	Ra-226	pCi/L														<0.83[b]	<1.28[b]	0.61	<0.95[b]	<2.15[b]	<0.95[b]	<1.06[b]	<1.48[a]	<1.21[a]
	Th-228[c]	pCi/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.54[b]	0.64	<0.42[b]	0.50	<0.17[b]	<0.45[b]	<0.58[b]	<0.34[a]	0.37
	Th-230	pCi/L														0.22	<0.50[b]	<0.42[b]	0.47	0.53	<0.39 [b]	0.50	0.69	<0.26[a]
	Th-232	pCi/L														<0.20[b]	<0.40[b]	<0.36[b]	<0.46[b]	<0.48[b]	<0.13[b]	<0.17[b]	<0.47[a]	<0.38[a]
C009[d]	Total U[a]	µg/L														1.92	3.53	2.47	1.16	2.17	1.60	1.13	2.05	0.88
	Ra-226	pCi/L														<0.90[b]	<1.04[b]	0.81	<1.4[b]	<1.27[b]	<1.02[b]	<1.02[b]	<1.47[a]	<1.05[a]
	Th-228[c]	pCi/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.40[b]	<0.45[b]	<0.46[b]	<0.44[b]	<0.53[b]	0.32	<0.51[b]	<0.51[a]	<0.53[a]
	Th-230	pCi/L														<0.49[b]	<0.45[b]	<0.51[b]	<0.36[b]	0.86	0.51	0.87	<0.48[a]	<0.40[a]
	Th-232	pCi/L														<0.18[b]	3.33	2.04	3.15	3.96	<0.34[b]	<0.18[b]	<0.48[a]	<0.45[a]

[a] Total U is equal to the sum of the concentrations of U isotopes (in pCi/L) divided by 0.677, where 0.677 microgram per picocurie is the specific activity for total U, assuming secular equilibrium.
[b] Reported result is less than the MDC and is therefore set equal to the MDC.
[c] Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.
[d] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.

Note: Total U (30 µg/L) is the only ROD monitoring guideline for surface water. The other radiological monitoring parameter data are collected to monitor COC migration.

NA – not applicable (No sample was collected during this event, because this station was established in 2014.)

Chemical Parameters

No chemical-specific ROD monitoring guidelines exist for surface water. Chemical monitoring parameter data are collected to monitor COC migration. The chemical monitoring results for the CY 2018 CWC surface-water sampling events are presented in Table 3-6.

Table 3-6. Chemical Results for CY 2018 CWC Surface-Water Sampling

Monitoring Parameter[a]	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008	C009
Target Analyte List Metals Concentration (µg/L)								
First Sampling Event (04/09/18-04/10/18)								
Antimony	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]
Arsenic	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]
Barium	130	130	140	130	130	130	130	120
Cadmium	0.22	0.33	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]
Chromium	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]
Molybdenum	8.2	9.8	9.1	9.1	7.7	8.5	8.1	7.7
Nickel	2.8	2.4	2.3	2.3	2.3	2.2	2.0	2.1
Selenium	3.2	2.9	3.6	3.0	3.7	3.9	3.5	4.0
Thallium	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]
Vanadium	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]
Second Sampling Event (10/09/18)								
Antimony	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]	<2.0[b]
Arsenic	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]
Barium	95	110	100	98	92	78	70	61
Cadmium	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]	<0.2[b]
Chromium	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]
Molybdenum	18	17	16	15	13	8.8	6.8	4.5
Nickel	2.5	2.2	2.8	2.7	11	2.6	2.5	5.3
Selenium	2.2	2.5	2.4	2.2	2.5	<2.0[b]	<2.0[b]	<2.0[b]
Thallium	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]	<0.9[b]
Vanadium	<4.0[b]	<4.0[b]	<4.0[b]	<4.0[b]	4.2	<4.0[b]	<4.0[b]	4.4

[a] No chemical-specific ROD monitoring guidelines exist for surface water.
[b] Reported result is less than the MDC and is therefore set equal to the MDC.

3.2.2 Coldwater Creek Sediment Monitoring Results

CY 2018 sediment sampling at CWC was conducted during the months of April and October as part of the EMP. Sediment samples were collected in depositional environments near each of the eight previously described surface-water locations (C002 through C009) (Figure 3-3) and analyzed according to the methods described in the SAG (USACE 2000). Sediment samples collected for the EMP were evaluated for the radiological and metal constituents listed in Table 3-3 of the EMICY18 (USACE 2017).

All sediment monitoring required through implementation of the EMICY18 was conducted as planned during CY 2018 (USACE 2017). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The analytical results from these monitoring activities are contained in Appendix D, Table D-2, of this EMDAR.

Radiological Parameters

The radiological results for CY 2018 CWC sediment sampling events are presented in Table 3-7. The ROD established sediment RGs for Ra-226, Th-230, and U-238 at the NC Sites (USACE 2005). Therefore, sediment sampling results for those radionuclides were compared against their corresponding RGs. Sediment samples from CWC were not analyzed for U-234 during CY 2018, because U-234 is assumed to be in equilibrium with U-238.

Table 3-7. Radiological Results for CY 2018 CWC Sediment Sampling

Monitoring Parameter	RGs[a]	Monitoring Stations							
		C002	C003	C004	C005	C006	C007	C008	C009
Radionuclide Concentration (pCi/g)									
First Sampling Event (04/09/18-04/10/18)									
Ac-227	No RG	<0.13[b]	0.23	<0.14[b]	<0.32[b]	<0.14[b]	<0.25[b]	<0.28[b]	0.16
Pa-231	No RG	<0.82[b]	<0.80[b]	<0.85[b]	<1.47[b]	<0.88[b]	<1.10[b]	<1.83[b]	<1.00[b]
Ra-226	15	0.98	1.04	1.17	1.78	1.23	1.14	1.20	1.25
Ra-228	No RG	0.34	0.66	0.71	0.92	0.79	0.69	0.74	0.73
Th-228[c]	No RG	0.32	1.14	0.92	1.24	1.11	0.95	1.12	1.25
Th-230[c]	43	0.65	2.70	1.83	1.61	2.71	3.79	2.11	2.21
Th-232[c]	No RG	<0.16[b]	0.95	0.86	1.10	1.06	1.01	0.90	0.86
U-235	No RG	<0.27[b]	<0.26[b]	<0.29[b]	<0.46[b]	<0.28[b]	<0.36[b]	<0.54[b]	<0.29[b]
U-238[d]	150	0.63	0.74	0.82	1.00	1.01	0.80	<0.80[b]	0.72
Second Sampling Event (10/09/18)									
Ac-227	No RG	<0.17[b]	<0.17[b]	<0.16[b]	<0.30[b]	<0.29[b]	<0.16[b]	<0.32[b]	<0.16[b]
Pa-231	No RG	<1.14[b]	<1.24[b]	<0.99[b]	<2.08[b]	<2.03[b]	<1.00[b]	<2.21[b]	<1.06[b]
Ra-226	15	1.24	1.47	1.33	1.68	1.59	1.39	1.70	1.67
Ra-228	No RG	0.61	0.81	0.79	0.87	0.81	0.64	0.88	0.88
Th-228[c]	No RG	0.92	1.05	0.91	1.04	1.27	1.01	1.01	0.87
Th-230[c]	43	1.30	1.48	1.50	3.50	4.52	3.29	2.23	4.60
Th-232[c]	No RG	0.62	0.86	0.94	0.89	1.18	0.73	1.18	0.72
U-235	No RG	<0.32[b]	<0.37[b]	<0.30[b]	<0.58[b]	<0.58[b]	<0.31[b]	<0.63[b]	<0.31[b]
U-238[d]	150	0.85	0.90	0.98	0.95	<0.68[b]	0.87	<1.24[b]	0.88

[a] RGs presented in the ROD (USACE 2005).
[b] Reported result is less than the MDC and is therefore set equal to the MDC.
[c] Both gamma spectroscopy and alpha spectroscopy results are produced; alpha spectroscopy results are reported.
[d] U-238 and U-234 are assumed to be in equilibrium.

All sediment data results were below the RGs established by the ROD. The historical radiological sediment sampling data for all monitoring stations since April of 2008 are summarized in Table 3-8.

Chemical Parameter

Chemical monitoring results for CY 2018 CWC sediment sampling events are presented in Table 3-9.

Table 3-8. Comparison of Historical Radiological Sediment Results for CWC

Station	Radionuclide	Units	04/08	11/08	03/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15	03/16	10/16	03/17	10/17	4/18	10/18
C002	Total U[a]	pCi/g	1.7	0.73	0.80	0.89	1.3	1.3	1.4	1.1	0.84	1.21	1.49	1.02	0.75	0.90	1.35	1.89	3.89	5.74	5.50	1.55	1.35	1.70
	Ra-226	pCi/g	1.0	0.85	0.75	1.07	0.71	0.95	0.87	0.85	0.89	0.911	0.91	1.01	0.94	0.88	0.78	1.26	1.34	2.01	1.30	1.22	0.98	1.24
	Ra-228	pCi/g	0.20	0.17	0.20	0.24	0.30	0.33	0.27	0.28	0.24	0.372	0.30	0.28	0.26	0.36	0.18	1.01	1.11	1.08	0.89	0.51	0.34	0.61
	Th-228	pCi/g	0.53	0.41	0.50	0.35	0.46	0.44	0.26	0.37	0.37	0.37	0.30	<0.16[c]	<0.26[c]	0.69	<0.18[b]	1.52	1.74	1.61	0.52	0.53	0.32	0.92
	Th-230	pCi/g	0.92	1.1	0.51	1.2	0.67	1.2	1.5	1.1	0.52	0.64	1.06	1.20	0.69	0.55	0.56	1.53	1.99	2.10	2.26	1.26	0.65	1.30
	Th-232	pCi/g	0.24	<0.26[c]	0.28	0.31	0.53	0.21	<0.29[c]	0.39	0.35	0.47	0.36	<0.44[c]	0.26	0.55	0.26	1.36	1.39	0.57	0.89	0.41	<0.16[b]	0.62
C003	Total U[a]	pCi/g	1.9	2.3	1.2	2.9	0.72	1.7	1.4	1.5	1.20	1.78	1.80	1.01	0.90	2.04	2.68	0.99	1.22	2.27	1.90	1.44	1.60	1.94
	Ra-226	pCi/g	1.1	1.1	0.79	1.4	0.98	1.1	0.73	1.2	1.07	1.33	1.41	1.03	1.42	1.22	1.00	0.92	1.11	1.41	1.10	1.29	1.04	1.47
	Ra-228	pCi/g	0.49	0.57	0.40	1.0	0.44	0.36	0.39	0.79	0.81	0.78	0.91	0.36	0.91	0.63	0.82	0.22	0.66	0.98	0.76	0.64	0.66	0.81
	Th-228	pCi/g	0.70	0.66	0.64	1.1	0.85	0.42	0.55	1.79	1.69	1.23	1.01	0.94	1.21	0.68	0.84	0.44	1.28	1.35	1.33	1.01	1.14	1.05
	Th-230	pCi/g	2.1	2.3	1.2	1.5	1.0	1.1	0.89	1.9	1.81	1.19	3.92	1.90	1.67	1.04	2.57	0.57	2.55	3.71	2.85	1.29	2.70	1.48
	Th-232	pCi/g	0.51	0.57	0.34	0.73	0.43	0.17	0.64	1.22	1.28	1.18	0.99	<0.35[c]	0.95	0.89	0.84	0.25	0.87	1.14	1.11	0.68	0.95	0.86
C004	Total U[a]	pCi/g	2.0	2.3	2.0	3.3	1.8	2.6	1.8	2.0	2.84	3.09	1.97	2.14	1.84	1.20	1.67	2.14	2.71	2.00	1.74	1.87	1.72	2.07
	Ra-226	pCi/g	1.0	1.0	0.97	1.3	1.3	1.5	1.1	1.3	1.13	1.28	1.16	1.25	1.62	1.36	1.00	1.21	1.39	1.44	1.12	1.14	1.17	1.33
	Ra-228	pCi/g	0.70	1.0	0.73	0.85	0.62	0.81	0.85	0.96	0.85	0.86	0.72	0.62	0.80	0.89	0.90	1.01	0.95	1.03	0.87	0.85	0.71	0.79
	Th-228	pCi/g	1.2	1.4	0.83	1.1	0.90	1.2	1.4	1.3	1.72	1.24	0.74	1.09	0.94	0.73	1.81	1.31	1.64	1.17	1.14	1.19	0.92	0.91
	Th-230	pCi/g	2.0	1.0	1.7	2.0	2.2	1.6	2.7	3.8	2.41	1.28	2.37	2.15	3.11	1.82	1.7	3.02	2.77	2.11	3.27	2.30	1.83	1.50
	Th-232	pCi/g	1.3	0.80	0.82	1.0	0.77	1.0	0.85	1.1	1.45	1.13	0.84	1.42	0.57	1.50	1.32	0.81	1.30	0.94	1.24	1.05	0.86	0.94
C005	Total U[a]	pCi/g	2.0	3.6	1.6	2.8	1.6	3.6	1.8	2.5	4.36	2.5	1.86	1.20	2.10	1.55	1.58	2.44	2.58	2.50	0.98	1.62	2.05	2.10
	Ra-226	pCi/g	1.1	5.4	1.0	1.4	1.5	2.5	1.2	1.5	1.47	1.33	1.28	1.01	1.59	1.62	1.12	1.05	1.44	1.74	1.08	1.60	1.78	1.68
	Ra-228	pCi/g	0.78	1.1	0.31	0.86	0.73	0.88	0.56	0.94	0.92	0.90	0.87	0.47	1.00	0.99	0.94	0.81	1.06	0.99	0.91	0.99	0.92	0.87
	Th-228	pCi/g	0.98	1.7	0.50	1.3	0.92	0.96	0.61	0.61	1.05	1.30	0.64	0.82	1.35	1.19	1.27	1.50	1.70	1.26	1.31	1.25	1.24	1.04
	Th-230	pCi/g	6.6	82.6	4.2	9.6	2.2	19.6	3.9	3.4	4.3	5.42	4.65	3.26	1.53	1.58	2.13	2.28	2.23	1.83	2.48	2.24	1.61	3.50
	Th-232	pCi/g	0.98	1.4	0.50	0.87	0.65	1.1	0.63	0.87	1.01	1.23	1.08	0.49	1.16	0.69	0.88	0.97	1.30	1.43	1.22	0.78	1.10	0.89
C006	Total U[a]	pCi/g	1.7	1.8	2.1	0.75	1.9	2.2	2.0	1.0	2.35	1.97	1.53	1.87	0.19	2.60	2.77	1.70	1.85	2.33	2.80	1.78	2.02	1.49
	Ra-226	pCi/g	1.0	1.4	1.0	1.1	1.7	1.7	1.3	0.90	1.16	1.02	1.13	1.37	1.38	1.36	1.06	1.28	1.27	1.47	1.21	1.19	1.23	1.59
	Ra-228	pCi/g	0.88	0.98	0.82	0.99	0.88	0.88	0.86	0.48	1.06	0.94	0.99	0.91	1.01	1.05	0.85	0.90	0.85	1.14	0.87	0.85	0.79	0.81
	Th-228	pCi/g	1.7	0.94	1.5	1.6	1.0	0.82	1.9	0.54	1.38	1.03	0.97	1.07	0.60	1.18	1.20	0.88	1.49	1.23	1.84	1.21	1.11	1.27
	Th-230	pCi/g	3.4	2.2	2.2	2.6	2.0	4.1	9.7	1.2	3.39	1.78	2.18	1.57	2.30	2.39	1.52	2.12	3.89	2.31	6.62	3.84	2.71	4.52
	Th-232	pCi/g	1.1	1.2	1.1	0.97	0.80	0.71	1.6	0.82	1.00	1.30	1.31	0.88	0.85	1.04	0.74	1.27	0.95	1.45	1.38	1.33	1.06	1.18
C007	Total U[a]	pCi/g	1.4	2.3	1.9	2.6	2.2	1.7	1.9	2.4	2.45	3.08	2.13	1.79	0.49	3.35	1.55	1.32	1.91	1.49	1.52	1.41	1.66	1.91
	Ra-226	pCi/g	1.1	1.4	1.1	1.3	1.4	1.4	1.3	1.4	1.23	1.06	1.32	1.20	1.55	2.12	1.10	1.08	1.14	1.28	0.95	1.33	1.14	1.39
	Ra-228	pCi/g	0.69	0.89	0.77	0.77	0.82	0.73	0.87	0.81	0.89	0.80	0.85	0.54	0.77	1.01	0.87	0.64	0.67	0.59	0.66	0.63	0.69	0.64
	Th-228	pCi/g	0.73	0.67	1.1	0.66	1.0	0.78	1.4	1.3	2.07	0.96	0.86	0.94	0.74	0.80	1.06	1.24	0.47	0.62	1.18	1.29	0.95	1.01
	Th-230	pCi/g	3.8	3.6	3.6	2.3	2.6	4.4	3.3	2.8	3.51	2.73	3.25	4.50	3.19	6.81	3.89	3.91	3.77	4.75	5.79	2.98	3.79	3.29
	Th-232	pCi/g	0.55	0.72	1.00	0.57	1.04	0.72	0.93	0.95	1.14	0.70	0.62	0.69	1.21	0.85	0.66	0.87	1.04	0.87	1.02	0.88	1.01	0.73
C008[d]	Total U[a]	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.60	1.81	1.37	3.24	3.11	1.93	1.73	0.91	-0.17
	Ra-226	pCi/g														1.22	1.17	1.23	1.27	1.71	1.13	1.30	1.20	1.70
	Ra-228	pCi/g														0.72	0.81	0.76	0.90	1.27	1.06	0.94	0.74	0.88
	Th-228	pCi/g														0.82	1.18	0.86	1.16	1.26	1.22	0.99	1.12	1.01
	Th-230	pCi/g														2.80	2.48	3.36	2.30	1.93	2.68	1.82	2.11	2.23
	Th-232	pCi/g														0.56	1.19	0.55	1.19	1.06	1.26	0.80	0.90	1.18

Table 3-8. Comparison of Historical Radiological Sediment Results for CWC (Continued)

Station	Radionuclide	Units	04/08	11/08	03/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15	03/16	10/16	03/17	10/17	4/18	10/18
C009[d]	Total U[a]	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.79	1.72	1.63	1.10	1.45	1.76	1.89	1.43	1.76
	Ra-226	pCi/g														1.43	1.26	1.19	1.43	1.48	1.10	1.27	1.25	1.67
	Ra-228	pCi/g														0.80	0.94	0.81	0.83	0.88	0.86	0.64	0.73	0.88
	Th-228	pCi/g														0.86	1.16	1.06	1.30	1.26	0.82	0.86	1.25	0.87
	Th-230	pCi/g														3.96	2.27	2.99	2.46	3.54	2.95	2.28	2.21	4.60
	Th-232	pCi/g														1.06	1.22	0.63	1.26	0.98	0.88	0.53	0.86	0.72

[a] Total U is equal to the sum of the concentrations of U isotopes (Office of the Federal Register, NARA 1998).
[b] Both gamma spectroscopy and alpha spectroscopy results were produced; gamma spectroscopy results are reported.
[c] Reported result is less than the MDC and is therefore set equal to the MDC.
[d] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
Note: The sediment RGs for Ra-226, Th-230, and U-238 are 15 pCi/g, 43 pCi/g, and 150 pCi/g, respectively. The other radiological monitoring parameter data are collected to monitor COC migration.
NA – not applicable (No sample was collected during this event, because this station was established in 2014.)

Table 3-9. Chemical Results for CY 2018 CWC Sediment Sampling

Monitoring Parameter	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008	C009
Target Analyte List Metals Concentration (mg/kg)								
First Sampling Event (04/09/18-04/10/18)								
Antimony	<0.23[a]	0.36	<0.27[a]	0.28	0.31	0.45	<0.28[a]	0.35
Arsenic	3.6	5.3	4.7	10	5.8	6.7	4.2	5.3
Barium	110	140	130	210	150	200	130	110
Cadmium	0.24	0.48	0.32	0.42	0.51	1.00	0.34	0.53
Chromium	8.2	26	12	16	20	34	15	21
Molybdenum	0.63	1.5	0.56	0.62	0.9	1.6	0.44	0.89
Nickel	8.3	14	13	19	23	18	16	17
Selenium	1.1	2.0	1.6	2.2	1.9	1.8	1.9	1.3
Thallium	<0.23[a]	<0.29[a]	<0.27[a]	<0.27[a]	<0.30[a]	<0.27[a]	<0.28[a]	<0.23[a]
Vanadium	11	15	16	30	19	20	17	14
Second Sampling Event (10/09/18)								
Antimony	0.49	0.41	0.30	0.57	0.42	0.51	<0.27[a]	0.47
Arsenic	8.9	6.9	5.2	7.7	6.8	6.5	5.2	16
Barium	190	160	140	180	210	160	170	160
Cadmium	0.60	0.65	0.50	0.76	0.92	0.64	0.37	0.52
Chromium	16	27	17	27	27	53	20	23
Molybdenum	1.4	1.1	0.77	1.0	1.3	1.4	0.47	0.92
Nickel	17	17	15	21	21	20	21	22
Selenium	2.0	2.6	2.0	2.6	2.3	2.5	2.4	2.5
Thallium	<0.28[a]	<0.30[a]	<0.27[a]	<0.27[a]	<0.27[a]	<0.29[a]	<0.27[a]	<0.28[a]
Vanadium	21	21	20	25	25	21	24	42

[a] Reported result is less than the DL and is therefore set equal to the DL.

Note: There are no chemical-specific ROD RGs or monitoring guidelines for sediment. Chemical monitoring parameter data are collected to monitor COC migration.

3.2.3 Impact of FUSRAP Coldwater Creek Remedial Action on Total Uranium Concentrations in Coldwater Creek Surface Water and Sediment

As part of the FUSRAP RA at the SLAPS, sediment and soil were removed from the bed and banks of CWC near monitoring stations C002 and C003 during August of 2004. An evaluation was conducted to determine if the SLAPS RA resulted in increased levels of uranium in CWC. The concentrations of radionuclides in sediment and surface-water samples from various stations along CWC were assessed. Radionuclide data from surface-water and sediment samples collected from March of 2000 to March of 2004 were used to create a baseline for comparison with sample results collected after the RA.

Methodology

Total U results from CY 2018 surface-water and sediment samples from six monitoring stations (C002 through C007) were compared to the 2000 to 2004 dataset for this evaluation. Total U was selected for this evaluation because it is among the most mobile of all the radionuclide COCs present at the SLAPS.

The total U concentration statistics for surface water and sediment at monitoring stations C002 through C007 for 2000 through 2004 are presented in Table 3-10.

Table 3-10. Total Uranium Concentration Statistics for CWC (2000-2004)

Stations[a]	Statistics for Total U in Surface Water March 2000 to March 2004 Data (pCi/L)			Statistics for Total U in Sediment March 2000 to March 2004 Data (pCi/g)		
	UCL_{95}	Mean	LCL_{95}	UCL_{95}	Mean	LCL_{95}
C002	4.2	3.1	1.9	1.7	1.4	1.1
C003	3.8	3.3	2.7	1.9	1.5	1.0
C004	4.5	3.4	2.3	2.3	1.7	1.2
C005	4.1	3.0	1.9	2.8	2.4	2.0
C006	8.2[b]	5.0	[c]	3.0	2.4	1.8
C007	4.7	3.4	0.75	2.5	1.9	1.3

[a] Monitoring stations C008 and C009 were established in 2014.
[b] March 2000 to March 2004 data are gamma distributed. Therefore, approximate gamma upper confidence limit (UCL) is used.
[c] The 95 percent lower confidence limit (LCL_{95}) is not calculated due to gamma-distributed data.

Qualitative trend line graphs of total U results from surface-water and sediment samples collected at monitoring stations C002 through C007 from March of 2000 to October of 2018 are presented on Figures 3-4 and 3-5. The mean, 95 percent upper confidence limit (UCL_{95}), and 95 percent lower confidence limit (LCL_{95}) concentrations of total U calculated from the March 2000 to March 2004 dataset are also shown on Figures 3-4 and 3-5. Surface-water and sediment data for total U from monitoring stations C008 and C009 are also included on Figures 3-4 and 3-5.

Conclusion

The data fit two hypothetical scenarios. First, the post-RA sampling results were not significantly less than the pre-RA sampling results for downstream stations at the SLAPS (C003 through C007), so it is unlikely that total U from the SLAPS RA is causing a significant contribution to CWC. The RA over time should markedly reduce the total U load in CWC if the SLAPS were a significant contributor. While a time lag in the fate downstream could occur, the current total U concentrations are already low. Second, the RA within CWC did not adversely impact concentrations of total U in CWC surface water or sediment. Had the RA contributed adversely, a notable short-term increase in total U concentrations would have been observed.

4.0 EVALUATION OF GROUND-WATER MONITORING DATA

During CY 2018, 17 ground-water monitoring wells were sampled at the NC Sites. Ground water was sampled following protocol for individual wells and analytes, and was analyzed for various radiological constituents and inorganic analytes. Static water levels were measured quarterly at the retained monitoring wells. In addition, field parameters were measured continuously during purging of the wells before sampling. The static water levels and other ground-water field parameter results for CY 2018 sampling are contained in Appendix E, Tables E-1 and E-2. Summary tables providing the NC Sites ground-water analytical sampling results for CY 2018 are contained in Appendix E, Tables E-3 and E-4.

Ground-Water Guidelines

The CY 2018 ground-water monitoring data for the NC Sites are compared to the ROD ground-water monitoring guidelines (henceforth referred to as ROD guidelines) listed in Tables F-1 and F-2 in Appendix F of this EMDAR. The ROD guidelines for the NC Sites are based on requirements specified in the ROD (USACE 2005) and are further explained in Sections 4.1.1 and 4.2.1.

Stratigraphy at the North St. Louis County Sites

The stratigraphic units present at the NC sites are shown in the stratigraphic column presented on Figure 4-1. Fill and topsoil (Unit 1) overlie Pleistocene loess (Unit 2) and glaciolacustrine deposits. The glaciolacustrine sediments consist of Subunit 3T (silty clay), Subunit 3M (moderately to highly plastic clay), Subunit 3B (silty clay), and Unit 4 (clayey and sandy gravel). Beneath these unconsolidated deposits, the bedrock is composed of Mississippian limestone (Unit 6). Stratigraphic Unit 5, Pennsylvanian shale bedrock, is not present at the HISS or Futura, but is found directly overlying Unit 6 under portions of the SLAPS.

4.1 LATTY AVENUE PROPERTIES

The Latty Avenue Properties include the HISS, Futura, and eight Latty Avenue VPs (VPs 01[L] through 06[L], VP-40A, and Parcel 10K530087). The ground-water monitoring wells at the Latty Avenue Properties are located on or immediately adjacent to the HISS and Futura.

Stratigraphy at the Latty Avenue Properties

Four HZs (HZ-A through HZ-C, and HZ-E) have been identified at the Latty Avenue Properties. The shallow ground-water zone, HZ-A, consists of the fine-grained silts and clays of Unit 1, Unit 2, and Subunit 3T. Underlying HZ-A is HZ-B, which consists of a highly impermeable clay (Subunit 3M). HZ-C consists of silty clay, clayey silt, and clayey gravel deposits that comprise the stratigraphic Subunit 3B and Unit 4. The Mississippian limestone bedrock is defined as HZ-E. HZ-E is the protected aquifer for the site. As a result of their very low permeability, Subunits 3M and 3B limit vertical ground-water movement between HZ-A and the deep ground-water zones (HZ-C and HZ-E) at the Latty Avenue Properties.

Summary of Calendar Year 2018 Ground-Water Monitoring Results at the Latty Avenue Properties

Based on an evaluation of the ground-water data at the Latty Avenue Properties, two inorganic soil COCs (molybdenum and selenium) were detected at concentrations in excess of the ROD guidelines in HZ-A ground water at the Latty Avenue Properties in CY 2018. Molybdenum was detected above its ROD guideline in HZ-A wells HISS-10 (during the third- and fourth-quarter sampling events) and HISS-11A (during the third-quarter sampling event). However, molybdenum does not exceed its ROD guideline at HISS-11A when measurement error was taken into account. Molybdenum was above the ROD guideline in the previous sampling event conducted in the third quarter of CY 2017 at HISS-10. Therefore, molybdenum concentrations in HISS-10 have exceeded the ROD guideline for more than 12 months. Selenium was detected in HISS-10 during the third- and fourth-quarter sampling events in CY 2018 at levels above the ROD guideline. However, selenium was at nondetect levels in HISS-10 in the previous sampling event conducted during the third quarter of CY 2017. Therefore, selenium concentrations in HISS-10 have not exceeded the ROD guideline for more than 12 months. The Mann-Kendall Trend Test results indicate a statistically significant increasing trend for molybdenum in HISS-10. Because a significant degradation of CWC surface water has not occurred, there is currently no finding of significantly degraded ground-water conditions in HZ-A ground water. However, because molybdenum levels in HISS-10 have exceeded the ROD guideline for a period of at least 12 months, ground-water monitoring will continue subject to subsequent CERCLA 5-year reviews.

Based on the CY 2018 results for HW23, concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HZ-C during CY 2018. Therefore, no findings currently indicate significantly degraded ground-water conditions in HZ-C ground water. An evaluation of potential response actions is therefore not required.

4.1.1 Evaluation of Ground-Water Monitoring Data at the Latty Avenue Properties

The ground-water monitoring data for the Latty Avenue Properties are evaluated against the requirements for ground-water monitoring identified in the ROD (USACE 2005). The ROD specifies two types of ground-water monitoring guidelines: (1) response-action monitoring guidelines and (2) a total U monitoring guideline (which is used for both response-action and long-term monitoring). Response-action monitoring of HZ-A and HZ-C is being conducted to ensure that the RA does not degrade current ground-water conditions. Another purpose of the response-action ground-water monitoring of HZ-C is to document protection of the limestone aquifer (HZ-E) during the RA.

The response-action monitoring guideline is two times the UCL_{95}, based on historical concentrations of the analyte in a particular well before RAs were initiated under the ROD. The response-action monitoring guidelines have been developed for the ROD soil COCs for each of the wells at the Latty Avenue Properties. The methodology for the development of the response-action monitoring guidelines is detailed in Appendix F of this EMDAR. The total U guideline is defined in the ROD to be equal to the total U maximum contaminant level of 30 µg/L (USACE 2005). If total U levels exceed 30 µg/L, monitoring would continue subject to a CERCLA 5-year review.

In addition to the previous requirements, an evaluation of concentration trends over time is conducted for the COCs detected above the ROD guidelines in ground water to support assessment of the effectiveness of the RA in the CERCLA 5-year reviews.

Monitoring Well Network at the Latty Avenue Properties

The CY 2018 EMP well network for the Latty Avenue Properties is shown on Figure 4-2. With the exception of monitoring well HW23, which is screened in HZ-C, the monitoring wells are screened in HZ-A. The screened HZs for the ground-water monitoring wells at the Latty Avenue Properties are identified in Table 4-1. Appendix G provides the well maintenance checklists for the annual inspection of the ground-water monitoring wells at the Latty Avenue Properties, conducted on March 13, 2018.

Table 4-1. Screened HZs for Ground-Water Monitoring Wells at the Latty Avenue Properties in CY 2018

Well ID	Screened HZs
HISS-01[a]	HZ-A
HISS-06A	HZ-A
HISS-10 [a]	HZ-A
HISS-11A[a]	HZ-A
HISS-17S	HZ-A
HISS-19S	HZ-A
HW22	HZ-A
HW23[a]	HZ-C

[a] Wells sampled in CY 2018.

Ground-water sampling was conducted at four ground-water monitoring wells at the Latty Avenue Properties in CY 2018. Second-quarter sampling was conducted on May 14, 2018; third-quarter sampling was conducted on August 14 and 16, 2018; and fourth-quarter sampling was conducted on November 12, 2018. No ground-water sampling was conducted at the Latty Avenue Properties during the first quarter of CY 2018.

HZ-A Ground Water

Ground-water samples were collected from three HZ-A wells in CY 2018. A summary table presenting the CY 2018 analytical data for all analytes is included in Appendix E (Table E-3).

For response-action monitoring, the CY 2018 ground-water data were evaluated to determine if ground-water conditions have significantly degraded. Continued monitoring of HZ-A could be required long term if significantly degraded ground-water conditions are found. Based on the ROD, a significantly degraded ground-water condition requires all of the following:

1. that soil COC concentrations have statistically increased in ground water (relative to the well’s historical data and accounting for uncertainty) for more than a 12-month period. Significantly increased concentrations are defined as doubling of an individual COC concentration above the upper confidence limit (UCL) of the mean (based on the historical concentration before RA) for a period of 12 months;
2. that the degraded well is close enough to impact CWC; and
3. that a significant degradation of CWC surface water is anticipated.

The CY 2018 results were compared to the guidelines for the soil COCs identified in the ROD (i.e., antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238). The ROD guideline for total U (30 µg/L) is used for both response-action and long-term monitoring of ground water at the Latty Avenue Properties. Total U concentrations were compared to the 30 µg/L monitoring guideline. Total U concentrations (in µg/L) were calculated as follows from the isotopic results (in pCi/L) and the specific activities (in pCi/µg) for each radionuclide.

$$TotalU\left(\mu g/L\right)=\left[\frac{U^{234}\left(pCi/L\right)}{6240\left(pCi/\mu g\right)}\right]+\left[\frac{U^{235}\left(pCi/L\right)}{2.16\left(pCi/\mu g\right)}\right]+\left[\frac{U^{238}\left(pCi/L\right)}{0.335\left(pCi/\mu g\right)}\right]$$

Those soil COCs with concentrations above the ROD guidelines in HZ-A ground-water samples at the Latty Avenue Properties during CY 2018 are listed in Table 4-2. Because no ground-water sampling data are available for HISS-11A prior to CY 2011, the ROD guidelines for HISS-11A were developed using the pre-2006 data from the well previously at this location (HISS-11).

Table 4-2. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the Latty Avenue Properties in CY 2018

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
Molybdenum	µg/L	HISS-10	5.6	39	40	39.5	2	2/2
	µg/L	HISS-11A	4.8	5.0	5.0	5.0	1	1/1
Selenium	µg/L	HISS-10	7.6	41	69	55	2	2/2

[a] ROD guidelines include the response-action monitoring guidelines and the total U monitoring guideline of 30 µg/L. Response-action monitoring guideline = 2 x UCL_{95}, based on historical concentrations before RAs were initiated (USACE 2005). Results are reported to two significant digits.

Two inorganic COCs, molybdenum and selenium, were detected above their ROD guidelines in HZ-A ground water at the Latty Avenue Properties in CY 2018. Molybdenum was detected in HISS-10 at levels above the ROD guideline of 5.6 µg/L in the third-quarter and fourth-quarter samples (39 µg/L and 40 µg/L, respectively). Molybdenum was above the ROD guideline in the previous sampling event conducted in the third quarter of CY 2017 (27 µg/L). Therefore, molybdenum concentrations in HISS-10 have exceeded the ROD guideline for more than 12 months. The molybdenum concentration exceeded the ROD guideline (4.8 µg/L) in the third-quarter sample from HISS-11A (5.0 µg/L). However, molybdenum does not exceed the ROD guideline at HISS-11A when measurement error was taken into account. In addition, selenium was detected in HISS-10 at levels above the ROD guideline of 7.6 µg/L in the third- and fourth-quarter samples (69 µg/L and 41 µg/L, respectively) during CY 2018. No radiological soil COCs were detected at concentrations above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties in CY 2018.

In summary, comparison of the data to the ROD guidelines indicates that two COCs, molybdenum and selenium, exceeded the ROD guidelines in HZ-A ground water in CY 2018. Because a significant degradation of CWC surface water has not occurred, no finding currently indicates significantly degraded ground-water conditions in HZ-A ground water.

HZ-C Ground Water

Ground-water samples were collected from one HZ-C well (HW23) in CY 2018. This well was sampled for both radionuclides and inorganics during the second quarter. Concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HW23 during CY 2018.

In summary, the CY 2018 HZ-C ground-water data from the Latty Avenue Properties indicate that no analytes were detected at concentrations above ROD ground-water criteria in HZ-C ground water. Therefore, there is currently no finding of significantly degraded ground-water conditions in HZ-C ground water.

4.1.2 Comparison of Historical Ground-Water Data at the Latty Avenue Properties

Ground-water sampling has been conducted at the Latty Avenue Properties from CY 1984 to the present. The most comprehensive ground-water monitoring program, involving sampling from 18 monitoring wells, was conducted at the site in the summer of CY 1997. Results from subsequent sampling events were used to evaluate contaminant trends at the Latty Avenue Properties during the period from the first quarter of CY 1999 to the fourth quarter of CY 2018. Statistical analysis was used to assist with identifying trends for those contaminants that exceeded the ROD guidelines in CY 2018.

Statistical Method and Trend Analysis

Several statistical methods are available to evaluate contaminant trends in ground water. These include the Mann-Kendall Trend Test, the Wilcoxon Rank Sum (WRS) Test, and the Seasonal Kendall Test (USEPA 2000). The latter two tests are applicable to data that may or may not exhibit seasonal behavior, but generally require larger sample sizes than the Mann-Kendall Trend Test. The Mann-Kendall Trend Test was selected for this project because this test can be used with small sample sizes (as few as four data points), and because a seasonal variation in concentrations was not indicated by the time-versus-concentration plots at the NC Sites. The Mann-Kendall Trend Test is a non-parametric test and, as such, is not dependent upon assumptions of distribution, missing data, or irregularly-spaced monitoring periods. In addition, data reported as being less than the detection limit (DL) can be used (Gibbons 1994). The test can assess whether a time-ordered dataset exhibits an increasing or decreasing trend, within a predetermined level of significance. While the Mann-Kendall Trend Test can use as few as four data points, often this is not enough data to detect a trend. Therefore, the test was performed only at those monitoring stations at the NC Sites for which data have been collected for at least six sampling events.

A customized Microsoft Excel® spreadsheet was used to perform the Mann-Kendall Trend Test. The test involves listing the sampling results in chronological order and computing all differences that may be formed between current measurements and earlier measurements. The value of the test statistic (S) is the difference between the number of strictly positive differences and the number of strictly negative differences. If S is a large positive value, then evidence indicates an increasing trend in the data. If S is a large negative value, then evidence indicates a decreasing trend in the data. If no trend exists and all observations are independent, then all rank orderings of the annual statistics are equally likely (USEPA 2000). The results of the Mann-Kendall Trend Test are reported in terms of a p-value or Z-score, depending on sample size, N. If the sample size is less than or equal to 10, then the p-value is computed. If the p value is less than or equal to 0.05, the test concludes that the trend is statistically significant. If the p value is greater than 0.05, the test concludes no evidence of a significant trend exists. For dataset sizes larger than 10, the Z-score is compared to ±1.65, which is the comparison level at a 95 percent confidence level. If the Z-score is greater than 1.65, the test concludes that a significant upward trend exists. If the Z-score is less than –1.65, the test concludes that a significant downward trend exists. For Z-scores between –1.65 and 1.65, no evidence of a significant trend exists.

The results of the Mann-Kendall Trend Test are less reliable for datasets containing a high number of non-detects, particularly if the DL changes over time. For that reason, for datasets in which more than 50 percent of the time-series data are non-detect, the Mann-Kendall Trend Test was not conducted. No general consensus exists regarding the percentage of non-detects that can be handled by the Mann-Kendall Trend Test. However, because the Mann-Kendall Trend Test is a nonparametric test that uses relative magnitudes, not actual values, it is generally valid even in cases in which there are a large number of non-detects.

Only unfiltered data were used, and split and QC sample results were not included in the database for the Mann-Kendall Trend Test. The Mann-Kendall Trend Test is used to evaluate the radiological data and to determine trends without regard to isotopic analysis. In addition, for monitoring wells for which the Mann-Kendall Trend Test has indicated a trend (either upward or downward), another analysis is performed to determine whether the trend is due to inherent error associated with the analytical test method for each sample analysis. This analysis involves graphing the data and the associated error-bar for the specific constituent. The time-versus-concentration plot for molybdenum in HISS-10 is provided on Figure 4-3.

Results of Trend Analysis for Ground Water at the Latty Avenue Properties

For those stations at which an analyte exceeded the ROD guideline at least once during the year and for which sufficient historical data were available to evaluate trends (i.e., at least six samples), statistical trend analysis is conducted to assess whether concentrations of the analyte are increasing (upward trending) or decreasing (downward trending) over time. For the purposes of this trend analysis, a statistically significant trend in concentration is defined as a trend with a confidence level greater than 95 percent. The confidence level denotes the probability that the indicated trend is an actual trend in the data, rather than a result of the random nature of environmental data.

HZ-A Ground Water

The Mann-Kendall Trend Test was performed for those wells in which analytes exceeded the ROD guidelines at least once during CY 2018, for which sufficient data were available (i.e., at least six samples were collected during the period from the first quarter of CY 1999 to the fourth quarter of CY 2018), and at which the percentage of non-detect results is less than or equal to 50 percent. The Mann-Kendall Trend Test was performed using data collected during the period from the first quarter of CY 2002 to the fourth quarter of CY 2018.

Inorganics

The concentration of two inorganic soil COCs, molybdenum and selenium, were above the ROD ground-water criteria in the CY 2018 ground-water samples from HZ-A well HISS-10. Therefore, a trend analysis was conducted for molybdenum and selenium in HISS-10. For molybdenum and selenium in HISS-10, the dataset was restricted to the time period CY 2002 through CY 2018 to meet the Mann-Kendall Trend Test requirement that the dataset have a detection frequency greater than 50 percent. As shown in Table 4-3 and on the time-versus-concentration plot on Figure 4-3, a statistically significant increasing trend in molybdenum concentrations (i.e., a trend with a confidence level greater than 95 percent) was observed for HISS-10 for the CY 2002 through CY 2018 dataset. No trend was identified for selenium in HISS-10.

Radionuclides

Concentrations of all radiological COCs were below the ROD ground-water criteria in ground-water samples from the six HZ-A wells sampled in CY 2018. Therefore, a trend analysis was not conducted for radiological COCs in HZ-A ground water.

The time-versus-concentration plots shown on Figure 4-4 provide an overview of the temporal and spatial variability in the concentrations of total U in ground water at the Latty Avenue Properties. Total U concentrations were calculated using the isotopic U results measured in pCi/L and converted to µg/L using radionuclide-specific activities. The reported values were used for detected and non-detected isotopic values, except when the value was negative. If the reported value was negative, a value equal to zero was substituted for the result prior to calculating the total U concentration.

Table 4-3. Results of the Mann-Kendall Trend Test for Analytes Exceeding the ROD Guidelines at the Latty Avenue Properties in CY 2018

Analyte	Station	N[a]	Test Statistics[b]		Trend[d]
			S[c]	Z[c]	
Molybdenum	HISS-10	16	72	3.23	Upward Trend
Selenium	HISS-10	16	0	0.0	No Trend

[a] N is the number of unfiltered ground-water sample results for a particular analyte for the period between January of 2002 and December of 2018. The dataset was restricted to this period rather than between January of 1999 and December of 2018 to meet the Mann-Kendall Trend Test requirement that the dataset have a detection frequency greater than 50 percent.

[b] Test Statistics: S – the S-Statistic; Z – Z-score, or normalized test statistic (for datasets having N greater than 10).

[c] One-tailed Mann-Kendall Trend Tests were performed at a UCL_{95}.

[d] Trend: If N greater than 10, the Z-score is compared to ±1.65 to determine trend significance.

HZ-C Ground Water

The Mann-Kendall Trend Test is performed for those wells in which analytes exceeded the ROD guidelines at least once during CY 2018. Concentrations of all soil COCs were below the ROD ground-water criteria in CY 2018 ground-water samples from the HZ-C well HW23 when measurement error was taken into account. Therefore, a trend analysis was not conducted for HZ-C ground water.

4.1.3 Evaluation of the Potentiometric Surface at the Latty Avenue Properties

Ground-water surface elevations were measured at the Latty Avenue Properties in February, May, August, and November of CY 2018. Potentiometric surface maps were created to illustrate ground-water flow conditions in wet and dry seasons. Previous EMDARs include potentiometric maps based on the second quarter (May) and fourth quarter (November) measurements to represent ground-water flow conditions during the wet and dry seasons, respectively. Similarly, for CY 2018, the May measurements have been used for mapping ground-water flow conditions during the wet season. However, the November 2018 measurements were not considered representative of the dry season due to above-average precipitation in the form of heavy snowfall. Instead, the February measurements have been used to represent the dry season. The potentiometric surface maps for HZ-A and HZ-C, created from the May 14 and February 13, 2018, ground-water elevation measurements, are provided on Figures 4-5, 4-6, 4-7, and 4-8. The ground-water surface elevations at the Latty Avenue Properties and the SLAPS and SLAPS VPs were mapped on the same figures, because these areas are located in the same ground-water flow regime.

The top of the saturated zone occurs in the low hydraulic conductivity silts and clays of stratigraphic Units 2 and 3T at the Latty Avenue Properties. The potentiometric data indicate some mounding of the HZ-A ground water at the HISS and Futura. Wells HISS-01 and HISS-10 have the highest potentiometric surface elevations, with lower ground-water elevations measured in the surrounding wells. At the western edge of the HISS and Futura, ground water in the HZ-A zone flows to the west toward CWC. The local horizontal gradient for HZ-A ground water at the HISS and Futura ranged from 0.012 ft/ft (May) to 0.014 ft/ft (February) in CY 2018. Based on the CY 2018 water-level measurements, the position of the HZ-A ground-water surface averages approximately 1 ft higher in the corresponding shallow wells at the HISS in the wet season (May) than in the dry season (February).

The potentiometric surface of the HZ-C ground water at the Latty Avenue Properties is not well defined due to the limited data available for the deeper HZs. Based on measured ground-water elevations in the HZ-C monitoring well HW23 at the Latty Avenue Properties and several HZ-C wells located to the southwest at the SLAPS and SLAPS VPs, the flow direction in the HZ-C ground water beneath the Latty Avenue Properties was generally toward the east-northeast at an average horizontal gradient of 0.002 ft/ft in both May and February of CY 2018.

4.2 ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES

Ground-water monitoring wells have been installed at the SLAPS and SLAPS VPs to characterize the site stratigraphy, ground-water chemistry, and ground-water migration pathways.

Stratigraphy at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

In the vicinity of the SLAPS and the adjacent SLAPS VP ballfields, surficial deposits (Unit 1) include topsoil and anthropogenic fill (rubble, scrap metal, gravel, glass, slag, and concrete) generally less than 14 ft thick (Figures 4-1, 4-9, and 4-10). Unit 2 is comprised of loess and has a thickness of 11 to 30 ft. Unit 3, which is subdivided into Subunits 3T, 3M, and 3B, consists primarily of clay and silt lakebed deposits. Each of these clayey subunits has a thickness of up to 30 ft. Unit 4 consists of clayey gravel with fine to very-fine sand and sandy gravel. This unit is interpreted to be approximately 5 to 15 ft thick and thins eastward and westward of the SLAPS. This unit is absent beneath the eastern part of the SLAPS, where the 3T, 3M, and 3B drape, or onlap, onto shale bedrock. Below Units 3 and 4 are Units 5 and 6, which consist of Pennsylvanian shale/siltstone and Mississippian limestone, respectively. Depth to bedrock ranges from approximately 55 ft on the eastern part of the SLAPS to a maximum of 90 ft toward CWC to the west. The hydrogeologic and geologic setting at the SLAPS and SLAPS VPs is similar to that at the HISS, with one exception. The Pennsylvanian shale bedrock unit (Unit 5), present beneath portions of the SLAPS and SLAPS VPs, is absent beneath the HISS.

Five HZs (HZ-A through HZ-E) are recognized beneath the SLAPS and SLAPS VPs. HZ-A consists of fill (Unit 1) and the Pleistocene, glacially related sediments of stratigraphic Unit 2, and Subunit 3T. Underlying HZ-A is HZ-B, which consists of highly impermeable clay (Subunit 3M). HZ-C consists of the stratigraphic Subunit 3B and Unit 4. The shale (Unit 5) and limestone (Unit 6) bedrock are recognized as HZ-D and HZ-E, respectively. HZ-E is the protected aquifer for the site.

The shallow (HZ-A) ground-water flow is toward CWC under normal flow conditions. Average depths to the ground-water surface at the site range from near the ground surface during the spring months to approximately 10 ft below ground surface (bgs) during the fall months. The dominant flow in HZ-A is through the more permeable Unit 2. Each of the subunits in Unit 3 has lower hydraulic conductivity than Units 1, 2, and 4. Units HZ-B and the Pennsylvanian shale HZ-D limit the passage of ground water vertically beneath the SLAPS and SLAPS VPs. Subunit 3M of HZ-B acts as a vertical barrier to ground-water movement under the western portion of the site. Subunit 3M is a clayey aquitard (unit resisting water passage) that effectively separates the HZ-A ground-water system from the underlying HZ-C and HZ-E. The dominant unit to obtain water in the lower horizon is the sandy, clayey gravel of Unit 4. Unit 4 of HZ-C is used as a surrogate for HZ-E, because water movement within the Mississippian limestone is dependent upon the limestone’s joint and solutioned system. In addition, the limestone has exhibited massive characteristics and is very slow to recharge.

Summary of Calendar Year 2018 Ground-Water Monitoring Results at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Three soil COCs (chromium, nickel, and total U) exceeded the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2018 when measurement error was taken into account.

One radiological COC (total U) has exceeded the ROD guideline for a period of at least 12 months. Statistically significant increasing trends were observed for chromium and nickel concentrations in B53W09S. The Mann-Kendall Trend Test results indicate no trend for total U in PW46 or nickel in PW43.

Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2018. However, because total U levels have exceeded the ROD guidelines for a period of at least 12 months, ground-water monitoring will continue subject to subsequent CERCLA 5-year reviews.

Based on the CY 2018 results for B53W01D, B53W07D, PW35, and PW42, no inorganic or radiological soil COC concentrations exceeded ROD ground-water guidelines in HZ-C during CY 2018. Therefore, no findings currently indicate significantly degraded ground-water conditions in HZ-C ground water.

4.2.1 Evaluation of Ground-Water Monitoring Data at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The purpose of the ground-water monitoring conducted at the SLAPS and SLAPS VPs is specified in the ROD (USACE 2005). Response-action monitoring is currently being conducted in HZ-A and HZ-C to assess the improvement of water quality due to source removals, and to document the protection of the limestone aquifer (HZ-E) during the RA.

As noted in Section 4.1.1, the ground-water monitoring data at the SLAPS and SLAPS VPs are evaluated against the requirements for ground-water monitoring identified in the ROD (USACE 2005).

In addition to the previously described monitoring, an evaluation of concentration trends is conducted for the COCs detected in excess of the ROD guidelines in ground water to support assessment of the effectiveness of the RA in the CERCLA 5-year reviews.

Monitoring Well Network at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The current EMP well network for the SLAPS and SLAPS VPs is shown on Figure 4-11. A summary of the HZ information for the ground-water monitoring wells located at the SLAPS and SLAPS VPs is provided in Table 4-4. HZ-A is considered the upper (or shallow) zone, while HZ-C, HZ-D, and HZ-E have been considered the lower (or deep) zone. This designation of upper and lower zones is separated at Subunit 3M of HZ-B. Fourteen (14) wells are screened exclusively across the shallow zone (HZ-A). Four (4) wells are screened exclusively in the lower zone across HZ-C, HZ-D, and/or HZ-E. The remaining well (PW36) is screened across both HZ-B and HZ-C. Appendix G provides the well maintenance checklists for the annual inspection of the ground-water monitoring wells at the SLAPS and SLAPS VPs, conducted in March 2018.

Table 4-4. Ground-Water Monitoring Well Network at the SLAPS and SLAPS VPs in CY 2018

Well ID	Screened HZs			
	HZ-A	HZ-B	HZ-C	HZ-E
B53W01D[a]			X	
B53W01S[a]	X			
B53W06S[a]	X			
B53W07D[a]			X	
B53W07S	X			

Table 4-4. Ground-Water Monitoring Well Network at the SLAPS and SLAPS VPs in CY 2018 (Continued)

Well ID	Screened HZs			
	HZ-A	HZ-B	HZ-C	HZ-E
B53W09S[a]	X			
B53W13S	X			
B53W17S[a]	X			
B53W18S	X			
B53W19S	X			
MW31-98[a]	X			
MW32-98	X			
PW35[a]				X
PW36		X	X	
PW42[a]			X	
PW43[a]	X			
PW44[a]	X			
PW45[a]	X			
PW46[a]	X			

[a] Wells sampled in CY 2018.

During CY 2018, 13 ground-water wells were sampled for various parameters at the SLAPS and SLAPS VPs. Ground-water samples collected from these wells were analyzed for both radiological and inorganic constituents. Historically, radiological parameters (Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238) and inorganic constituents have been the main focus of the ground-water sampling. In CY 2018, ground-water sampling was conducted on February 13 and 14 (first quarter); May 15 and 16 (second quarter); August 13 and 14 (third quarter); and November 8, 9, 12 and 14 (fourth quarter).

HZ-A Ground Water

Nine HZ-A wells (B53W01S, B53W06S, B53W09S, B53W17S, MW31-98, PW43, PW44, PW45, and PW46) were sampled at the SLAPS and SLAPS VPs during CY 2018. The analytical data for the CY 2018 ground-water sampling at the SLAPS and SLAPS VPs are contained in Appendix E, Table E-4.

The CY 2018 results were compared to ROD guidelines for the soil COCs identified in the ROD (i.e., antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238). Table 4-5 lists those soil COCs exceeding the ROD guidelines in CY 2018 ground-water samples from HZ-A wells at the SLAPS and SLAPS VPs.

Table 4-5. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the SLAPS and SLAPS VPs in CY 2018

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
Chromium	µg/L	B53W09S	9.6	7.1	200	101.7	2	3/3
	µg/L	B53W17S	7.0	8.9[b]	8.9[b]	8.9	1	1/1
Nickel	µg/L	B53W06S	16	14	27	20.5	1	2/2
	µg/L	B53W09S	83	47	240	120.7	2	3/3
	µg/L	PW43	3.6	2.2	6.0[c]	4.1	1	2/2
Vanadium	µg/L	PW43	3.1	4.4[b]	4.4[b]	4.4	1	1/2

Table 4-5. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the SLAPS and SLAPS VPs in CY 2018 (Continued)

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
U-234	pCi/L	PW46	5,500	305[c]	305[c]	305[c]	0	1/1
U-235	pCi/L	PW46	290	14[c]	14[c]	14[c]	0	1/1
U-238	pCi/L	PW46	5,600	298[c]	298[c]	298[c]	0	1/1
Total U[d]	µg/L	PW46	30	896	896	896	1	1/1

[a] ROD guidelines = response-action monitoring guideline and total U monitoring guideline. Response-action monitoring guideline = 2 x UCL_{95} (based on historical concentrations before RAs were initiated). Total U monitoring guideline = 30 µg/L (USACE 2005).

[b] The results did not exceed the ROD guideline if the associated measurement errors are taken into account.

[c] The results for U-234, U-235, and U-238 do not exceed the ROD guidelines. The results are provided because they were used in the total U calculation.

[d] Total U values were calculated from isotopic concentrations in pCi/L and converted to µg/L using radionuclide-specific activities with the following formula: total U (µg/L) = U-234 (pCi/L)/6240 + U-235 (pCi/L)/2.16 + U-238 (pCi/L)/0.335.

Three inorganic soil COCs (chromium, nickel, and vanadium) were detected in HZ-A ground water at concentrations in excess of the ROD guidelines at the SLAPS and SLAPS VPs during CY 2018. Chromium was detected at concentrations in excess of the ROD guidelines in the HZ-A wells B53W09S and B53W17S during CY 2018. Chromium concentrations exceeded the ROD guideline of 9.6 µg/L in the second- and third-quarter samples from B53W09S (200 µg/L and 98 µg/L, respectively). However, chromium concentrations did not exceed the ROD guideline in the fourth-quarter sample (7.1 µg/L). Therefore, chromium concentrations in B53W09S did not exceed the ROD guideline for more than 12 months. Chromium concentrations exceeded the ROD guideline of 7.0 µg/L in the second-quarter sample from B53W17S (8.9 µg/L). However, chromium concentrations did not exceed the ROD guideline at B53W17S when measurement error was taken into account.

Nickel was detected at concentrations in excess of the ROD guidelines in three HZ-A wells (B53W06S, B53W09S, and PW43) during CY 2018. Nickel concentrations exceeded the ROD guideline of 16 µg/L in the fourth-quarter sample from B53W06S (27 µg/L). The concentration of nickel detected at B53W06S during the second-quarter sampling event (14 µg/L) did not exceed the ROD guideline. Therefore, the nickel concentration at B53W06S has not exceeded the ROD guideline for a period of at least 12 months. Nickel concentrations exceeded the ROD guideline of 83 µg/L in the second-quarter sample from B53W09S (240 µg/L). However, nickel was detected at concentrations below the ROD guideline in the third- and fourth-quarter samples (75 µg/L and 47 µg/L, respectively). Therefore, the nickel concentration at B53W09S has not exceeded the ROD guideline for a period of at least 12 months. The nickel concentration in PW43 exceeded the ROD guideline of 3.6 µg/L in the first-quarter sample (6.0 µg/L). However, nickel concentrations did not exceed the ROD guideline at PW43 when measurement error was taken into account. In addition, the nickel concentration in the third-quarter CY 2018 sample (2.2 µg/L) was not above the ROD guideline. Therefore, the nickel concentration at PW43 has not exceeded the ROD guideline for a period of at least 12 months. The vanadium concentration in PW43 exceeded the ROD guideline of 3.1 µg/L in the third-quarter sample (4.4 µg/L). However, the vanadium concentration did not exceed the ROD guideline at PW43 when measurement error was taken into account.

One radiological soil COC (total U) exceeded the ROD guideline of 30 µg/L in HZ-A ground water at the SLAPS and SLAPS VPs. The total U concentration in PW46 (calculated from the isotopic concentrations) exceeded the 30-µg/L guideline during the first-quarter CY 2018 sampling event. The total U concentration in PW46 was 896 µg/L on February 14, 2018.

PW46 is an RA evaluation well that was installed at the western edge of the SLAPS in April of 2006. Although no ground-water sampling data are available for PW46 prior to May 18, 2006, data are available for PW38, the previous well at this location. The ROD guidelines for PW46 were developed using pre-2004 data from PW38. Based on the total U data collected from PW38 prior to its decommissioning in November of 2003, the CY 2018 total U concentration at PW46 is lower than the historical concentrations reported at PW38. Based on the statistical evaluation of trends presented in Section 4.2.2, no statistically significant trend in the concentrations of total U was observed in PW46 during CY 2018.

In summary, two inorganic soil COCs (chromium in B53W06S and B53W09S and nickel in B53W09s) exceeded the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2018 when measurement error was taken into account. However, none of these inorganics exceeded the ROD guidelines for a period of at least 12 months. In addition, the concentration of total U exceeded the guideline of 30 µg/L in one HZ-A well (PW46) located at the western edge of the SLAPS and has exceeded the ROD guideline for a period of at least 12 months. However, comparison of the CY 2018 concentration with historical well data did not indicate that significant degradation of HZ-A ground water is occurring. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2018. However, because total U levels have exceeded the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent CERCLA 5-year reviews.

Lower Ground Water (HZ-C Through HZ-E)

Four wells (B53W01D, B53W07D, PW35, and PW42) screened across lower ground water (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs during CY 2018. Concentrations of all chemical and radiological COCs were below the ROD ground-water criteria in samples collected from HZ-C through HZ-E ground water in CY 2018. Therefore, the CY 2018 HZ-C through HZ-E ground-water data from the SLAPS and SLAPS VPs do not indicate significant degradation of lower ground water.

4.2.2 Comparison of Historical Ground-Water Data at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Results of ground-water sampling conducted from CY 1998 though CY 2018 indicate that various inorganics and radionuclides have been detected at concentrations in excess of the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs. Statistical analysis was used to identify trends for those contaminants that exceeded these guidelines during CY 2018. As described in Section 4.1.2, the Mann-Kendall Trend Test is the statistical method used to evaluate contaminant trend in ground water. Filtered data, split samples, and field duplicates were not included in the analysis. For datasets in which 50 percent or more of the time-series data are non-detect, the Mann-Kendall Trend Test was not performed.

Results of Trend Analysis at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The evaluation of historical trends for ground water at the SLAPS and SLAPS VPs focuses on those contaminants that exceeded the ROD guidelines in samples collected during CY 2018. For those monitoring wells at which an analyte exceeded these guidelines in one or more samples during CY 2018 and the historical dataset had a detection frequency greater than 50 percent and a sample size of at least six, a statistical trend analysis was conducted to assess whether concentrations of the analyte are increasing (upward trending) or decreasing (downward trending) over time. For the purposes of this EMDAR, a statistically significant trend in concentration is defined as a trend with a confidence level greater than 95 percent. Because the Mann-Kendall Trend Test does not consider the effects of measurement error and does not provide any information concerning the magnitude of trends, time-versus-concentration plots were used to evaluate these factors.

Based on the CY 2018 ground-water monitoring data for the SLAPS and SLAPS VPs, three soil COCs (chromium, nickel, and total U) exceeded the ROD guidelines in HZ-A ground water in CY 2018 when measurement error was taken into account. The Mann-Kendall Trend Test was performed for chromium in B53W09S; nickel in B53W06S and B53W09S; and total U in PW46. To aid in the evaluation of trends, time-versus-concentration plots for chromium and nickel and for total U are provided on Figures 4-12 and 4-13, respectively.

Trend analysis was not performed for deep (HZ-C through HZ-E) ground water, because no soil COCs exceeded their ROD guidelines in deep ground water during CY 2018 at the SLAPS and SLAPS VPs when measurement error was taken into account.

Inorganics

The results of the Mann-Kendall Trend Tests are provided in Table 4-6. As shown in Table 4-6, statistically significant increasing trends were observed for chromium concentrations in B53W09S and for nickel concentrations in B53W06S and B53W09S. Because the Mann-Kendall Trend Test does not consider the effects of measurement error and does not provide any information concerning the magnitude of the trend, time-versus-concentration plots for those soil COCs having statistically significant increasing trends in ground water (provided on Figure 4-12) were used to evaluate these factors. The best-fit trend lines based on the data scatter are also shown on the graphs on this figure.

Table 4-6. Results of Mann-Kendall Trend Test for Analytes with Concentrations Exceeding ROD Guidelines in Ground Water at the SLAPS and SLAPS VPs in CY 2018

Analyte	Station	N[a]	Test Statistics[b]		Trend[d]
			S[c]	Z[c]	
Chromium	B53W09S	31	259	4.40	Upward Trend
Nickel	B53W06S	24	156	3.88	Upward Trend
	B53W09S	31	213	3.61	Upward Trend
Total U	PW46	19	-19	-0.63	No Trend

[a] N is the number of unfiltered ground-water sample results for a particular analyte for the period between January of 1999 and December of 2018. With the exception of total U at PW46, the time period is between January of 1999 and December of 2018. For PW46, which was installed in April 2006, the dataset covers the period between May of 2006 and December of 2018.

[b] Test Statistics: S – the S-Statistic; Z – Z-score, or normalized test statistic (used if N greater than 10).

[c] One-tailed Mann-Kendall Trend Tests were performed at a 95-percent level of confidence.

[d] Trend: If N is greater than 10, the Z-score is compared to ±1.64 to determine trend significance.

Radionuclides

A statistical evaluation of historical uranium concentrations has been conducted using total U concentrations. Total U values were calculated from isotopic concentrations in pCi/L and converted to µg/L using radionuclide-specific activities. The Mann-Kendall Trend Test was performed for total U in the HZ-A well with concentrations in excess of the 30-µg/L ROD guideline in CY 2018 (PW46). The results of the Mann-Kendall Trend Test are provided in Table 4-6. The Mann-Kendall Trend Test results indicate no trend for total U in PW46. A graph of time-versus-total-U concentrations for PW46 is shown on Figure 4-13. PW46 was installed in April of 2006 near the former location of PW38 and is screened across the same interval. For comparison purposes, the PW38 data collected between March of 2000 and November of 2003 are also shown on the graph of PW46 data on Figure 4-13. As indicated on the graph, total U concentrations in PW46 have decreased from the levels reported at PW38 prior to installation of

PW46. Time-versus-concentration graphs for total U for some of the wells sampled in CY 2018 at the SLAPS and SLAPS VPs are provided on Figure 4-14.

4.2.3 Evaluation of Potentiometric Surface at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Ground-water surface elevations were measured from wells at the SLAPS and SLAPS VPs in February, May, August, and November of CY 2018. Ground-water elevation contours were drawn using the May 14, 2018, and February 13, 2018, measurements to provide a comparison of the ground-water flow conditions during periods of high and low ground-water elevations, respectively. The potentiometric surface maps, shown on Figures 4-5 through 4-8, were developed for both HZ-A and HZ-C ground-water zones. The ground-water flow direction is interpreted to be perpendicular to the ground-water equipotential contours.

In May and February of CY 2018, the ground-water flow direction in the HZ-A ground water at the SLAPS and adjacent SLAPS VP ballfields was northwesterly toward CWC (Figures 4-5 and 4-7). In the eastern portion of the SLAPS, the average horizontal hydraulic gradient was 0.005 ft/ft in the wet season (May 14, 2018) and 0.002 ft/ft in the dry season (February 13, 2018). The hydraulic gradient increases near CWC, where the average horizontal gradient ranges from 0.027 ft/ft (May 14, 2018) to 0.019 ft/ft (February 13, 2018). The unconfined HZ-A ground water is interpreted to discharge into CWC, which divides the HZ-A ground-water system south and east of the creek from areas north and west of CWC. Ground-water recharge comes from three primary sources: precipitation, off-site inflow of ground water, and creek bed infiltration during high creek stage. Ground-water discharge could occur by seepage into CWC during low creek stage (DOE 1994). The vertical gradient varies beneath the site and is influenced by stratigraphic heterogeneity and seasonal fluctuations in recharge and evapotranspiration. Based on the CY 2018 water-level measurements, the elevation of the HZ-A ground-water surface averaged approximately 4.4 ft higher in the corresponding shallow wells at the SLAPS and SLAPS VPs in the wet season (May) than in the dry season (February).

A review of the screened intervals in the deep wells indicates that many wells are screened across multiple lithologic units and HZs. Based on this review, the HZ-C (Units 3B and 4) potentiometric surface was determined to be a proper representation of the lower ground-water system. This review reduces the number of data points used to develop the potentiometric surface contours, but results in a higher level of confidence in contouring the HZ-C potentiometric surface.

The potentiometric surface contours for the HZ-C ground water in CY 2018 are illustrated on Figures 4-6 and 4-8. The flow direction in HZ-C is generally east or northeast beneath the SLAPS and SLAPS VPs, at an average horizontal gradient of 0.0014 ft/ft in May and 0.0017 ft/ft in February of 2018. A comparison of the ground-water elevations from monitoring well pairs indicates that the wells completed in HZ-A exhibit different hydraulic heads from the wells completed in HZ-C. Near CWC, the potentiometric surface of the “confined” aquifer HZ-C averages approximately 8.5 ft higher than the potentiometric surface of the unconfined HZ-A zone, indicating an upward vertical gradient. The large difference in hydraulic head demonstrates that the HZ-A and HZ-C ground-water zones are distinct ground-water systems with limited hydraulic connection. This is supported by the lithologic data, which indicate that a highly impermeable clay (Subunit 3M of HZ-B) and silty clay (Subunit 3B of HZ-C) separates the HZ-A ground-water system from the underlying ground-water zones. The HZ-C potentiometric surfaces do not appear to be influenced by CWC (the creek’s thalweg is approximately 500 ft amsl) or by seasonal changes. These features are likely a result of the overlying clay layers limiting vertical ground-water movement.

5.0 ENVIRONMENTAL QUALITY ASSURANCE PROGRAM

5.1 PROGRAM OVERVIEW

The environmental quality assurance (QA) program includes management of the QA/QC programs, plans, and procedures governing environmental monitoring activities at all SLS and at subcontracted vendor laboratories. This section discusses the environmental monitoring standards of the FUSRAP and the goals for these programs, plans, and procedures.

The environmental QA program provides the FUSRAP with reliable, accurate, and precise monitoring data. The program furnishes guidance and directives to detect and prevent problems from the time a sample is collected until the associated data are evaluated. The MDNR conducted site visits on February 13, 2018, April 10, 2018, May 14, 2018, August 13, 2018, October 9, 2018, and November 9, 2018, to observe the environmental monitoring activities. USEPA Region 7 and MDNR regulatory oversight of sampling activities provided an additional level of QA/QC.

Key elements in achieving the goals of this program are maintaining compliance with the QA program; personnel training; compliance assessments; use of QC samples; documentation of field activities and laboratory analyses; and a review of data documents for precision, accuracy, and completeness.

General objectives are as follows:

- To provide data of sufficient quality and quantity to support ongoing remedial efforts, aid in defining potential COCs, meet the requirements of the EMG and the SAG, and support the ROD (USACE 1999a, 2000, 2005);
- To provide data of sufficient quality to meet applicable State of Missouri and federal concerns (e.g., reporting requirements); and
- To ensure samples were collected using approved techniques and are representative of existing site conditions.

5.2 QUALITY ASSURANCE PROGRAM PLAN

The quality assurance program plan (QAPP) for activities performed at the NC Sites is described in Section 3.0 of the SAG. The QAPP provides the organization, objectives, functional activities, and specific QA/QC activities associated with investigations and sampling activities at the NC Sites.

QA/QC procedures are performed in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements. The QAPP was prepared in accordance with USEPA and USACE guidance documents, including *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (USEPA 1991), *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations* (USEPA 1994), and Engineer Manual (EM) 200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans* (USACE 2001).

5.3 SAMPLING AND ANALYSIS GUIDE

The SAG summarizes standard operating procedures (SOPs) and data quality requirements for collecting and analyzing environmental data. The SAG integrates protocols and methodologies identified under various USACE and regulatory guidance. It describes administrative procedures for managing environmental data and governs sampling plan preparation, data review, evaluation and validation, database administration, and data archiving. The identified sampling and monitoring structures are delineated in programmatic documents such as the EMG (USACE 1999a) for the NC Sites, which is an upper-tier companion document to the SAG (USACE 2000). The EMICY18 outlines the analyses to be performed at the NC Sites for various media (USACE 2017).

Flexibility to address non-periodic environmental sampling (e.g., specific studies regarding environmental impacts, well installations, and/or in-situ waste characterizations) was accomplished by the issuance of work descriptions. Environmental monitoring data obtained during these sampling activities were reported to the USEPA Region 7 on a quarterly basis.

5.4 FIELD SAMPLE COLLECTION AND MEASUREMENT

Prior to beginning field sampling, field personnel were trained, as necessary, and participated in a project-specific readiness review. These activities ensured that standard procedures were followed in sample collection and completion of field logbooks, chain-of-custody forms, labels, and custody seals. Documentation of training and readiness were submitted to the project file.

The master field investigation documents are the site field logbooks. The primary purpose of these documents is to record daily field activities; personnel on each sampling team; and any administrative occurrences, conditions, or activities that may have affected the fieldwork or data quality of any environmental samples for a given day. Guidance for documenting specific types of field sampling activities in field logbooks or log sheets is provided in Appendix C of EM 200-1-3, *Requirements for the Preparation of Sampling and Analysis Plans* (USACE 2001).

At any point in the process of sample collection or data and document review, a non-conformance report may be initiated if non-conformances are identified (Leidos 2015a). Data entered into the St. Louis FUSRAP database may be flagged accordingly.

5.5 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities were conducted to verify that sampling and analysis activities were performed in accordance with the procedures established in the SAG and activity-specific work description or the EMICY18 (USACE 2017).

5.5.1 Field Assessments

Internal assessments (audit or surveillance) of field activities (sampling and measurements) were conducted by the QA/QC Officer (or designee). Assessments included an examination of field sampling records; field instrument operating records; sample collection, handling, and packaging procedures; and maintenance of QA procedures and chain-of-custody forms. These assessments occurred at the onset of the project to verify that all established procedures were followed (systems audit).

Performance assessments followed the system audits to ensure that deficiencies had been corrected and to verify that QA practices/procedures were being maintained throughout the duration of the project. These assessments involved reviewing field measurement records, instrumentation calibration records, and sample documentation.

External assessments may be conducted at the discretion of the USACE, USEPA Region 7, or the State of Missouri.

5.5.2 Laboratory Audits

The on-site USACE St. Louis FUSRAP laboratory locations are subject to periodic review(s) by the local USACE Chemist to demonstrate compliance with the *Department of Defense/Department of Energy Consolidated Quality Systems Manual for Environmental Laboratories* (QSM) (U.S. Department of Defense [DOD] and DOE 2017). Accordingly, the on-site laboratories participate in blind, third-party performance evaluation studies (performance audits) at least twice per year, with results reported to the local USACE point(s) of contact. In addition, contract laboratories are required to be accredited under the DOD Environmental Laboratory Accreditation Program (ELAP). The DOD ELAP requires an annual audit and re-accreditation every 3 years.

These system audits include examining laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records. Performance audits consist of USACE laboratories receiving performance evaluation samples from an outside vendor for an ongoing assessment of laboratory precision and accuracy. The analytical results of the analysis of performance evaluation samples are evaluated by USACE Hazardous, Toxic, and Radioactive Waste – Center of Expertise and/or a local oversight chemist to ensure that laboratories maintain acceptable performance.

Internal performance and system audits of laboratories were conducted by the Laboratory QA Manager as directed in the *Laboratory Quality Assurance Plan for the FUSRAP St. Louis Radioanalytical Laboratory* (USACE 2018). System audits included an examination of laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records against the requirements of the laboratory's SOPs. Internal performance audits were also conducted on a regular basis. Single-blind performance samples were prepared and submitted along with project samples to the laboratory for analysis. The Laboratory QA Manager evaluated the analytical results of these single-blind performance samples to ensure that the laboratory maintained acceptable performance. Quarterly QA/QC reports were generated and provided to the local USACE authority; these reports document the ongoing QC elements and allow further monitoring of quality processes/status. In addition, QA plans and methodology follow the guidance presented in the QSM (DOD and DOE 2017).

5.6 SUBCONTRACTED LABORATORY PROGRAMS

All samples collected during environmental monitoring activities were analyzed by USACE-approved subcontractor laboratories. QA samples collected for ground water and sediment were analyzed by the designated USACE QA laboratory. Each laboratory supporting this work maintained statements of qualifications including organizational structure, QA manual, and SOPs. Additionally, subcontracted laboratories were also required to be an accredited laboratory under the DOD ELAP.

Samples collected during these investigations were analyzed by the USEPA methods contained in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846* (USEPA 1993) and by other documented USEPA or nationally recognized methods. Laboratory SOPs are based on the QSM) (DOD and DOE 2017).

5.7 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

The QA and QC samples were analyzed for the purpose of assessing the quality of the sampling effort and the reported analytical data. The QA and QC samples include duplicate samples (–1) and split samples (–2). The equations utilized for accuracy and precision can be found in Section 5.9.

5.7.1 Duplicate Samples

These samples, which measure precision, were collected by the sampling teams and were submitted for analysis to the on-site USACE St. Louis FUSRAP laboratory or contract laboratories. The identity of duplicate samples is held blind to the analysts. The purpose of these samples is to provide activity-specific, field-originated information regarding the homogeneity of the sampled matrix and the consistency of the sampling effort. These samples were collected concurrently with the primary environmental samples and equally represent the medium at a given time and location. Duplicate samples were collected from each medium addressed by this project and were submitted to the contracted laboratories for analysis. One duplicate sample was collected for approximately every 20 field samples of each matrix and analyte across the SLS. Precision is measured by the relative percent difference (RPD) for radiological and by non-radiological analyses or the normalized absolute difference (NAD) for radiological analyses.

The RPDs for non-radiological analyses are presented in Tables 5-1 and 5-2. The RPDs and NADs for radiological analyses are presented in Tables 5-3 through 5-5. The overall precision for CY 2018 environmental monitoring activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-1. Non-Radiological Duplicate Sample Analysis for CY 2018 – Surface and Ground Water

Water Sample Name[a]	**Antimony**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**
	RPD[b]	**RPD[b]**	**RPD[b]**	**RPD[b]**	**RPD[b]**
CWC200934 / CWC200934-1	NC	NC	0.00	NC	NC
CWC207425 / CWC207425-1	NC	NC	0.00	NC	NC
SVP200663 / SVP200663-1	NC	NC	0.00	**90.91**	NC
Water Sample Name[a]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD[b]	**RPD[b]**	**RPD[b]**	**RPD[b]**	**RPD[b]**
CWC200934 / CWC200934-1	6.32	13.33	38.89	NC	NC
CWC207425 / CWC207425-1	0.00	7.41	8.00	NC	NC
SVP200663 / SVP200663-1	NC	3.28	NC	NC	NC

[a] Surface/ground-water samples ending in "-1" are duplicate surface/ground water samples.
[b] RPD criterion for liquid samples is less than or equal to 30 percent.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)
SVP – St. Louis Airport Sites vicinity property (sample prefix designation)

Table 5-2. Non-Radiological Duplicate Sample Analysis for CY 2018 – Sediment

Soil Sample Name[a]	**Antimony**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**
	RPD[b]	**RPD[b]**	**RPD[b]**	**RPD[b]**	**RPD[b]**
CWC200933 / CWC200933-1	**65.42**	3.85	35.29	**55.64**	47.62
CWC207424 / CWC207424-1	6.45	5.61	7.41	6.19	0.00
Soil Sample Name[a]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD[b]	**RPD[b]**	**RPD[b]**	**RPD[b]**	**RPD[b]**
CWC200933 / CWC200933-1	6.90	**72.73**	16.22	NC	12.50
CWC207424 / CWC207424-1	35.29	0.00	5.13	NC	5.13

[a] Sediment samples ending in "-1" are duplicate sediment samples.
[b] RPD criterion for solid matrix samples is less than or equal to 50 percent.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-3. Radiological Duplicate Sample Analysis for CY 2018 – Surface and Ground Water

Water Sample Name[a]	Ra-226		Ra-228		Th-228		Th-230	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200934 / CWC200934-1	NC	NA	*	*	NC	NA	NC	NA
CWC207425 / CWC207425-1	NC	NA	*	*	NC	NA	NC	NA
SVP200663 / SVP200663-1	NC	NA	*	*	NC	NA	NC	NA
Water Sample Name[a]	**Th-232**		**U-234**		**U-235**		**U-238**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200934 / CWC200934-1	NC	NA	6.90	NA	NC	NA	17.54	NA
CWC207425 / CWC207425-1	NC	NA	NC	NA	NC	NA	NC	NA
SVP200663 / SVP200663-1	NC	NA	38.35	0.80	NC	NA	24.87	NA

[a] Surface/ground-water samples ending in "-1" are duplicate surface/ground water samples.
[b] RPD criterion for liquid samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
* Not calculated, because either parent or duplicate sample was not analyzed.
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

Table 5-4. Radiological Duplicate Sample Alpha Analysis for CY 2018 – Sediment

Soil Sample Name[a]	Th-228		Th-230		Th-232	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-1	53.05	0.92	73.42	1.69	29.19	NA
CWC207424 / CWC207424-1	12.26	NA	29.06	NA	9.35	NA

[a] Sediment samples ending in "-1" are duplicate sediment samples.
[b] RPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
NA – not applicable (see RPD)

Table 5-5. Radiological Duplicate Sample Gamma Analysis for CY 2018 – Sediment

Soil Sample Name[a]	Ac-227		Am-241		Cs-137		K-40	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-1	NC	NA	NC	NA	NC	NA	4.92	NA
CWC207424 / CWC207424-1	NC	NA	NC	NA	NC	NA	8.70	NA
Soil Sample Name[a]	**Pa-231**		**Ra-226**		**Ra-228**		**Th-228**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-1	NC	NA	4.69	NA	6.95	NA	6.95	NA
CWC207424 / CWC207424-1	NC	NA	7.25	NA	6.12	NA	6.12	NA
Soil Sample Name[a]	**Th-230**		**Th-232**		**U-235**		**U-238**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-1	NC	NA	6.95	NA	NC	NA	38.84	NA
CWC207424 / CWC207424-1	NC	NA	6.12	NA	NC	NA	0.92	NA

[a] Sediment samples ending in "-1" are duplicate sediment samples.
[b] RPD criterion for solid matrix samples is less than or equal_to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
Am – americium
Cs – cesium
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

5.7.2 Split Samples

Split samples measure accuracy and were collected by the sampling team and sent to a USACE QA laboratory for analysis to provide an independent assessment of contractor and subcontractor laboratory performance. One split sample was collected for approximately every 20 field samples of each matrix for non-radiological and for radiological analytes across the SLS.

The RPDs for non-radiological analyses are presented in Tables 5-6 and 5-7. The RPDs and NADs for radiological analyses are presented in Tables 5-8 through 5-10. The overall accuracy for the CY 2018 environmental monitoring activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-6. Non-Radiological Split Sample Analysis for CY 2018 – Surface and Ground Water

Water Sample Name[a]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD[b]	RPD[b]	RPD[b]	RPD[b]	RPD[b]
CWC200934 / CWC200934-2	NC	NC	7.17	NC	NC
CWC207425 / CWC207425-2	NC	NC	0.70	NC	NC
SVP200663 / SVP200663-2	NC	NC	2.47	**79.66**	NC
Water Sample Name[a]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD[b]	RPD[b]	RPD[b]	RPD[b]	RPD[b]
CWC200934 / CWC200934-2	1.32	45.91	**56.44**	NC	NC
CWC207425 / CWC207425-2	5.79	29.27	41.06	NC	NC
SVP200663 / SVP200663-2	NC	33.45	NC	NC	NC

[a] Surface/ground-water samples ending in "-2" are split surface/ground water samples.
[b] RPD criterion for liquid samples is less than or equal to 30 percent.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-7. Non-Radiological Split Sample Analysis for CY 2018 – Sediment

Soil Sample Name[a]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD[b]	RPD[b]	RPD[b]	RPD[b]	RPD[b]
CWC200933 / CWC200933-2	**90.08**	25.05	22.22	11.39	**58.71**
CWC207424 / CWC207424-2	NC	**52.12**	39.11	3.34	28.19
Soil Sample Name[a]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD[b]	RPD[b]	RPD[b]	RPD[b]	RPD[b]
CWC200933 / CWC200933-2	NC	0.72	42.42	NC	10.53
CWC207424 / CWC207424-2	NC	32.56	**115.58**	NC	**64.90**

[a] Sediment samples ending in "-2" are split sediment samples.
[b] RPD criterion for solid matrix samples is less than or equal to 50 percent.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-8. Radiological Split Sample Analysis for CY 2018 – Surface and Ground Water

Sample Name[a]	Ra-226		Ra-228		Th-228		Th-230	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC195845 / CWC195845-2	NC	NA	*	*	NC	NA	44.81	0.41
CWC199427 / CWC199427-2	NC	NA	*	*	NC	NA	101.05	1.03
SVP196688 / SVP196688-2	NC	NA	*	*	NC	NA	37.11	0.33
Sample Name[a]	**Th-232**		**U-234**		**U-235**		**U-238**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC195845 / CWC195845-2	NC	NA	5.91	NA	NC	NA	32.82	0.48
CWC199427 / CWC199427-2	NC	NA	112.73	1.41	NC	NA	48.16	0.50
SVP196688 / SVP196688-2	NC	NA	NC	NA	NC	NA	NC	NA

[a] Surface/ground-water samples ending in "-2" are split surface/ground water samples.
[b] RPD criterion for liquid samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
* Not calculated, because either parent or split sample was not analyzed.
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

Table 5-9. Radiological Split Sample Alpha Analysis for CY 2018 – Sediment

Soil Sample Name[a]	Th-228		Th-230		Th-232	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-2	55.61	1.06	**84.96**	**2.05**	44.15	NA
CWC207424 / CWC207424-2	25.63	NA	46.81	NA	26.98	NA

[a] Sediment samples ending in "-2" are split sediment samples.
[b] RPD criterion for solid matrix sample is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
Bold values exceed the control limits. Values not in bold are within control limits.
NA – not applicable (see RPD)

Table 5-10. Radiological Split Sample Gamma Analysis for CY 2018 – Sediment

Soil Sample Name[a]	Ac-227		Am-241		Cs-137		K-40	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-2	NC	NA	NC	NA	NC	NA	4.08	NA
CWC207424 / CWC207424-2	NC	NA	NC	NA	NC	NA	4.65	NA
Soil Sample Name[a]	**Pa-231**		**Ra-226**		**Ra-228**		**Th-228**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-2	NC	NA	10.85	NA	39.49	NA	39.49	NA
CWC207424 / CWC207424-2	NC	NA	67.74	1.79	15.49	NA	15.49	NA
Soil Sample Name[a]	**Th-230**		**Th-232**		**U-235**		**U-238**	
	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]	RPD[b]	NAD[b]
CWC200933 / CWC200933-2	*	*	39.49	NA	NC	NA	NC	NA
CWC207424 / CWC207424-2	*	*	15.49	NA	NC	NA	NC	NA

[a] Sediment samples ending in "-2" are split sediment samples.
[b] RPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
* Not calculated, because either parent or split sample was not analyzed.
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

5.7.3 Equipment Rinsate Blanks

Equipment rinsate blank samples are typically taken from the rinsate water collected from equipment decontamination activities. These samples consist of analyte-free water that has been rinsed over sampling equipment for the purposes of evaluating the effectiveness of equipment decontamination. All of the monitoring wells have dedicated sampling equipment, rendering decontamination unnecessary. Because decontamination does not apply, equipment rinsate blanks were not employed.

Sediment samples from CWC are collected from each station using a clean sampling spoon. These spoons are segregated after use and decontaminated at the SLAPS field trailer according to Field Technical Procedure 400, "Equipment Decontamination" (Leidos 2015b). Because the process of collecting sediment occurs below the surface of the water, a rinsate blank would not represent the wetted surface of the sampling spoon at the time of sample collection and would therefore not apply. The CWC surface water samples are collected using new nitrile gloves and new laboratory sample containers. Equipment rinsate blanks for these samples are also not required, because no potential for contamination exists.

5.8 DATA REVIEW, EVALUATION, AND VALIDATION

All data packages received from the analytical laboratory were reviewed and either evaluated or validated by data management personnel. Data validation is the systematic process of ensuring that the precision and accuracy of the analytical data are adequate for their intended use. Validation was performed in accordance with *Data Verification and Validation* (Leidos 2015c), and/or with project-specific guidelines. General chemical data quality management guidance found in Engineer Regulation 1110-1-263 (USACE 1998c) was also used when planning for chemical data management and evaluation. Additional details of data review, evaluation, and validation are provided in the *FUSRAP Laboratory Data Management Process for the St. Louis Site* (USACE 1999b). Data assessment guidance to determine the usability of data from hazardous, toxic, and radioactive waste projects is provided in EM 200-1-6 (USACE 1997).

One hundred (100) percent of the data generated from all analytical laboratories was independently reviewed and either evaluated and/or validated. The data review process documents the possible effects on the data from various QC failures; it does not determine data usability, nor does it include assignment of data validation qualifier (VQ) flags. The data evaluation process uses the results of the data review to determine the usability of the data. The process of data evaluation summarizes the potential effects of QA/QC failures on the data, and the USACE Chemist or USACE Health Physicist assesses their impact on the attainment of the project-specific data quality objectives (DQOs). Consistent with the data quality requirements, as defined in the DQOs, approximately 10 percent of all project data were validated.

5.9 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY, COMPLETENESS, AND SENSITIVITY

The data evaluation process considers precision, accuracy, representativeness, completeness, comparability, and sensitivity. This section provides detail to the particular parameters and how the data were evaluated for each, with discussion and tables to present the associated data. An evaluation of the overall precision, accuracy, representativeness, completeness, comparability, and sensitivity of the CY 2018 environmental monitoring activities was acceptable and complete.

Accuracy and precision can be measured by the RPD or the NAD using the following equations:

$$RPD = \left(\frac{[S - D]}{\frac{S+D}{2}} \right) x\ 100$$

$$NAD = \frac{|S - D|}{\sqrt{U_S^2 + U_D^2}}$$

where:

S = parent sample result
D = duplicate/split sample result
U_S = parent sample uncertainty
U_D = duplicate/split sample uncertainty

The RPD is calculated for all samples for which a detectable result is reported for both the parent and the QA field split or field duplicate. For surface and ground-water radiological samples, when the RPD is greater than 30 percent, the NAD is used to determine the accuracy or precision of the method. NAD accounts for uncertainty in the results; RPD does not. The NAD should be equal to or less than a value of 1.96. The RPD criterion for sediment samples is equal to 50 percent. Neither equation is used when the analyte in one or both of the samples is not detected. In cases in which neither equation can be used, the comparison is counted as acceptable in the overall number of comparisons.

Precision is a measure of mutual agreement among individual measurements performed under the same laboratory controls. To evaluate for precision, a field duplicate is submitted to the same laboratory as the original sample to be analyzed under the same laboratory conditions.

The RPD and NAD between the two results was calculated and used as an indication of the precision of the analyses performed (Tables 5-1 through 5-5). Sample collection precision was measured in the laboratory by the analyses of duplicates. With the exception of a few outliers, which were qualified accordingly, the overall precision for the CY 2018 environmental monitoring activities was acceptable.

Accuracy provides a gauge or measure of the agreement between an observed result and the true value for an analysis. The RPD and NAD between the two results was calculated and used as an indication of the accuracy of the analyses performed (Tables 5-6 through 5-10). For this EMDAR, accuracy is measured through the use of the field split samples through a comparison of the prime laboratory results versus the results of an independent laboratory. The overall accuracy for CY 2018 environmental monitoring activities was acceptable.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter that depends upon the proper design of the sampling program and proper laboratory protocols. Representativeness is satisfied through proper design of the sampling network, use of proper sampling techniques, following proper analytical procedures, and not exceeding holding times of the samples.

Representativeness was determined by assessing the combined aspects of the QA program, QC measures, and data evaluations. The network design was developed from the EMICY18, the sampling protocol from the SAG has been followed, and analytical procedures were conducted within the bounds of the QAPP. The overall representativeness of the CY 2018 environmental monitoring activities was acceptable.

Comparability expresses the confidence with which one dataset can be compared with another. The extent to which analytical data will be comparable depends upon the similarity of sampling and analytical methods, as well as sample-to-sample and historical comparability. Standardized and consistent procedures used to obtain analytical data are expected to provide comparable results. For example, post-CY 1997 analytical data may not be directly comparable to data collected before CY 1997, because of differences in DQOs. Additionally, some sample media (e.g., storm water and radiological monitoring) have values that are primarily useful in the present, thus the comparison to historical data is not as relevant. However, the overall comparability of the applicable environmental monitoring data met the project DQOs.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under normal conditions. Laboratories are expected to provide data meeting QC acceptance criteria for all samples tested. For the CY 2018 environmental monitoring activities, the data completeness was 100 percent (St. Louis FUSRAP DQO for completeness is 90 percent).

Sensitivity is the determination of minimum detectable concentration (MDC) values that allows the investigation to assess the relative confidence that can be placed in an analytical result in comparison to the magnitude or level of analyte concentration observed. For this EMDAR, MDC is a term generically used to represent both the method detection limit (MDL) for non-radiologicals and the minimum detectable activity (MDA) for radiological analytes. The closer a measured value to the MDC, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the SAG. These levels were achieved or exceeded throughout the analytical process.

The MDC is reported for each result obtained by laboratory analysis. These very low MDCs are achieved through the use of gamma spectroscopy for all radionuclides of concern, with additional analyses from alpha spectroscopy for thorium and from inductively coupled plasma (ICP) for metals. Variations in MDCs for the same radiological analyte reflect variability in the detection efficiencies and conversion factors due to factors such as individual sample aliquot, sample density, and variations in analyte background radioactivity for gamma and alpha spectroscopy at the laboratory. Variations in MDLs for the same non-radiological analyte reflect variability in calibrations between laboratories, dilutions, and analytical methods. In order to complete the data evaluation (i.e., precision, accuracy, representativeness, and comparability), analytical results that exceed the MDC of the analyte are desired.

5.10 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the data meets the established project objectives. Through proper implementation of the project data review, evaluation, validation, and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable, but estimated when necessary. Data that have been estimated have concentrations/activities that are below the quantitation limit or are indicative of accuracy, precision, or sensitivity less than desired but adequate for interpretation.

These data can withstand scientific scrutiny, are appropriate for the intended purpose, and are technically defensible. The environmental information presented has an established confidence, which allows utilization for the project objectives and provides data for future needs.

5.11 RESULTS FOR PARENT SAMPLES AND THE ASSOCIATED DUPLICATE AND SPLIT SAMPLES

Summaries of the QA parent sample results and associated duplicate and/or split sample results are presented in Tables 5-11 through 5-14.

Table 5-11. Non-Radiological Parent Samples and Associated Duplicate and Split Samples (Surface and Ground Water) for CY 2018

Water Sample Name[a]	Antimony[b]			Arsenic[b]			Barium[b]			Cadmium[b]			Chromium[b]		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC200934	2.00	2.00	U	4.00	4.00	U	130.00	0.90	=	0.33	0.20	=	4.00	4.00	U
CWC200934-1	2.00	2.00	U	4.00	4.00	U	130.00	0.90	=	0.20	0.20	U	4.00	4.00	U
CWC200934-2	1.56	0.50	=	2.38	0.50	=	121.00	1.50	=	0.30	0.30	U	1.06	1.00	=
CWC207425	2.00	2.00	U	4.00	4.00	U	100.00	0.90	=	0.20	0.20	U	4.00	4.00	U
CWC207425-1	2.00	2.00	U	4.00	4.00	U	100.00	0.90	=	0.20	0.20	U	4.00	4.00	U
CWC207425-2	0.50	0.50	U	3.62	0.50	=	99.30	1.50	=	0.30	0.30	U	1.55	1.00	=
SVP200663	2.00	2.00	U	4.00	4.00	U	160.00	0.90	=	0.21	0.20	=	4.00	4.00	U
SVP200663-1	2.00	2.00	U	4.00	4.00	U	160.00	0.90	=	0.56	0.20	=	4.00	4.00	U
SVP200663-2	0.50	0.50	U	3.02	0.50	=	164.00	1.50	=	0.49	0.30	=	1.00	1.00	U

Water Sample Name[a]	Molybdenum[b]			Nickel[b]			Selenium[b]			Thallium[b]			Vanadium[b]		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC200934	9.80	2.00	=	2.40	2.00	=	2.90	2.00	=	0.90	0.90	U	4.00	4.00	U
CWC200934-1	9.20	2.00	=	2.10	2.00	=	4.30	2.00	=	0.90	0.90	U	4.00	4.00	U
CWC200934-2	9.93	5.00	=	3.83	2.00	=	5.18	0.50	=	0.80	0.10	=	1.23	0.50	=
CWC207425	16.00	2.00	=	2.80	2.00	J	2.40	2.00	J	0.90	0.90	U	4.00	4.00	U
CWC207425-1	16.00	2.00	=	2.60	2.00	J	2.60	2.00	J	0.90	0.90	U	4.00	4.00	U
CWC207425-2	15.10	5.00	=	3.76	2.00	=	3.64	0.50	=	0.10	0.10	U	2.61	0.50	=
SVP200663	2.00	2.00	U	6.00	2.00	=	2.00	2.00	U	0.90	0.90	U	4.00	4.00	U
SVP200663-1	2.00	2.00	U	6.20	2.00	=	2.00	2.00	U	0.90	0.90	U	4.00	4.00	U
SVP200663-2	5.00	5.00	U	8.41	2.00	=	1.76	0.50	=	0.10	0.10	U	2.23	0.50	=

[a] Samples ending in “-1” are duplicate samples. Samples ending in “-2” are split samples.
[b] Result values are expressed in µg/L.
VQ symbols indicate: “=” for positively identified results, “U” for not detected, and “J” analyte was identified as estimated quantity.

Table 5-12. Non-Radiological Parent Samples and Associated Duplicate and Split Samples (Sediment) for CY 2018

Soil Sample Name[a]	Antimony[b]			Arsenic[b]			Barium[b]			Cadmium[b]			Chromium[b]		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC200933	0.36	0.29	J	5.30	0.59	=	140.00	0.73	=	0.48	0.04	J	26.00	0.66	=
CWC200933-1	0.71	0.28	=	5.10	0.56	=	200.00	0.70	=	0.85	0.03	=	16.00	0.63	=
CWC200933-2	0.95	0.10	=	4.12	0.20	=	112.00	1.98	=	0.54	0.07	=	14.20	0.26	=
CWC207424	0.30	0.27	=	5.20	0.53	=	140.00	0.67	=	0.50	0.03	=	17.00	0.60	=
CWC207424-1	0.32	0.31	=	5.50	0.62	=	130.00	0.78	=	0.47	0.04	=	17.00	0.70	=
CWC207424-2	0.07	0.07	U	3.05	0.14	=	94.20	0.72	J	0.52	0.05	=	12.80	0.19	J
Soil Sample Name[a]	**Molybdenum[b]**			**Nickel[b]**			**Selenium[b]**			**Thallium[b]**			**Vanadium[b]**		
	Result	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**
CWC200933	1.50	0.29	=	14.00	0.29	J	2.00	0.47	=	0.29	0.29	U	15.00	0.59	=
CWC200933-1	1.40	0.28	=	30.00	0.28	=	1.70	0.45	=	0.28	0.28	U	17.00	0.56	=
CWC200933-2	1.44	1.44	U	13.90	0.53	=	1.30	0.13	=	0.13	0.03	=	13.50	0.33	=
CWC207424	0.77	0.27	=	15.00	0.27	=	2.00	0.43	=	0.27	0.27	U	20.00	0.53	=
CWC207424-1	1.10	0.31	=	15.00	0.31	=	1.90	0.50	=	0.31	0.31	U	19.00	0.62	=
CWC207424-2	1.60	1.60	U	10.80	0.38	=	0.54	0.10	=	0.08	0.02	=	10.20	0.24	J

[a] Samples ending in “-1” are duplicate samples. Samples ending in “-2” are split samples.
[b] Result values are expressed in mg/kg.
VQ symbols indicate: “=” for positively identified results, “U” for not detected, and “J” analyte was identified as estimated quantity.

Table 5-13. Radiological Parent Samples and Associated Duplicate and Split Samples (Surface and Ground Water) for CY 2018

Water Sample Name[a]	Ra-226[b]				Ra-228[b]				Th-228[b]				Th-230[b]			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC200934	0.57	0.65	1.12	UJ	*	*	*	*	0.34	0.36	0.61	UJ	0.34	0.33	0.38	UJ
CWC200934-1	-0.04	0.48	1.56	UJ	*	*	*	*	0.11	0.22	0.48	UJ	0.36	0.34	0.40	UJ
CWC200934-2	0.11	0.06	0.08	J	*	*	*	*	0.04	0.14	0.23	UJ	0.07	0.22	0.34	UJ
CWC207425	0.04	0.34	1.12	UJ	*	*	*	*	0.17	0.24	0.42	UJ	0.10	0.20	0.42	UJ
CWC207425-1	0.26	0.45	0.97	UJ	*	*	*	*	0.24	0.27	0.38	UJ	0.12	0.19	0.29	UJ
CWC207425-2	0.37	0.13	0.12	J	*	*	*	*	0.10	0.13	0.18	UJ	-0.01	0.15	0.23	UJ
SVP200663	1.87	1.61	1.64	J	*	*	*	*	0.09	0.24	0.51	UJ	0.33	0.34	0.51	UJ
SVP200663-1	0.07	0.62	1.93	UJ	*	*	*	*	0.23	0.27	0.40	UJ	0.53	0.38	0.18	J
SVP200663-2	0.59	0.14	0.07	=	*	*	*	*	0.09	0.10	0.14	UJ	0.27	0.16	0.17	J
Water Sample Name[a]	**Th-232[b]**				**U-234[b]**				**U-235[b]**				**U-238[b]**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC200934	0.00	0.20	0.53	UJ	1.12	0.66	0.47	J	0.00	0.31	0.80	UJ	0.59	0.48	0.46	J
CWC200934-1	-0.02	0.16	0.40	UJ	1.20	0.61	0.44	J	0.00	0.24	0.62	UJ	0.49	0.40	0.49	J
CWC200934-2	-0.04	0.04	0.21	UJ	1.02	0.32	0.14	=	0.02	0.06	0.15	UJ	0.49	0.22	0.10	=
CWC207425	0.04	0.14	0.39	UJ	0.61	0.40	0.32	J	0.00	0.00	0.21	U	0.30	0.28	0.28	J
CWC207425-1	0.04	0.14	0.38	UJ	0.40	0.38	0.53	UJ	0.18	0.27	0.42	UJ	0.00	0.00	0.91	U
CWC207425-2	-0.01	0.02	0.10	UJ	0.62	0.22	0.13	=	0.02	0.05	0.11	UJ	0.39	0.18	0.10	=
SVP200663	-0.03	0.06	0.36	UJ	4.04	1.30	0.59	=	-0.04	0.09	0.52	UJ	3.21	1.11	0.19	=
SVP200663-1	0.13	0.19	0.18	UJ	2.74	0.97	0.39	=	0.16	0.23	0.22	UJ	2.50	0.91	0.17	=
SVP200663-2	-0.01	0.02	0.12	UJ	3.18	0.54	0.12	=	0.07	0.09	0.12	UJ	2.19	0.43	0.10	=

[a] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
[b] Result values are expressed in pCi/L. Negative results are less than the laboratory system's background level.
* Not available, because sample was not analyzed.
VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" analyte was identified as estimated quantity, and "UJ" analyte was not detected and had QC deficiencies.

Table 5-14. Radiological Parent Samples and Associated Duplicate and Split Samples (Sediment) for CY 2018

Soil Sample Name[a]	Th-228[b,c]				Th-230[b,c]				Th-232[b,c]			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC200933	1.14	0.43	0.24	=	2.70	0.74	0.16	=	0.95	0.38	0.16	=
CWC200933-1	0.66	0.30	0.14	=	1.25	0.43	0.12	=	0.71	0.31	0.17	=
CWC200933-2	0.64	0.20	0.13	=	1.09	0.26	0.15	=	0.61	0.18	0.07	=
CWC207424	0.91	0.37	0.23	=	1.50	0.50	0.15	J	0.94	0.37	0.14	=
CWC207424-1	1.03	0.41	0.17	=	2.01	0.63	0.13	J	1.03	0.41	0.18	=
CWC207424-2	0.70	0.17	0.10	=	0.93	0.20	0.12	=	0.72	0.16	0.05	=
Soil Sample Name[a]	**Ac-227[c]**				**Am-241[c]**				**Cs-137[c]**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC200933	0.23	0.04	0.10	=	0.00	0.03	0.04	UJ	0.00	0.01	0.02	UJ
CWC200933-1	-0.78	0.14	0.24	UJ	-0.02	0.04	0.06	UJ	-0.01	0.02	0.03	UJ
CWC200933-2	0.50	1.07	1.79	UJ	0.06	0.22	0.36	UJ	-0.10	0.13	0.19	UJ
CWC207424	-0.87	0.18	0.16	UJ	-0.01	0.04	0.06	UJ	-0.01	0.02	0.03	UJ
CWC207424-1	-0.40	0.11	0.15	UJ	-0.01	0.03	0.05	UJ	0.00	0.02	0.03	UJ
CWC207424-2	0.11	0.43	0.85	UJ	-0.08	0.20	0.33	UJ	0.04	0.06	0.10	UJ
Soil Sample Name[a]	**K-40[c]**				**Pa-231[c]**				**Ra-226[c]**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC200933	12.50	0.80	0.21	=	0.21	0.47	0.80	UJ	1.04	0.26	0.05	=
CWC200933-1	11.90	0.83	0.30	=	-0.08	0.66	1.11	UJ	1.09	0.27	0.07	=
CWC200933-2	12.00	2.30	0.85	=	0.45	2.09	6.67	UJ	0.93	0.23	0.14	=
CWC207424	13.20	1.76	0.30	=	-0.18	0.60	0.99	UJ	1.33	0.34	0.07	=
CWC207424-1	12.10	1.63	0.27	=	-0.31	0.61	1.00	UJ	1.43	0.36	0.06	=
CWC207424-2	12.60	2.09	0.83	=	-0.30	3.45	5.83	UJ	0.66	0.16	0.12	=
Soil Sample Name[a]	**Ra-228[c]**				**Th-228[c]**				**Th-230[c]**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC200933	0.66	0.03	0.05	=	0.66	0.03	0.05	=	5.27	2.50	4.31	UJ
CWC200933-1	0.61	0.04	0.07	=	0.61	0.04	0.07	=	0.25	3.36	5.58	UJ
CWC200933-2	0.44	0.21	0.42	=	0.44	0.21	0.42	=	*	*	*	*
CWC207424	0.79	0.11	0.07	=	0.79	0.11	0.07	=	0.70	3.01	5.01	UJ
CWC207424-1	0.75	0.11	0.07	=	0.75	0.11	0.07	=	1.93	2.81	4.73	UJ
CWC207424-2	0.93	0.23	0.29	=	0.93	0.23	0.29	=	*	*	*	*
Soil Sample Name[a]	**Th-232[c]**				**U-235[c]**				**U-238[c]**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC200933	0.66	0.03	0.05	=	0.11	0.15	0.26	UJ	0.74	0.17	0.50	=
CWC200933-1	0.61	0.04	0.07	=	0.16	0.21	0.35	UJ	0.50	0.21	0.49	=
CWC200933-2	0.44	0.21	0.42	=	-0.26	0.73	1.23	UJ	0.02	1.85	3.16	UJ
CWC207424	0.79	0.11	0.07	=	0.12	0.18	0.30	UJ	0.98	0.18	0.32	=
CWC207424-1	0.75	0.11	0.07	=	0.13	0.19	0.32	UJ	0.97	0.18	0.31	=
CWC207424-2	0.93	0.23	0.29	=	-0.22	0.62	1.03	UJ	-0.46	0.63	2.23	UJ

[a] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
[b] Results from alpha spectroscopy.
[c] Result values are expressed in pCi/g.
* Not available, because sample was not analyzed.
VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" analyte was identified as estimated quantity, and "UJ" analyte was not detected and had QC deficiencies.

6.0 RADIOLOGICAL DOSE ASSESSMENT

This section evaluates the cumulative dose to a hypothetically impacted individual from exposure to radiological contaminants at the NC Sites and documents dose trends. The regulatory dose limit for members of the public is 100 mrem per year, as stated in 10 *CFR* 20.1301. Although 10 *CFR* 20.1301 is not an ARAR for the NC Sites, the USACE has provided this evaluation to assess public exposures from St. Louis FUSRAP cleanup operations. Compliance with the dose limit in §20.1301 can be demonstrated in one of the two following methods (§20.1302(b)(1) and (2)):

1. Demonstrating by measurement or calculation that the TEDE to the individual likely to receive the highest dose from FUSRAP cleanup operations at the NC Sites does not exceed the annual dose limit (i.e., 100 mrem per year); or
2. Demonstrating that: (*i*) the annual average concentration of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area does not exceed the values specified in Table 2 of Appendix B to 10 *CFR* 20; and (*ii*) if an individual were continuously present in an unrestricted area, the dose from external sources would not exceed 2 mrem per hour.

The USACE has elected to demonstrate compliance by calculation of the TEDE to a hypothetical individual likely to receive the highest dose from FUSRAP cleanup operations at the NC Sites (method 1). This section describes the methodology employed for this evaluation.

Dose calculations are presented for hypothetical maximally exposed individuals at the Latty Avenue Properties, SLAPS, SLAPS VPs, and CWC. The monitoring data used in the dose calculations are reported in the respective environmental monitoring sections of this EMDAR.

Dose calculations related to airborne emissions, as required by 40 *CFR* 61, Subpart I, *National Emission Standards for Emissions of Radionuclides Other Than Radon From Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered By Subpart H,* are presented in Appendix A (the "North St. Louis County FUSRAP Sites 2018 Radionuclide Emissions NESHAP Report Submitted in Accordance with Requirements of 40 *CFR* 61, Subpart I").

6.1 SUMMARY OF ASSESSMENT RESULTS AND DOSE TRENDS

Soil cleanup activities of accessible areas on the most contaminated Latty Avenue Properties (HISS and Futura) were completed in CY 2011; however, inaccessible contamination was left beneath and adjacent to the buildings and adjacent to power poles on the north side of the properties. The TEDE from Latty Avenue Properties to a hypothetical maximally exposed receptor was indistinguishable from background radiation dose after the cleanup concluded on the Latty Avenue Properties. Therefore, calculation of TEDE from the Latty Avenue Properties to a hypothetical maximally exposed receptor was not included in the reports from 2012 until 2016 because neither excavation nor loadout activities occurred on those properties during that time.

In 2017, a small area was identified along the railroad tracks on VP-40A where the external radiation levels are slightly above background levels. This area is currently classified as inaccessible and is known to have radiological contamination in excess of ROD RGs. Although the average external gamma radiation levels do not exceed the monitoring threshold of 20 µR per hour in the ROD, monitoring was started. In 2018, additional excavation occurred on a previously inaccessible area around power poles on Futura adjacent to Latty Avenue.

The TEDE from Latty Avenue Properties to a hypothetical maximally exposed individual from all complete/applicable pathways combined was calculated to be less than 5.0 mrem per year, estimated for an individual who works full time at a location approximately 75 m east of VP-40A on the Futura property and conservatively estimated to be approximately 55 m southwest of the power pole excavation.

The TEDE from the SLAPS to a hypothetical maximally exposed individual from all complete/applicable pathways combined was less than 0.1 mrem per year, estimated for an individual who works full time at a location approximately 500 m west-southwest from the center of the SLAPS Loadout area.

The TEDE from the SLAPS VPs to a hypothetical maximally exposed individual from all complete/applicable pathways combined was 0.2 mrem per year, estimated for a resident who lives full time at a location approximately 70 m west from the center of the Chez Paree excavation area.

The TEDE from CWC to a hypothetical maximally exposed individual from all complete/applicable pathways combined was 0.3 mrem per year, estimated for a resident youth (10-year-old child) spending time as a recreational user of CWC.

Annual dose trends from CY 2000 to CY 2018 at applicable NC Sites are documented on Figure 6-1. A comparison of the maximum annual dose from CY 2000 to CY 2018 at each of the applicable NC Sites to the annual average natural background dose of approximately 300 mrem per year is provided on Figure 6-2.

6.2 PATHWAY ANALYSIS

The six complete pathways for exposure to NC Site radiological contaminants evaluated by the St. Louis FUSRAP EMP are listed in Table 6-1. These pathways are used to identify data gaps in the EMP and to estimate potential radiological exposures from the site. Of the six complete pathways, four were applicable in CY 2018 and were thus incorporated into radiological dose estimates.

Table 6-1. Complete Radiological Exposure Pathways for the NC Sites

Exposure Pathway	Pathway Description	Applicable to CY 2018 Dose Estimate	
		NC Sites	CWC
Liquid A	Ingestion of ground water from local wells down-gradient from the site.	NA	NA
Liquid B	Ingestion of fish inhabiting CWC.	NC	NA
Liquid C	Ingestion of surface water[a] and sediments.	NC	Y[b]
Airborne A	Inhalation of particulates dispersed through wind erosion and RAs.	Y	NC
Airborne B	Inhalation of Rn-222 and decay products emitted from contaminated soils/wastes.	Y	NC
External	Direct gamma radiation from contaminated soils/wastes.	Y	NA

[a] Surface water includes storm-water run-off from NC Sites, MSD discharges, and the water in CWC.

[b] The pathway is only applicable to a recreational receptor (youth) exposed to contaminants present in CWC water and sediments. Data from NC Sites storm-water discharges and MSD discharges are not applicable to the hypothetical recreational receptor; therefore, those data are not evaluated in this section.

NA – not applicable for the site
NC – not a complete pathway for the respective site
Y – applicable for the site

In developing specific elements of the St. Louis FUSRAP EMP, potential exposure pathways of the radioactive materials present on site are reviewed to determine which pathways are complete.

Evaluation of each exposure pathway is based on hypothetical sources, release mechanisms, types, probable environmental fates of contaminants, and the locations and activities of potential receptors. Pathways are then reviewed to determine whether a link exists between one or more radiological contaminant sources, or between one or more environmental transport processes, to an exposure point at which human receptors are present. If a link exists, the pathway is termed complete. Each complete pathway was reviewed to determine if a potential for exposure was present in CY 2018. If a potential for exposure was possible, the pathway is termed applicable. Only applicable pathways are considered in estimates of dose.

The pathways applicable to the CY 2018 dose estimates for NC Sites, including CWC, are shown in Table 6-1. The incomplete pathways were not considered in the dose assessment and are only listed in Table 6-1 because they were complete for at least one receptor location. The pathways listed as not applicable were listed as such in CY 2018 for the following reasons:

- Liquid A is not applicable, because the aquifer is of naturally low quality and is not known to be used for any domestic purpose in the vicinity of the NC Sites (DOE 1994).
- Liquid B is not applicable at CWC or for the SLAPS transient receptor, because the receptor would be unlikely to catch and eat a game fish. A survey was conducted, and 97 percent of the fish collected at CWC during the survey were fathead minnows (Parker and Szlemp 1987).
- The dose equivalent from CWC to the receptor from contaminants in the water/sediment was estimated using the Microshield Version 5.03 computer-modeling program. The scenario used was a youth playing in the creek bed (1 ft of water shielding and dry) for 52 hours per year. The highest estimated whole body dose to the youth was 0.3 microrem per year. The gamma dose rate emitted from the contaminants is indistinguishable from background gamma radiation. Therefore, the external gamma pathway (from contaminants in the creek water/sediment) is not applicable for the CWC receptor.

6.3 EXPOSURE SCENARIOS

Dose calculations were performed for maximally exposed individuals at critical receptor locations for applicable exposure pathways (see Table 6-1) to assess dose due to radiological releases from the NC Sites. First, conditions were set to determine the TEDE to a maximally exposed individual at each of the main site locations on which excavation and loadout activities occurred (i.e., Latty Avenue Properties, the SLAPS, and the SLAPS VPs). A second dose equivalent for CWC was calculated. A third set of dose equivalent calculations was performed to meet NESHAP requirements (Appendix A). These dose equivalent calculations were also used for purposes of TEDE calculation.

The scenarios and models used to evaluate these radiological exposures are conservative but appropriate. Although radiation doses can be calculated or measured for individuals, it is not appropriate to predict the health risk to a single individual using the methods prescribed herein. Dose equivalents to a single individual are estimated by hypothesizing a maximally exposed individual and placing this individual in a reasonable but conservative scenario. This method is acceptable when the magnitude of the dose to a hypothetical maximally exposed individual is small, as is the case for the NC Sites. This methodology provides for reasonable estimates of potential exposure to the public and maintains a conservative approach. The scenarios and resulting estimated doses are outlined in Section 6.4.

All ingestion calculations were performed using the methodology described in International Commission on Radiation Protection (ICRP) Reports 26 and 30 for a 50-year committed effective dose equivalent (CEDE). The 50-year CEDE conversion factors were obtained from *Federal Guidance Report* 11 (USEPA 1989a) and *Calculation of Slope Factors and Dose Coefficients* (ORNL 2014).

6.4 DETERMINATION OF TOTAL EFFECTIVE DOSE EQUIVALENT FOR EXPOSURE SCENARIOS

The TEDE for the exposure scenarios was calculated using CY 2018 monitoring data. Calculations for dose scenarios are provided in Appendix H. Dose equivalent estimates are well below the standards set by the NRC for annual public exposure and the USEPA NESHAP limits.

The CY 2018 TEDE for a hypothetical maximally exposed individual near the Latty Avenue Properties, SLAPS, SLAPS VPs, and CWC is 5.0 mrem per year, less than 0.1 mrem per year, 0.2 mrem per year, and 0.3 mrem per year, respectively. In comparison, the annual average exposure to natural background radiation in the United States results in a TEDE of approximately 300 mrem per year (NCRP 2009). Assumptions are detailed in the following sections.

6.4.1 Radiation Dose Equivalent from Latty Avenue Properties to a Maximally Exposed Individual

The Latty Avenue Properties contributing to dose include the monitored area on VP-40A and the location where RA occurred on Futura in CY 2018. This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to be located approximately 75 m east from the area identified as having the highest external gamma radiation level on VP-40A and conservatively assumed to be located 55 m southwest of the power pole excavation on Futura. No private residences are adjacent to the site. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than 100 percent. A full-time-employee business receptor was considered the maximally exposed individual for the Latty Avenue Properties.

The exposure scenario assumptions are as follows:

- Exposure to external gamma radiation and radon from VP-40A sources occurs to the maximally exposed individual while working full time outside at the receptor location (i.e., Futura) located approximately 75 m east from the area identified as having the highest external gamma level on VP-40A Exposure time is 2,000 hours per year (Leidos 2019b).
- Exposure from external gamma radiation was calculated using environmental TLD monitoring data at the perimeter between the source and the receptor. The site is assumed to represent a line-source to the receptor (Leidos 2019b).
- Exposure from inhalation of radioactive particulates dispersed through wind erosion of contaminated soil and airborne particulates during excavation activities was conservatively estimated at a distance of 55 m to the southwest of the Futura excavation (Leidos 2019b).
- Exposure from Rn-222 (and progeny) was calculated using a dispersion factor and Rn-222 (ATD) monitoring data at the site perimeter between the source and the receptor (Leidos 2019b).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the Futura facility located 75 m east from the monitored area on VP-40A identified as having the highest external gamma level and located 55 m southwest of the power pole excavation would have received less than 0.1 mrem per year from external gamma, less than 0.1 mrem per year from airborne radioactive particulates, and 5.0 mrem per year from Rn-222, for a TEDE of 5.0 mrem per year (Leidos 2019b).

6.4.2 Radiation Dose Equivalent from St. Louis Airport Site to a Maximally Exposed Individual

The SLAPS area contributing to dose (i.e., those areas at which waste handling activities occurred in CY 2018) is the SLAPS Loadout area. This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to be located approximately 500 m west-southwest from the center of the SLAPS Loadout area and to receive a radiation dose by the exposure pathways identified previously. No private residences are adjacent to the site. Therefore, all calculations of dose equivalence due to the applicable pathways assume a realistic residence time that is less than 100 percent. A full-time-employee business receptor was considered the maximally exposed individual for the SLAPS.

The exposure scenario assumptions are as follows:

- Exposure to radiation from all SLAPS sources occurs to the maximally exposed individual while working full time outside at the receptor location facility located approximately 500 m west-southwest from the center of the SLAPS Loadout area Exposure time is 2,000 hours per year (Leidos 2019c).
- Exposure from external gamma radiation was calculated using environmental TLD monitoring data at the perimeter between the source and the receptor. The site is assumed to represent a line-source to the receptor (Leidos 2019c).
- Exposure from airborne radioactive particulates was calculated using soil concentration data and air particulate monitoring data to determine a source term and then running the CAP88-PC modeling code to calculate dose to the receptor (Leidos 2019c).
- Exposure from Rn-222 (and progeny) was calculated using a dispersion factor and Rn-222 (ATD) monitoring data at the site perimeter between the source and the receptor (Leidos 2019c).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the receptor facility 500 m west-southwest of the center of the SLAPS Loadout area would have received less than 0.1 mrem per year from external gamma, less than 0.1 mrem per year from airborne radioactive particulates, and less than 0.1 mrem per year from Rn-222, for a TEDE of less than 0.1 mrem per year (Leidos 2019c).

6.4.3 Radiation Dose Equivalent from St. Louis Airport Site Vicinity Properties to a Maximally Exposed Individual

The SLAPS VPs contributing to dose (i.e., those properties at which RA occurred in CY 2018) include the following: Eva Avenue, the Ballfields (IA-09), and the Chez Paree Properties. This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent the perimeter of the SLAPS VPs and to receive a radiation dose by the exposure pathways identified previously. Because radiation dose due to radon and external gamma radiation are considered negligible at the SLAPS VPs, the estimated TEDE only includes dose from exposure to airborne radioactive particulates that are assumed to be released during active excavations. The excavation activities at the Chez Paree Properties yielded the highest estimated exposure to airborne radioactive particulates (0.2 mrem per year) from the SLAPS VPs. A private residence is located approximately 70 m west of the Chez Paree Properties excavation; therefore, a residential receptor was considered the maximally exposed individual for the SLAPS VPs.

The exposure scenario assumptions are as follows:

- Exposure to radiation from all SLAPS VP sources occurs to the maximally exposed individual while living full time at the residence receptor location located approximately 70 m west from the center of the Chez Paree Properties excavation area. Exposure time is 8,760 hours per year (Leidos 2019c).
- Exposure from airborne radioactive particulates was calculated using soil concentration data and air particulate monitoring data to determine a source term and then running the CAP88-PC modeling code to calculate dose to the receptor (Leidos 2019c).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual living at the residence receptor location 70 m west from the center of the Chez Paree Properties excavation areas would have received 0.2 mrem per year from airborne radioactive particulates for a TEDE of 0.2 mrem per year (Leidos 2019c).

6.4.4 Radiation Dose Equivalent from Coldwater Creek to a Maximally Exposed Individual

This section describes the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent CWC and receive a radiation dose by the exposure pathways identified previously. The assumed scenario is for a recreational user. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than 100 percent. A youth spending time as a recreational user of CWC is considered the maximally exposed individual for CWC.

The exposure scenario assumptions are as follows:

- The youth spends 2 hours at CWC during each visit, and visits once every 2 weeks. It is likely that this activity would be greater in summer and less in winter, but the yearly average is 26 visits (Leidos 2019d).
- The soil/sediment ingestion rate is 50 mg per day, and the water ingestion rate is 2 L per day (USEPA 1989b; Leidos 2019d).
- The UCL_{95} of the mean radionuclide concentrations in CWC surface water/sediment samples collected in CY 2018 were assumed to be present in the water/sediment ingested by the maximally exposed individual (Leidos 2019d).
- Dose equivalent conversion factors for ingestion (for a 10-year-old child) are as follows: total U, 2.63E-04 mrem/pCi; Ra-226, 2.97E-03 mrem/pCi; Ra-228, 1.45E-02 mrem/pCi; Th-228, 5.07E-04 mrem/pCi; Th-230, 9.10E-04 mrem/pCi; and Th-232, 1.07E-03 mrem/pCi (ORNL 2014; Leidos 2019d).

Based on the exposure scenario and assumptions described herein, a maximally exposed individual using CWC for recreational purposes would have received less than 0.1 mrem per year from soil/sediment ingestion and 0.3 mrem per year from water ingestion, for a TEDE of 0.3 mrem per year (Leidos 2019d).

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FIGURES

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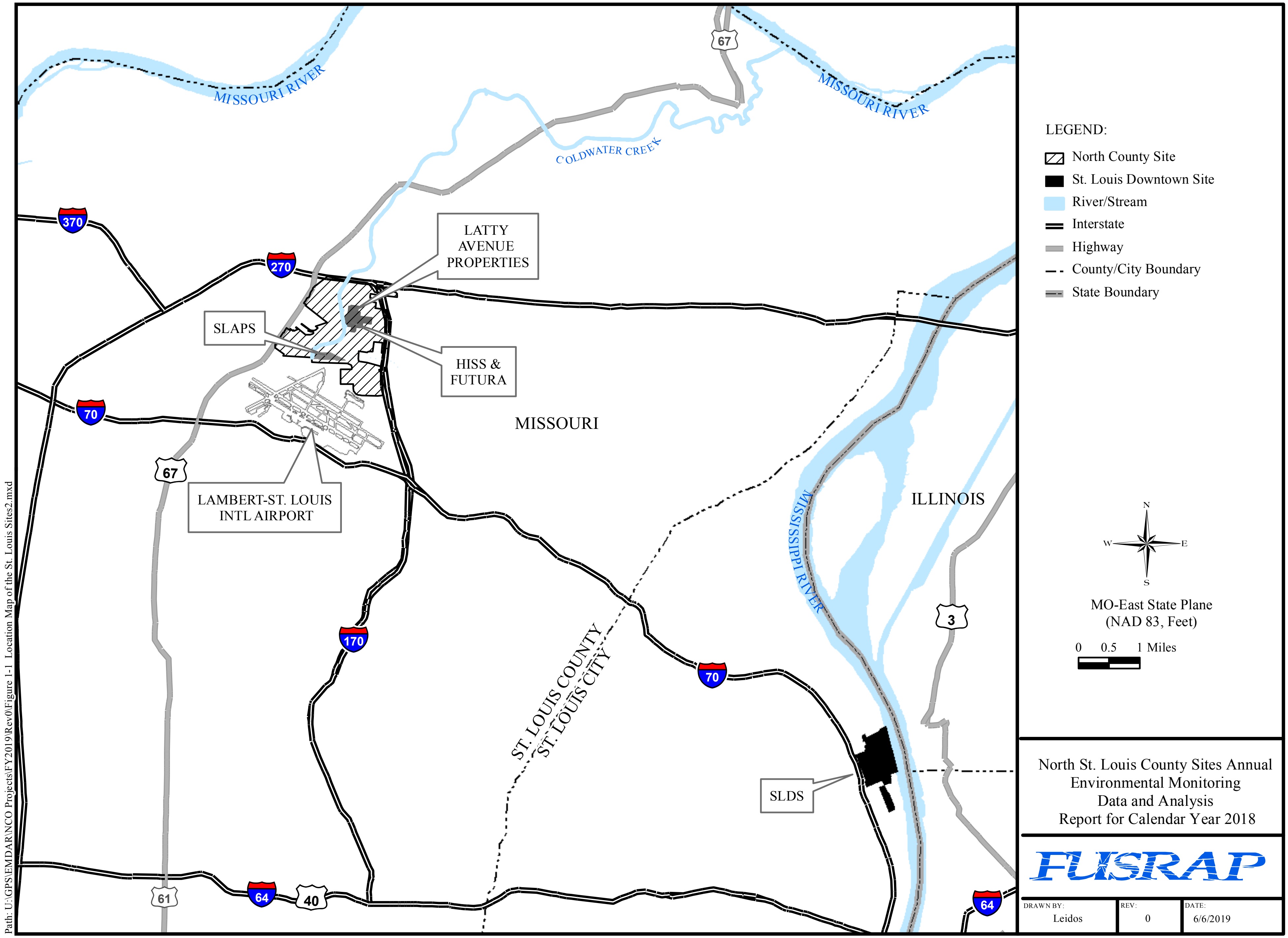

Figure 1-1. Location Map of the St. Louis Sites

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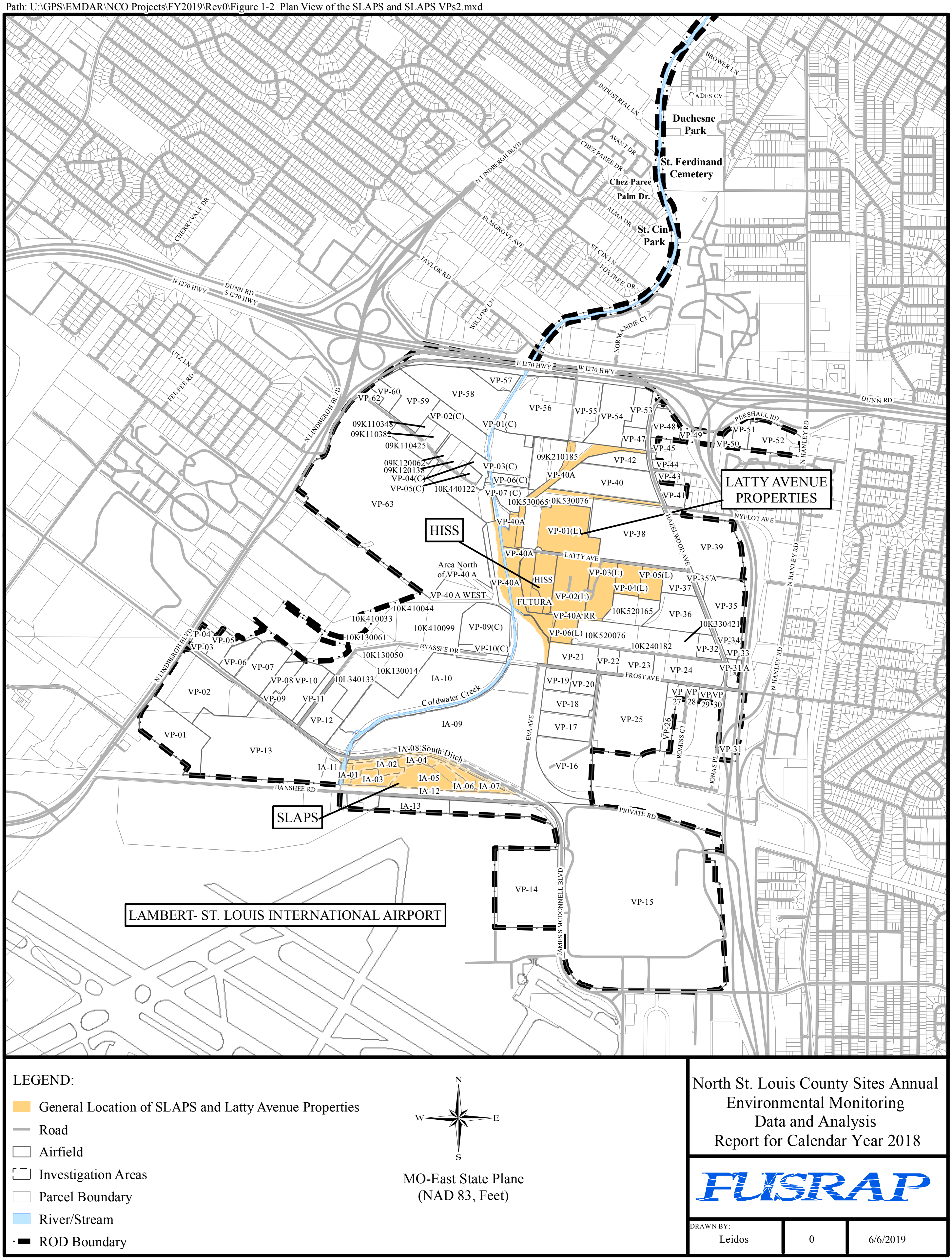

Figure 1-2. Plan View of the SLAPS, SLAPS VPs, and Latty Avenue Properties

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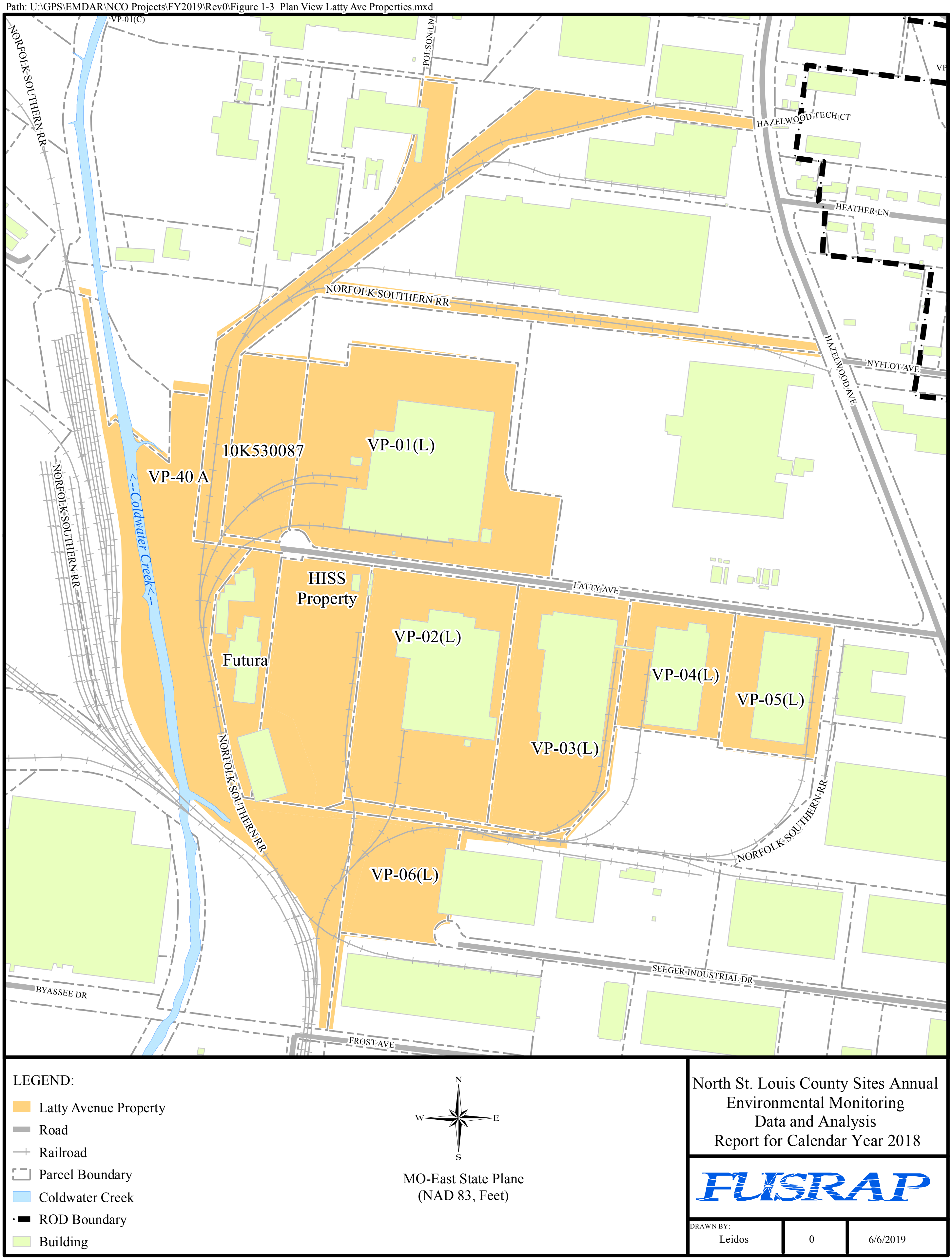

Figure 1-3. Plan View of the Latty Avenue Propeties including HISS and Futura

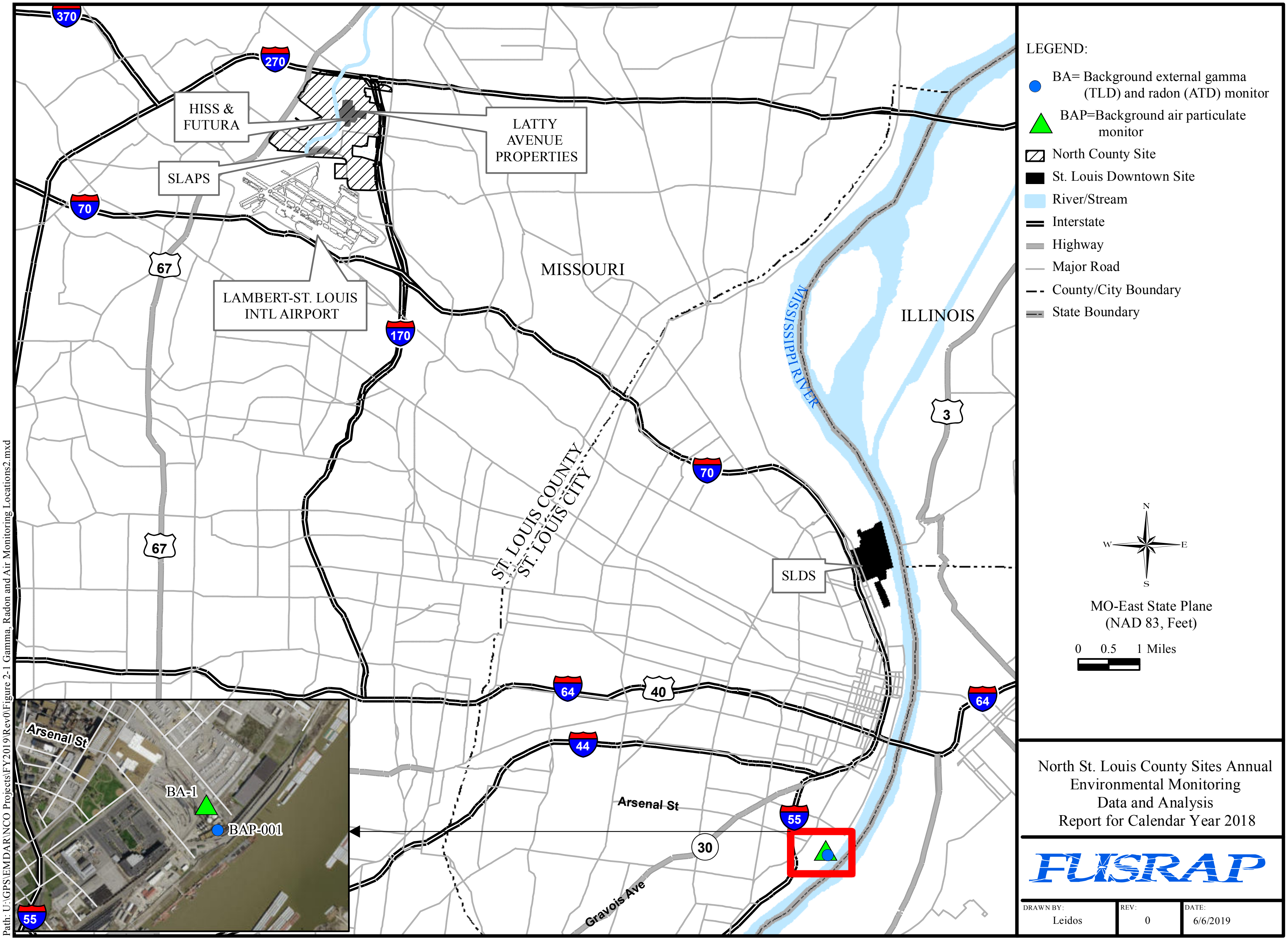

Figure 2-1. Gamma Radiation, Radon, and Particulate Air Monitoring at St. Louis Background Location - USACE Service Base

Path: U:\GPS\EMDAR\NCO Projects\FY2019\Rev0\Figure 2-2 Gamma Radiation, Rn, and Particulate Air Monitoring Locations at the Latty Avenue Properties.mxd

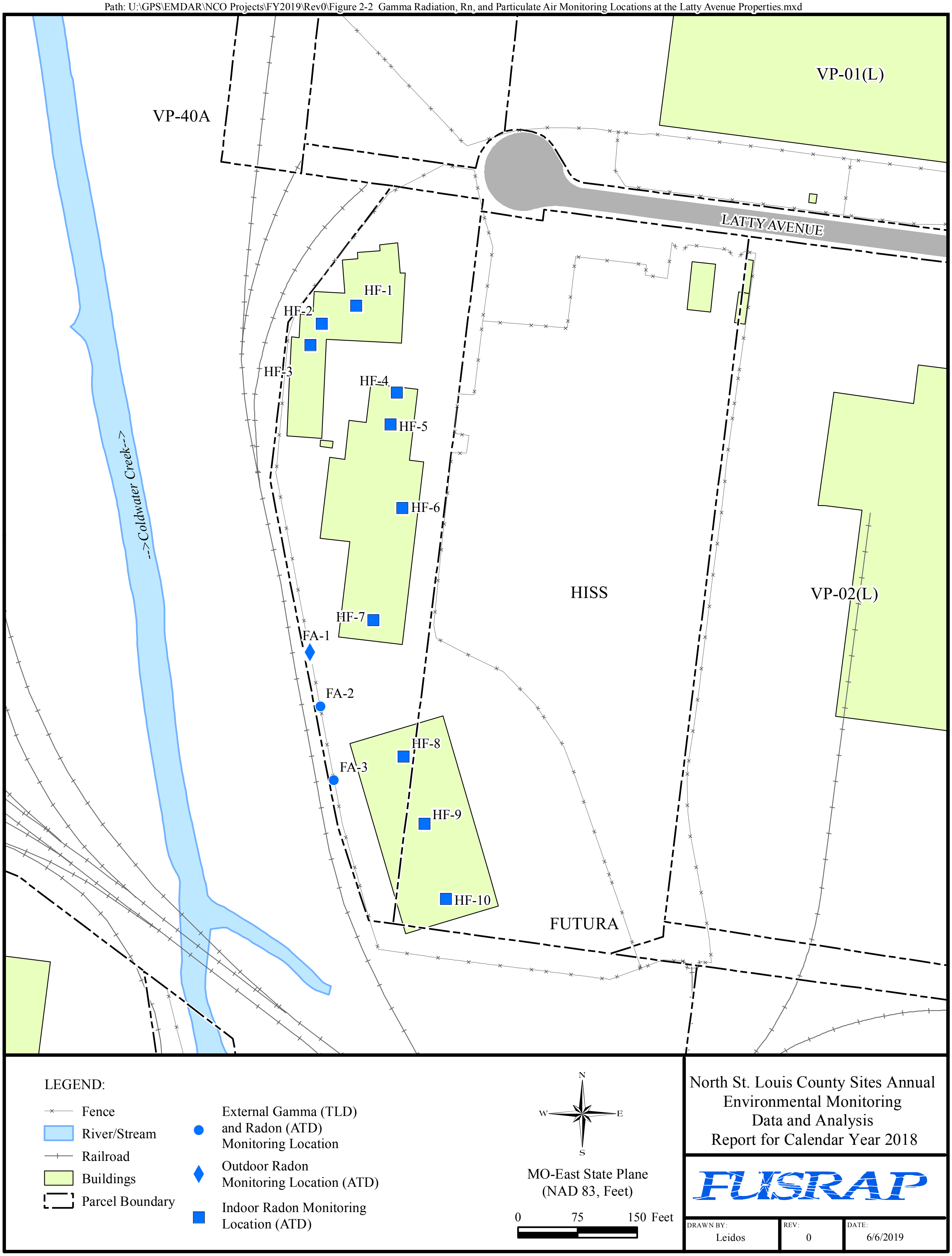

Figure 2-2. Radon Monitoring Locations at the Latty Avenue Properties

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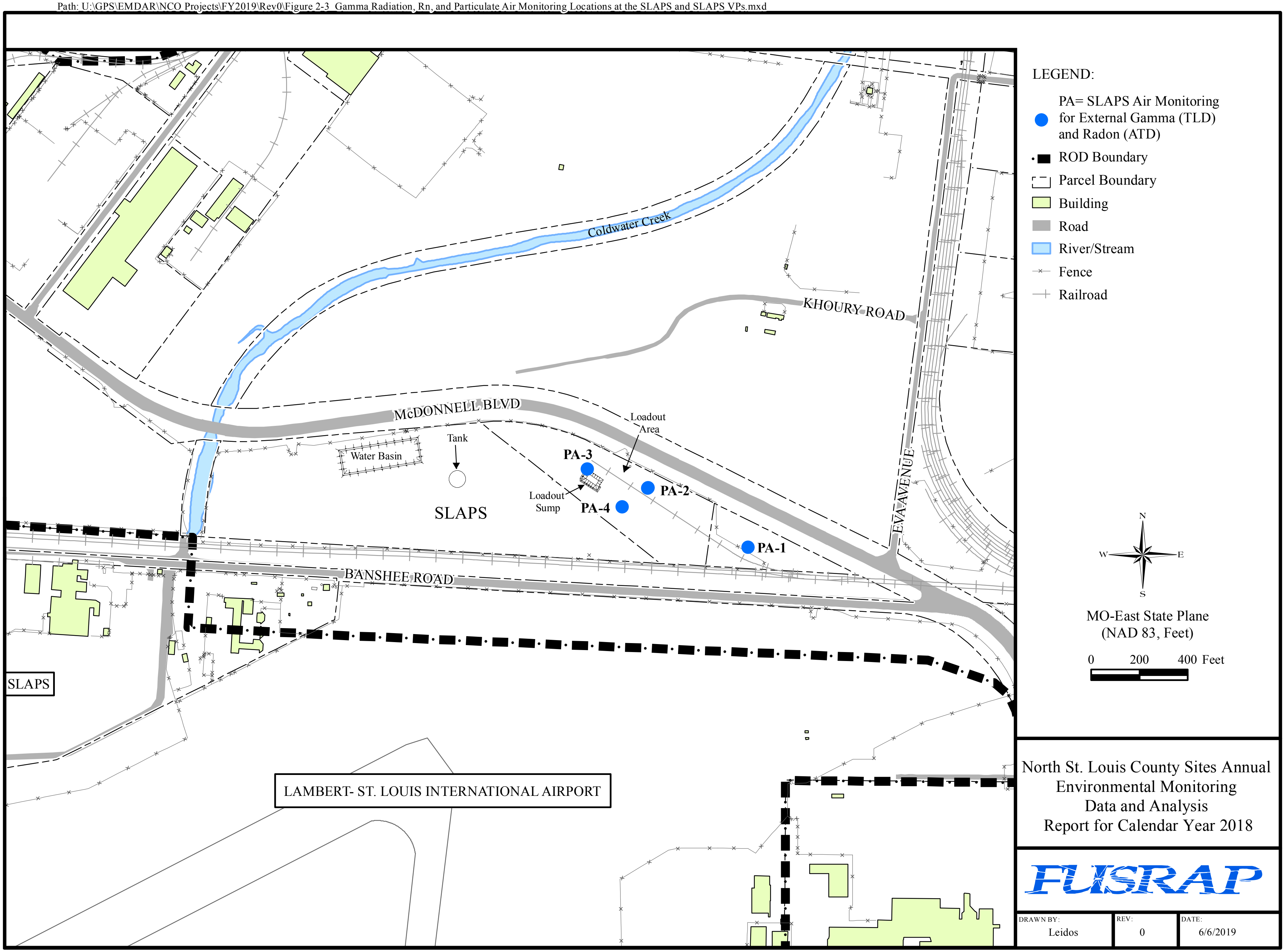


Figure 2-3. Gamma Radiation and Radon Monitoring Locations at the SLAPS

Path: U:\GPS\EMDAR\NCO Projects\FY2019\Rev0\Figure 3-1 MSD Discharge Point for Waste Water from the HISS Labratory.mxd

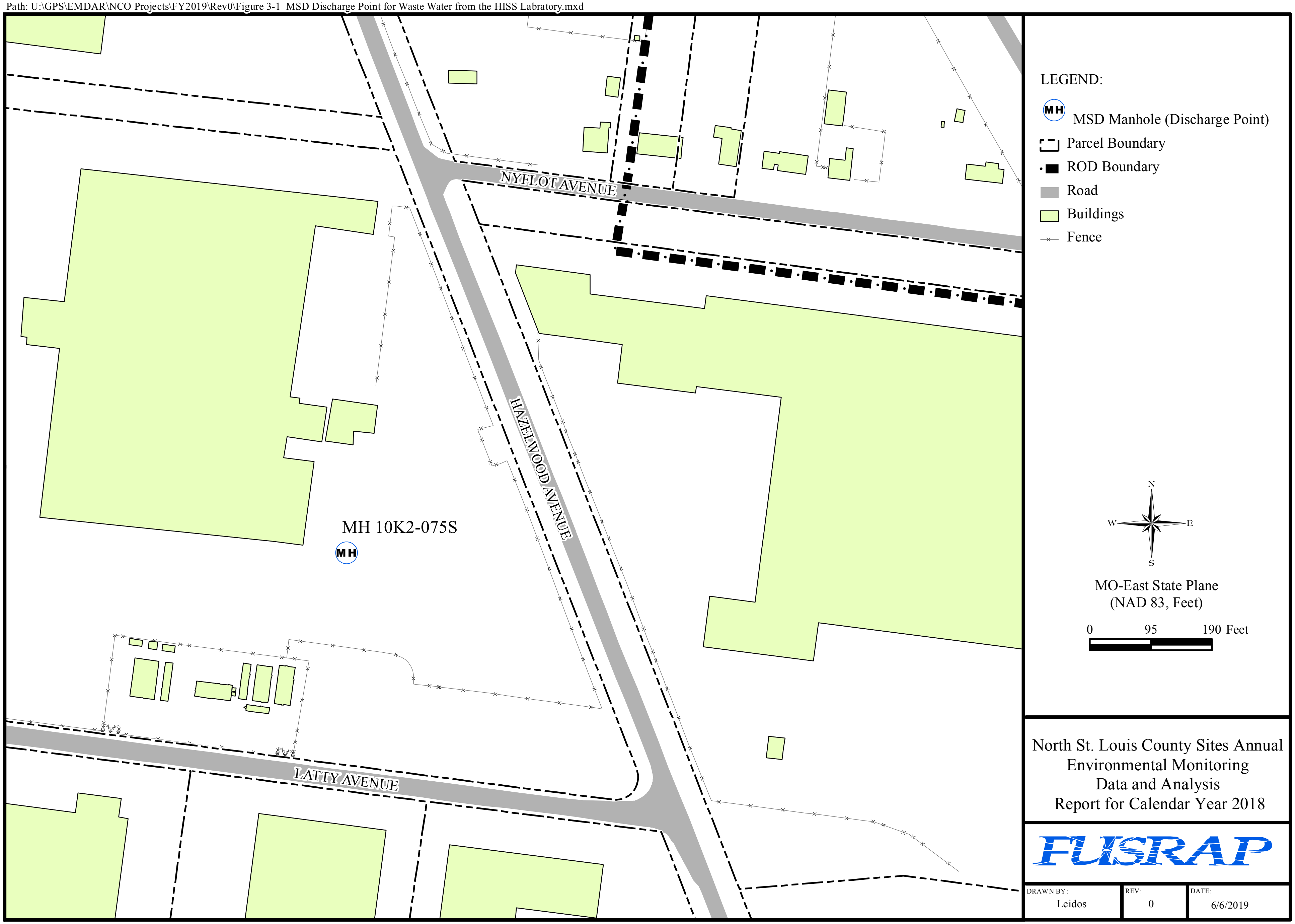


Figure 3-1. MSD Discharge Point for Wastewater from the USACE St. Louis FUSRAP Laboratory

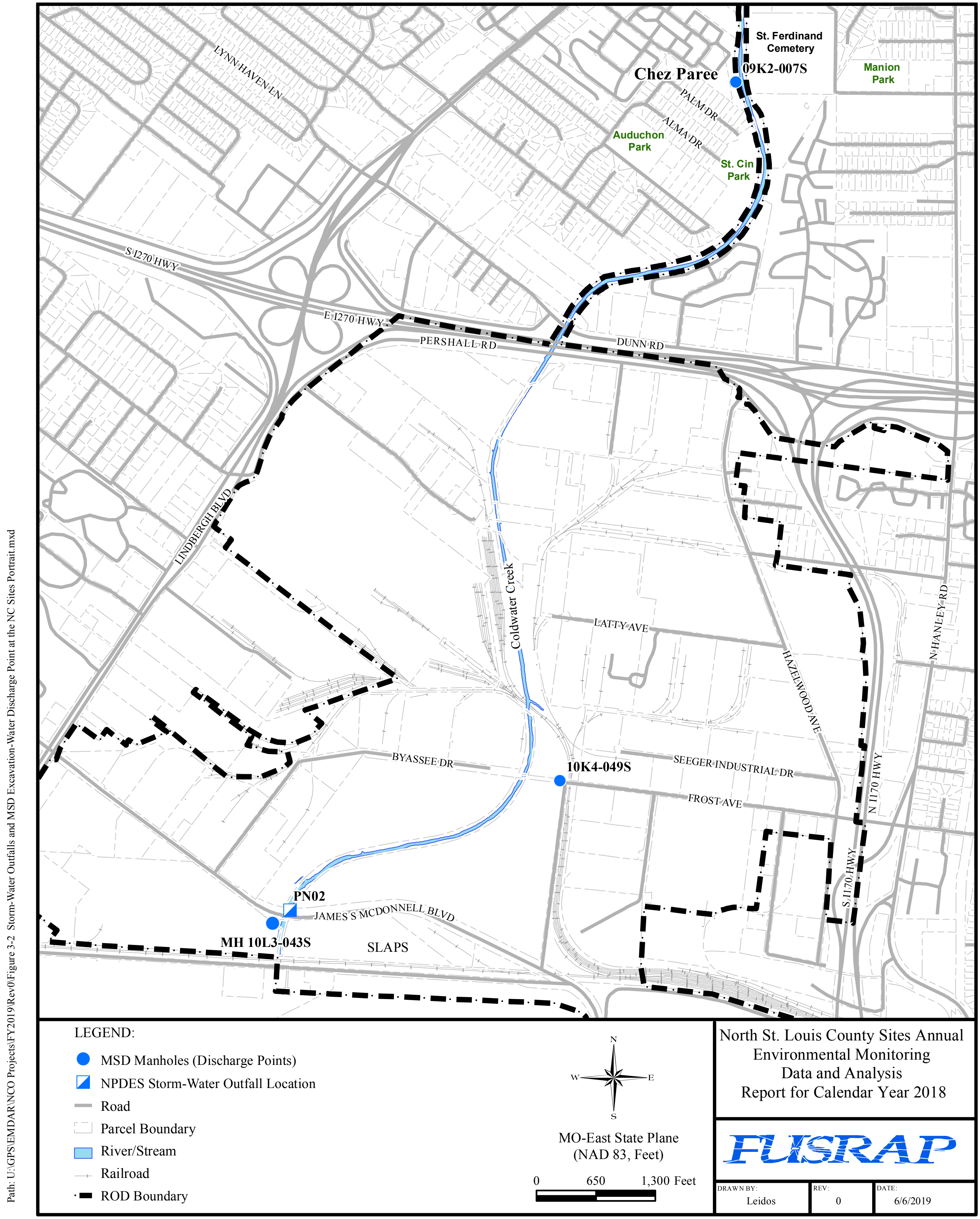


Figure 3-2. Storm-Water Outfall and MSD Excavation-Water Discharge Points at the SLAPS

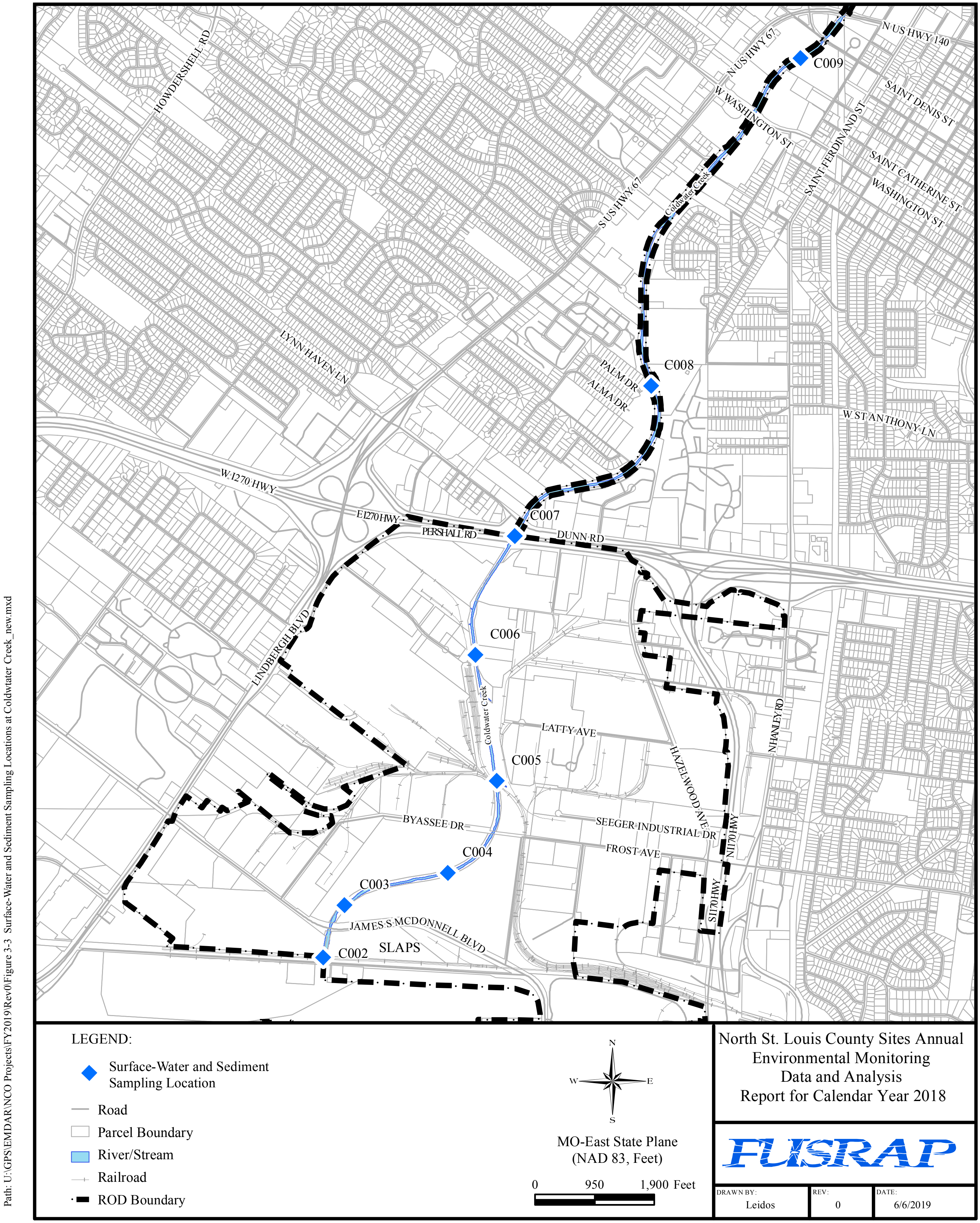
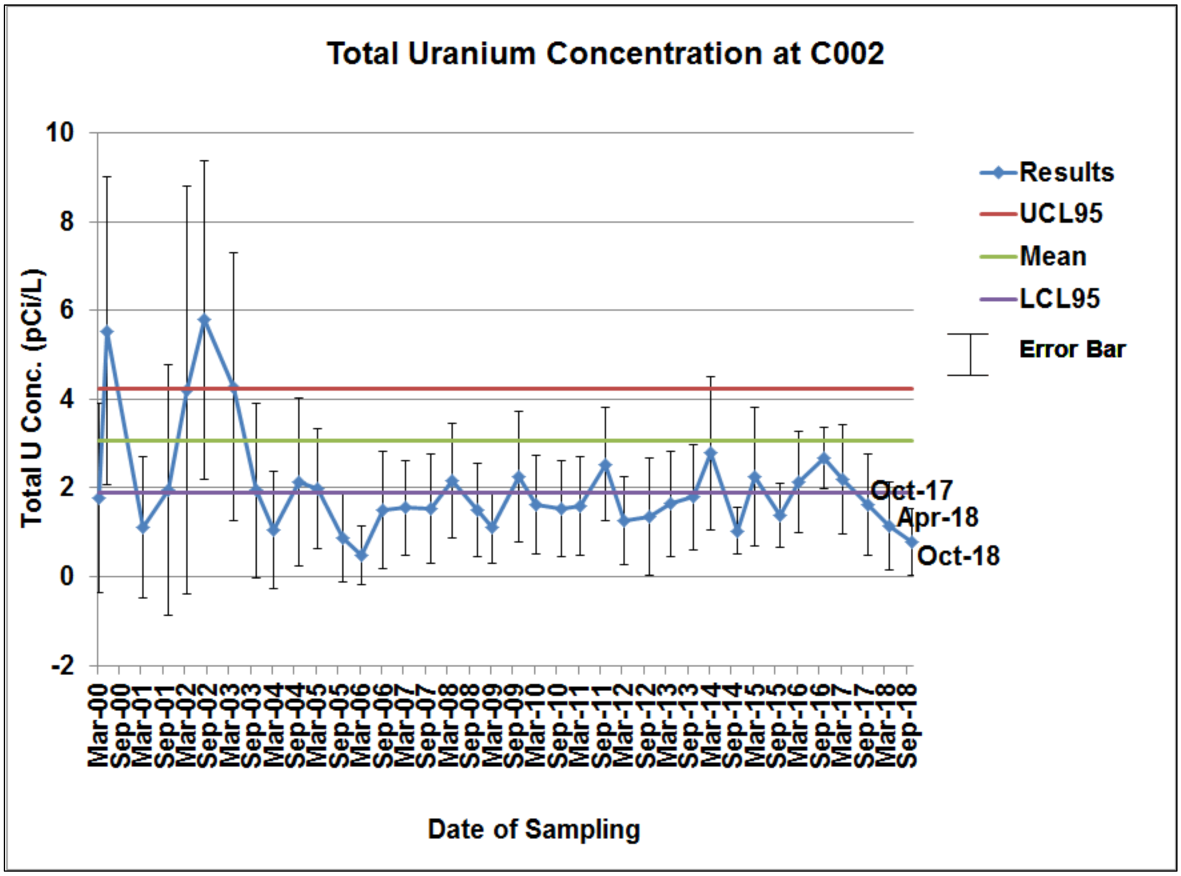


Figure 3-3. Surface-Water and Sediment Sampling Locations at Coldwater Creek



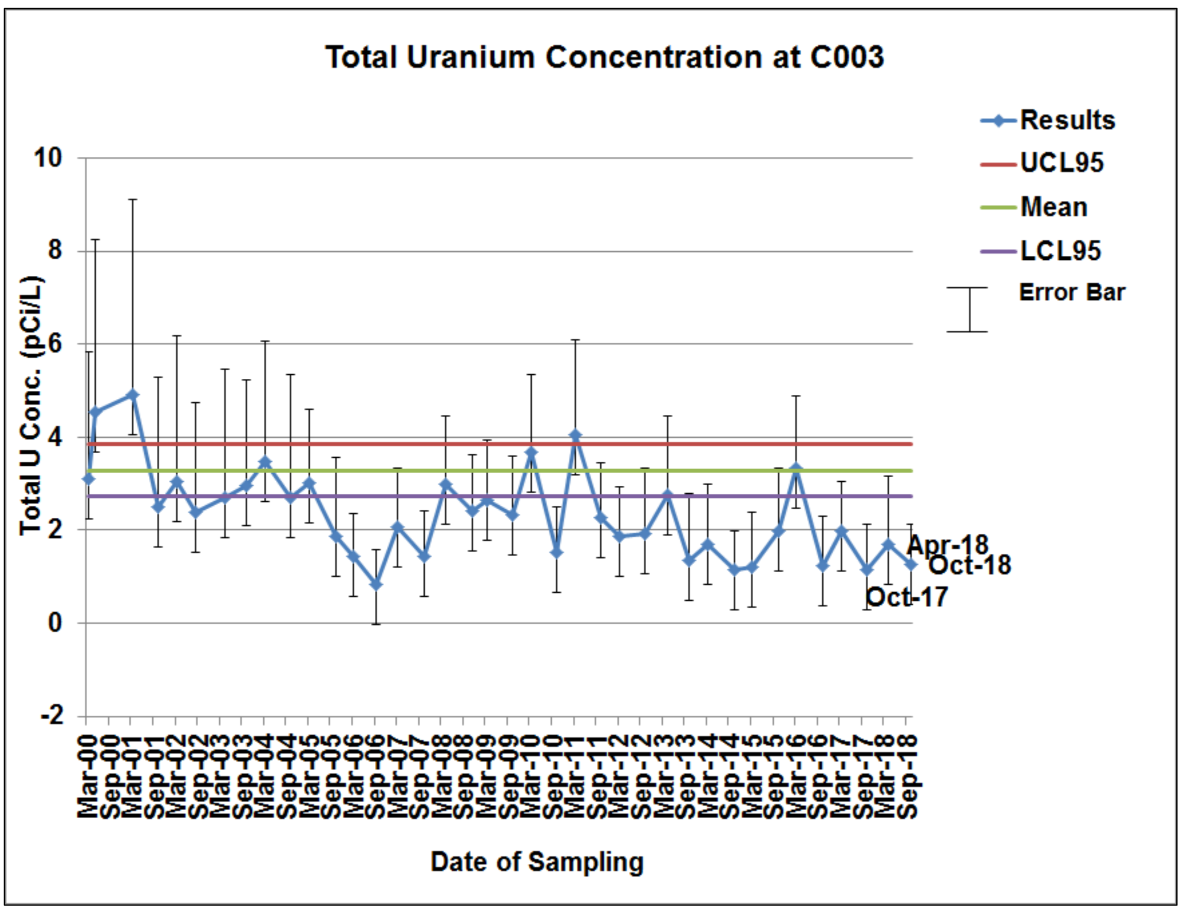
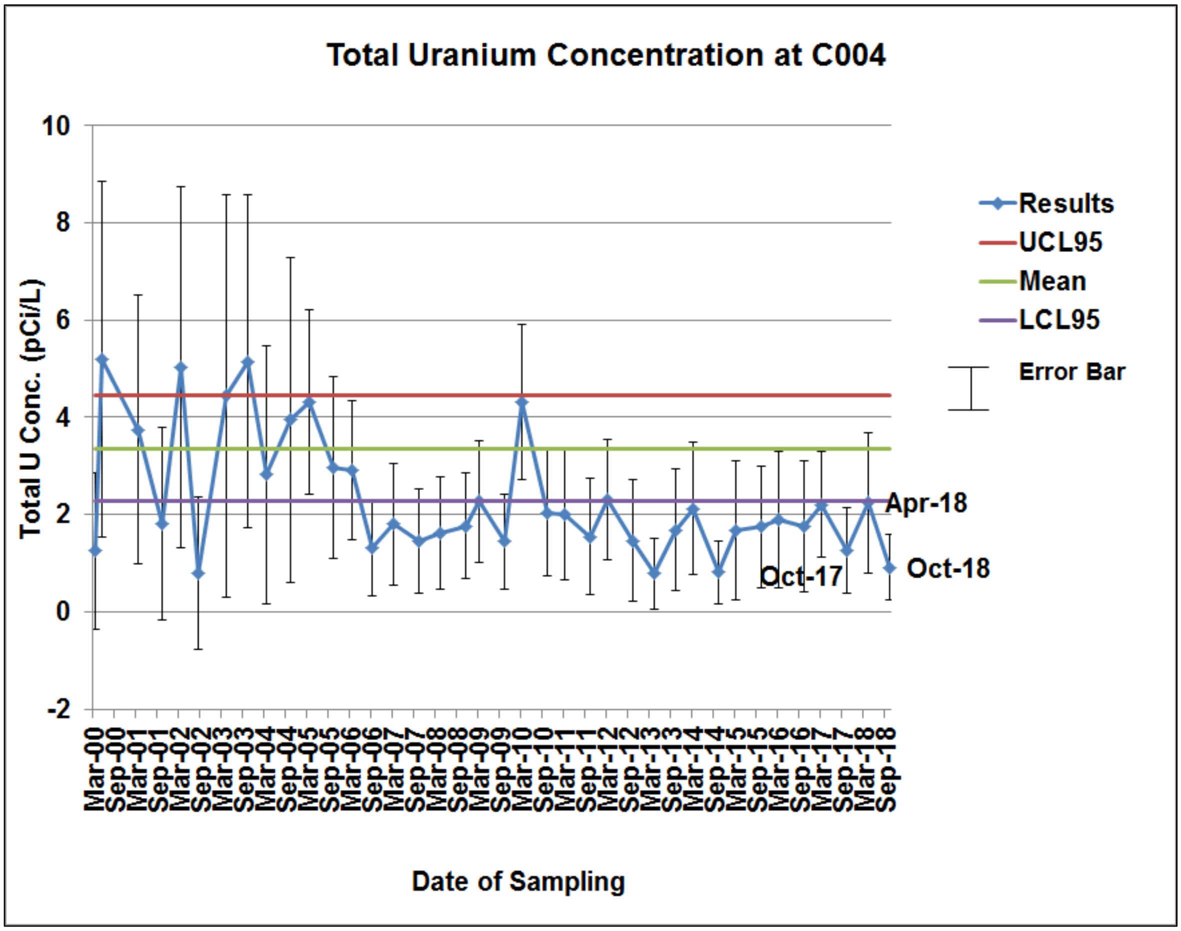


Figure 3-4. Total U Concentration Statistics in Surface Water Versus Sampling Data



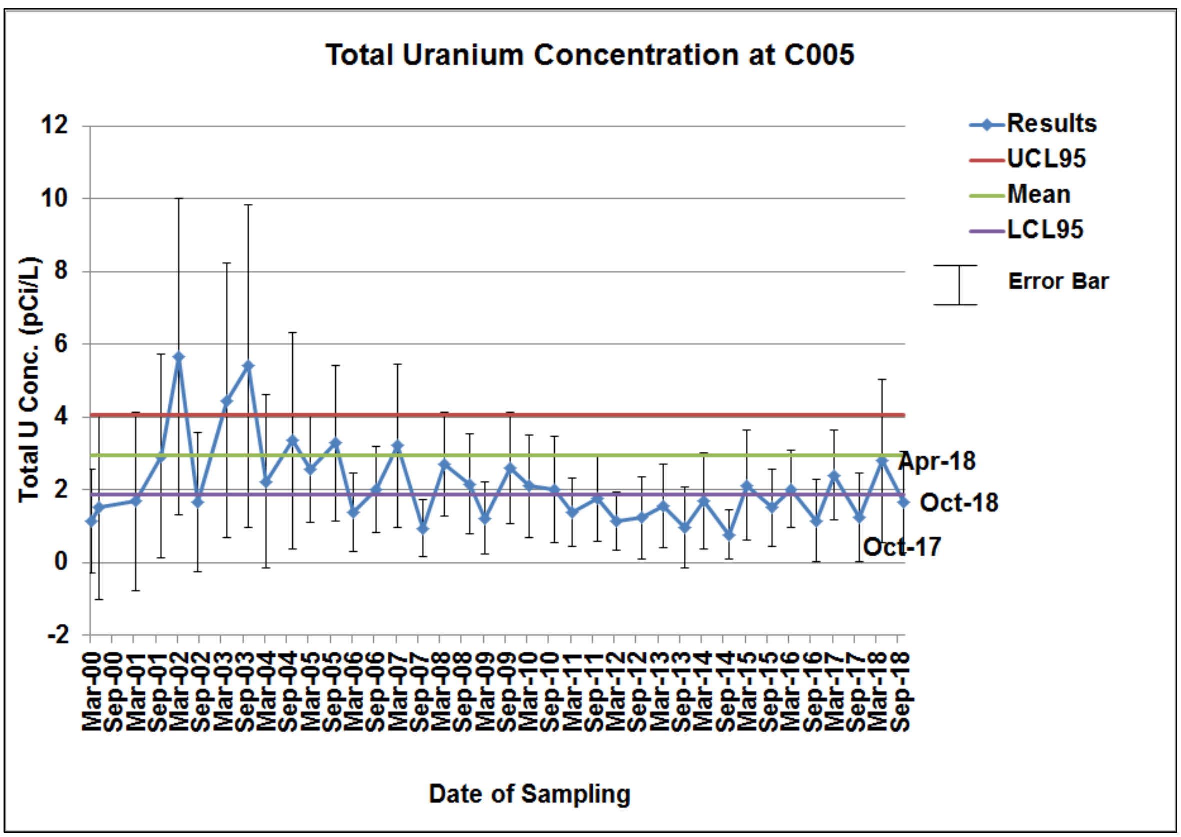
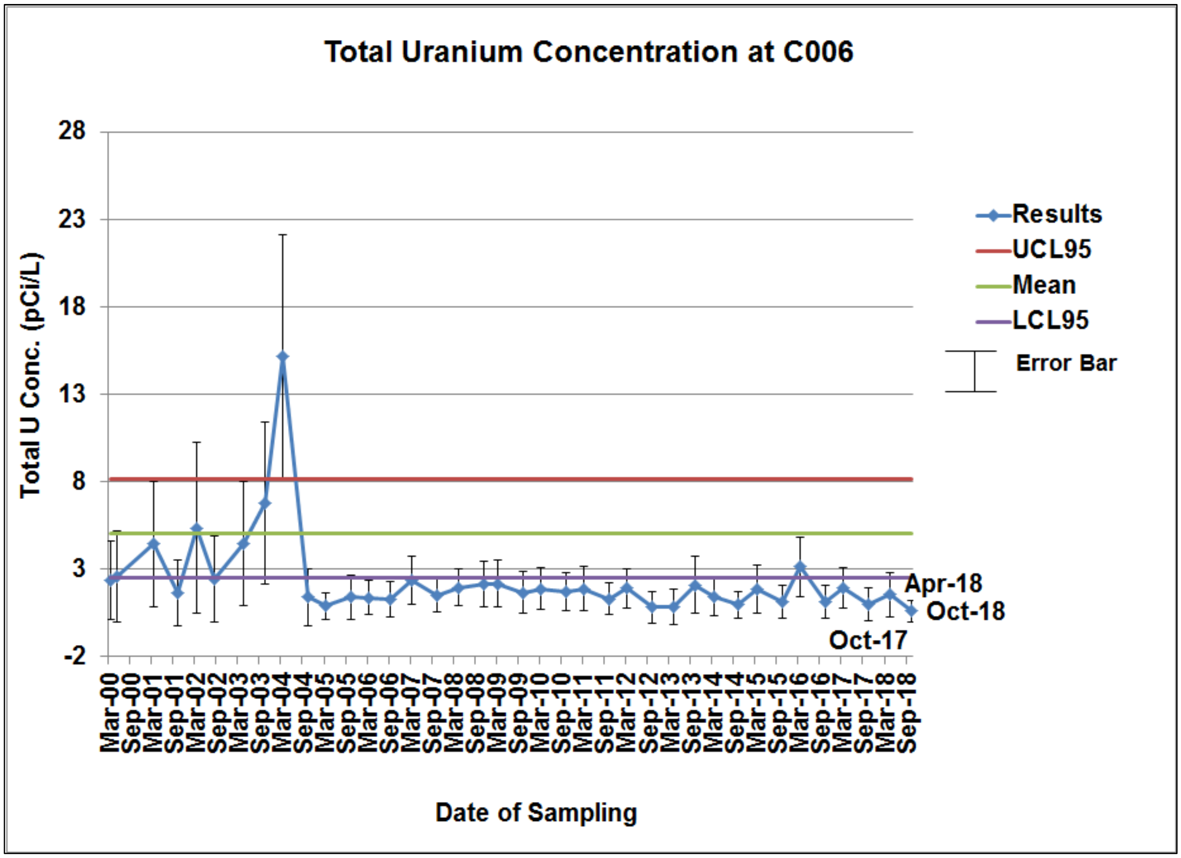


Figure 3-4. Total U Concentration Statistics in Surface Water Versus Sampling Data (Continued)



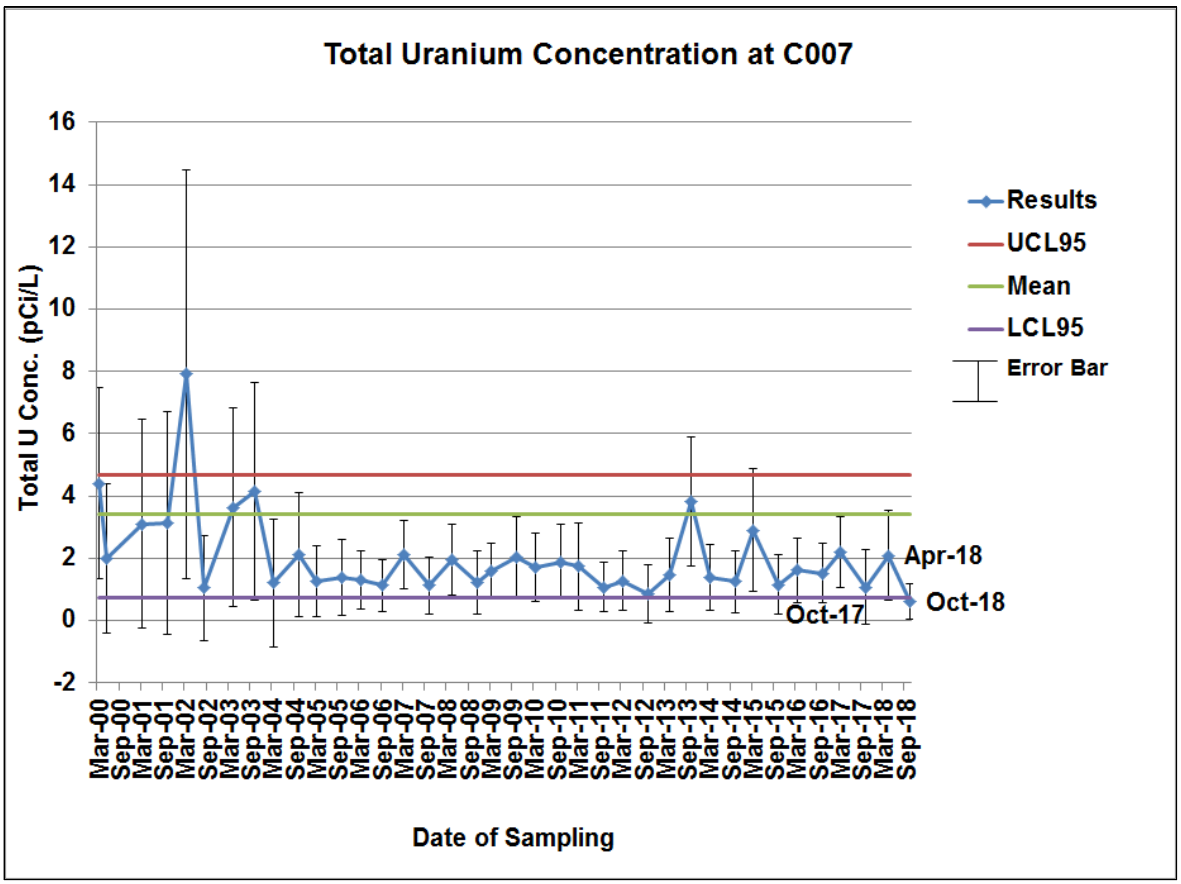


Figure 3-4. Total U Concentration Statistics in Surface Water Versus Sampling Data (Continued)

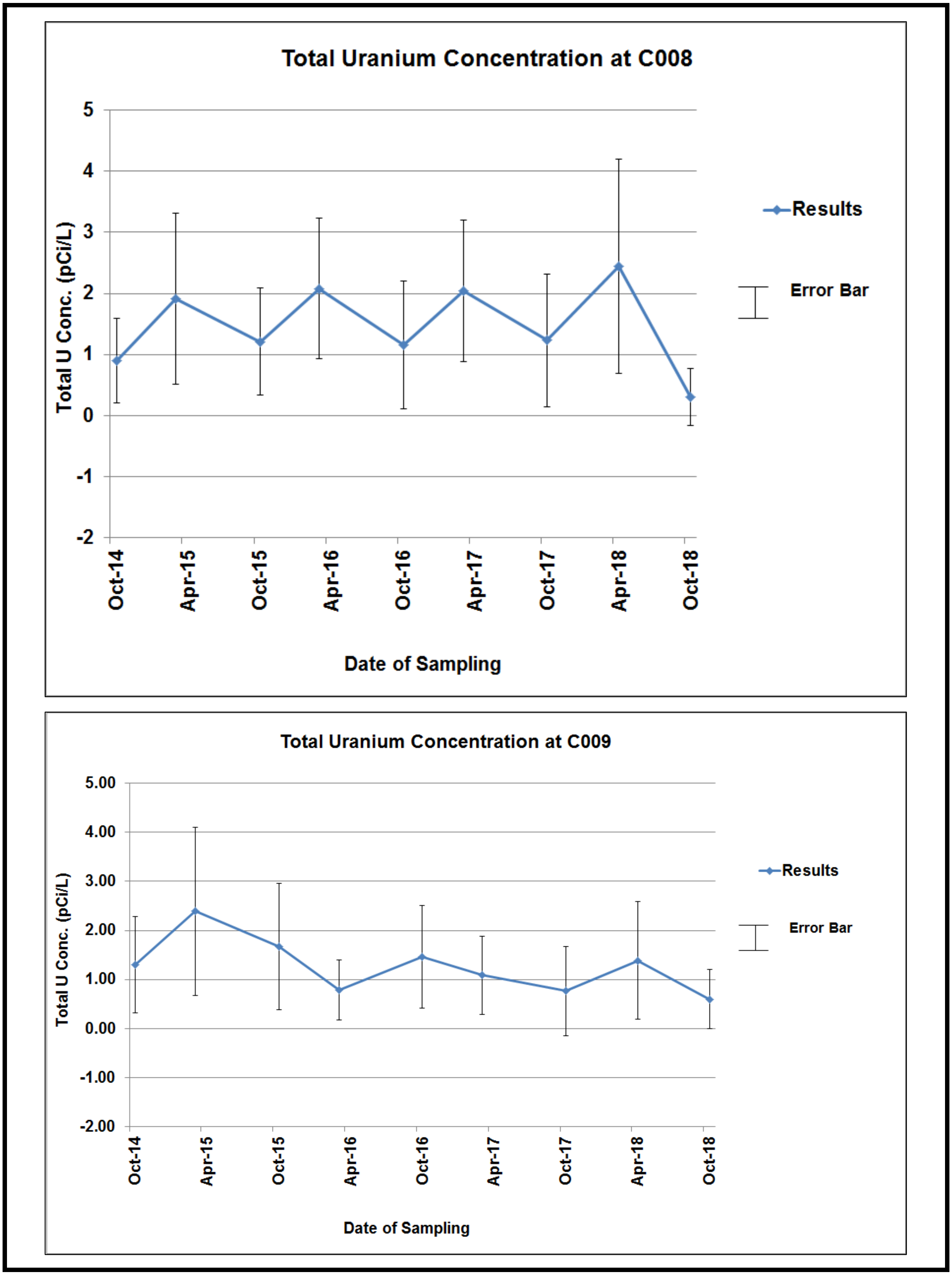
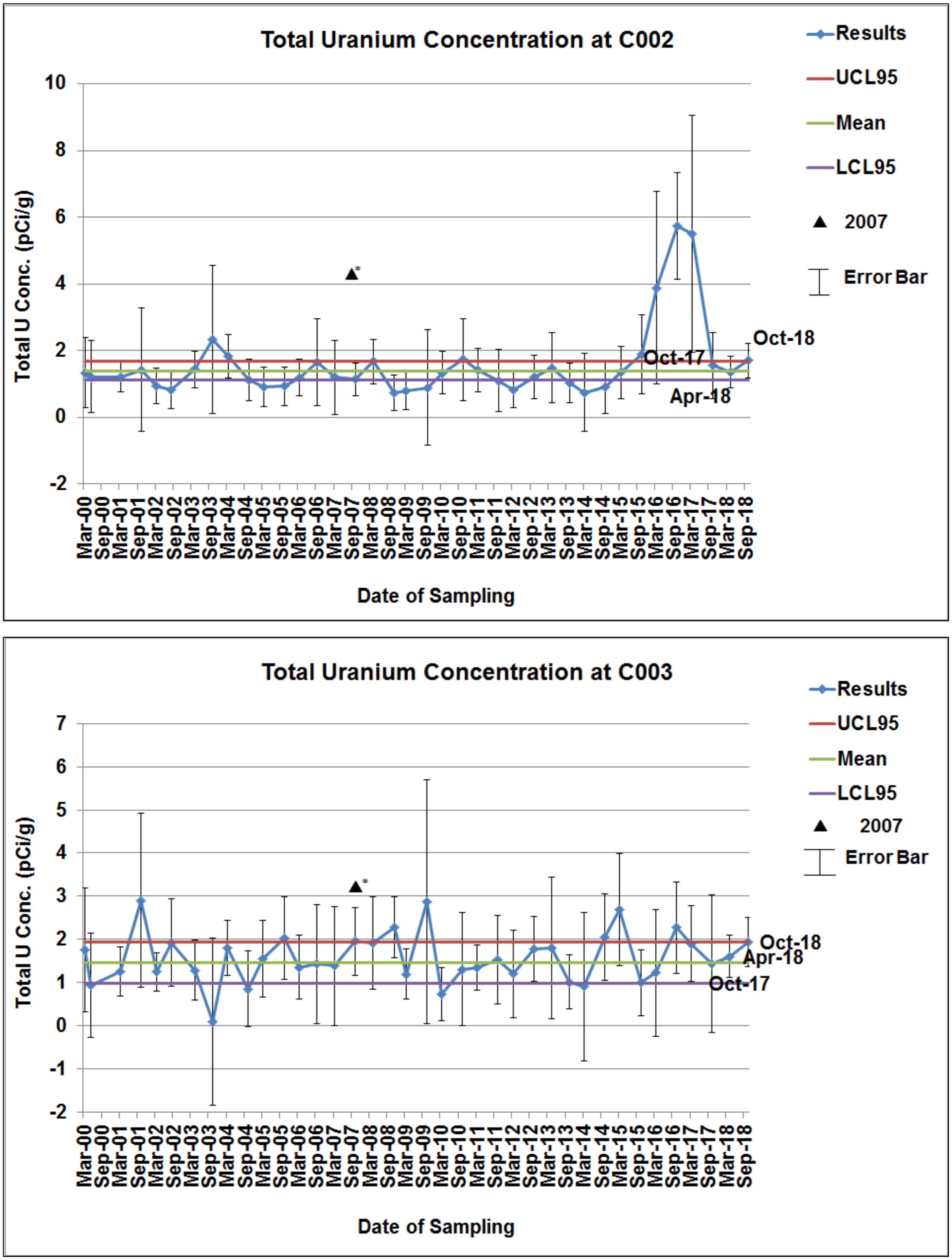
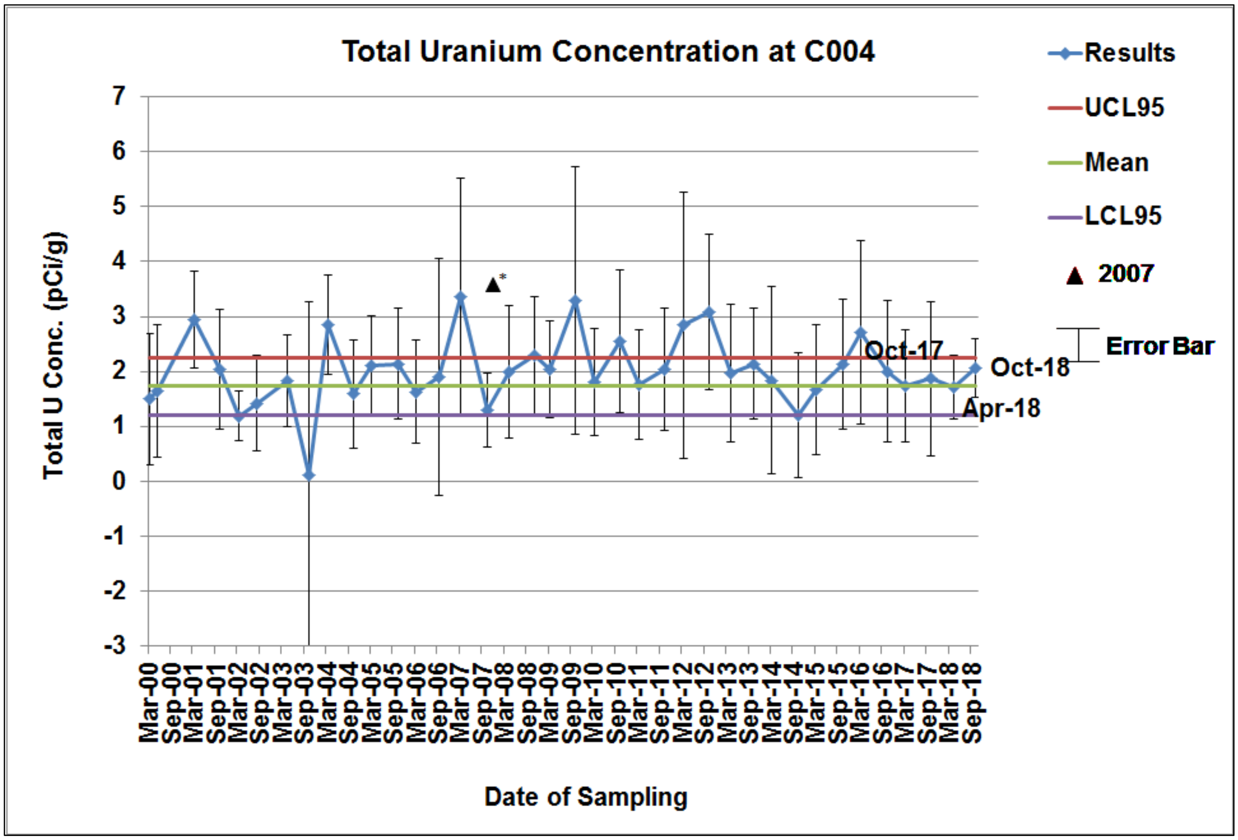


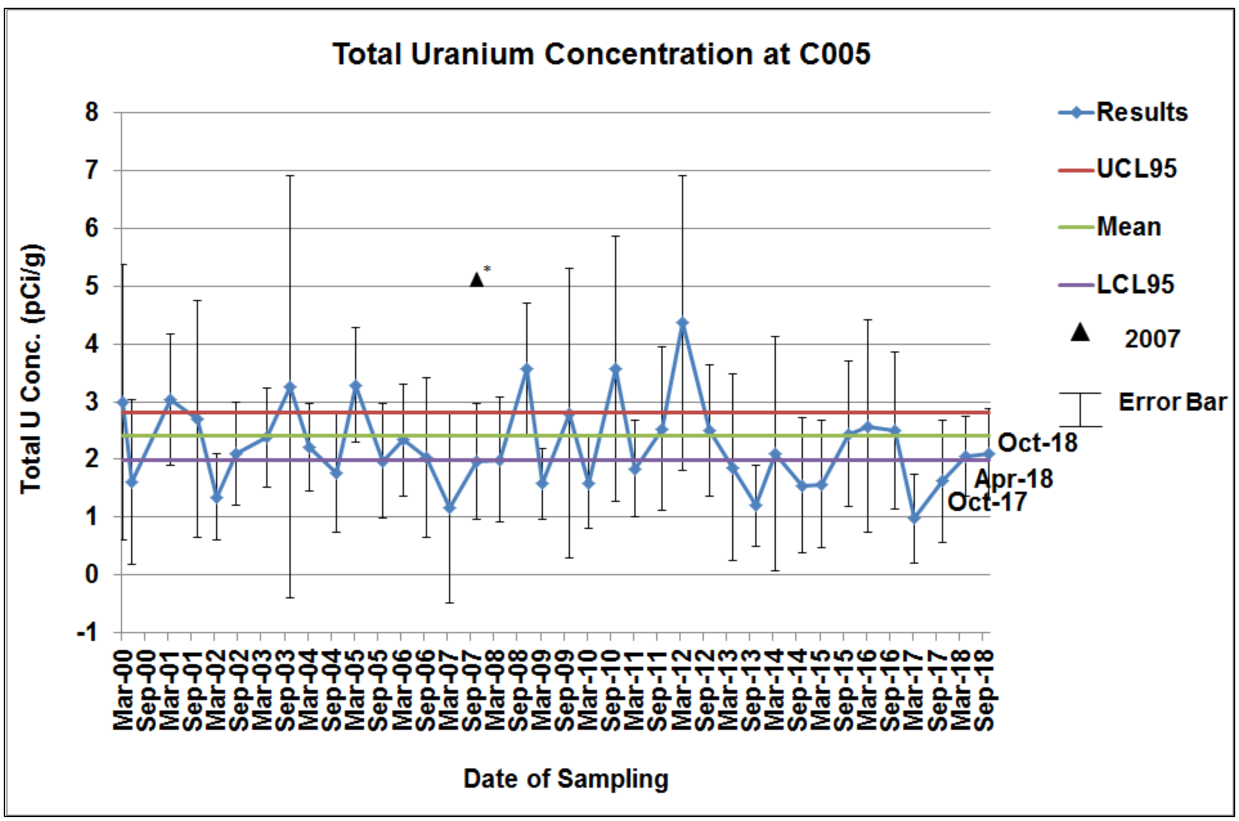
Figure 3-4. Total U Concentration Statistics in Surface Water Versus Sampling Data (Continued)



* The October 2007 value was incorrectly graphed in previous reports due to the alpha and gamma results being added together, artificially increasing the value. The charts in this figure have been corrected.

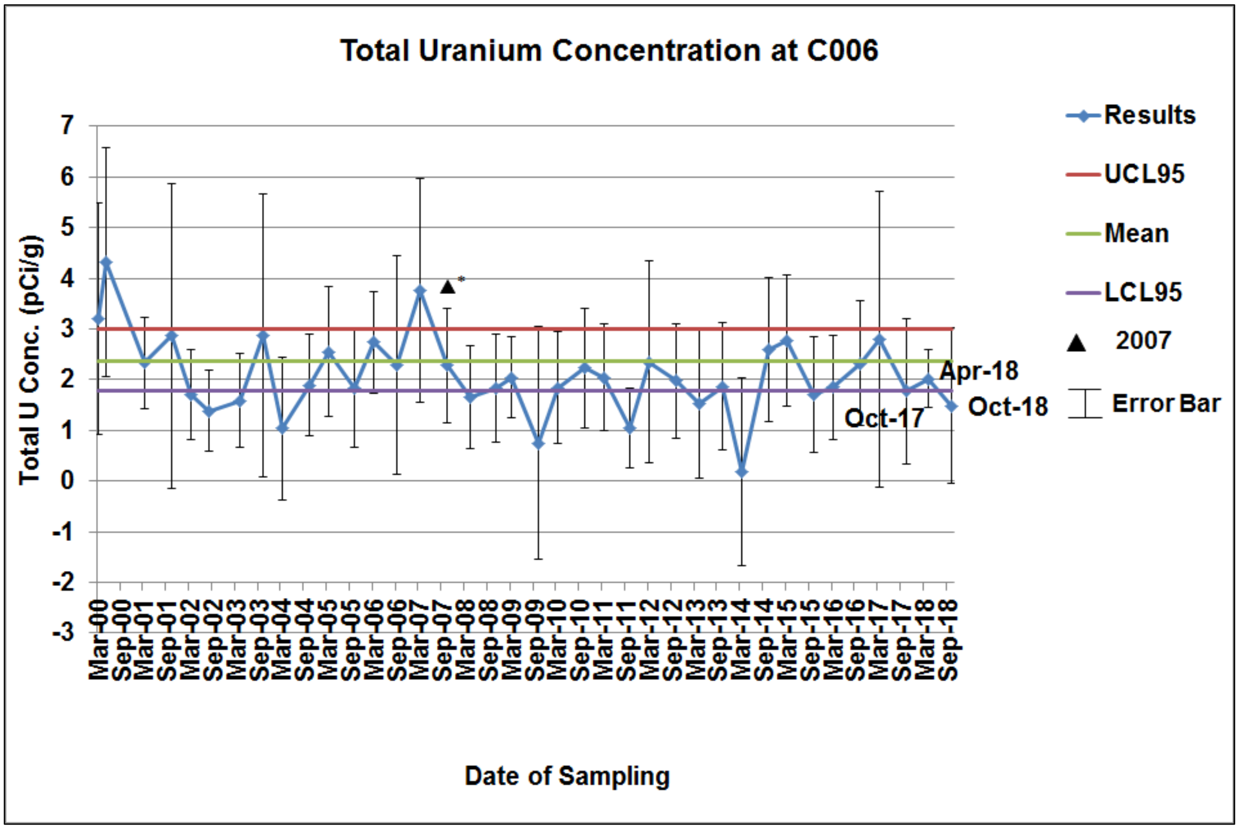
Figure 3-5. Total U Concentration Statistics in Sediment Versus Sampling Date

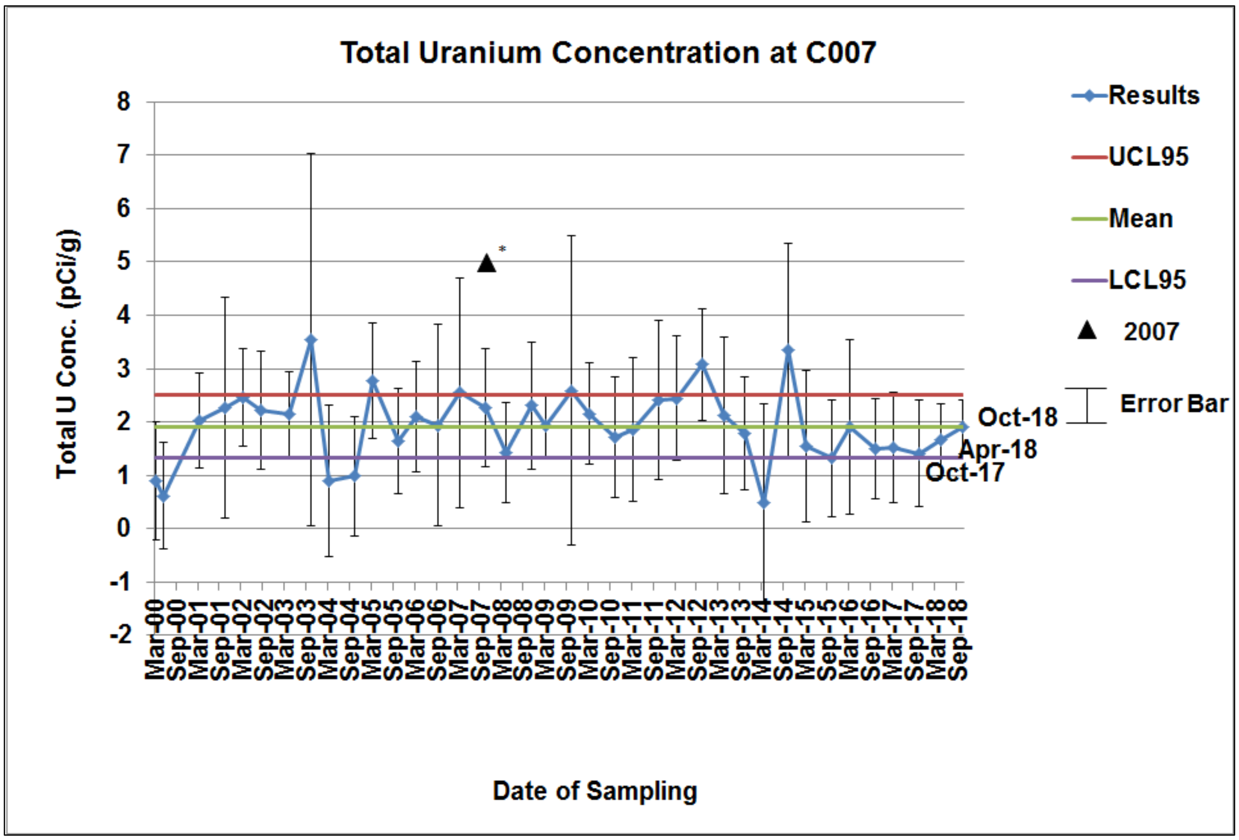




* The October 2007 value was incorrectly graphed in previous reports due to the alpha and gamma results being added together, artificially increasing the value. The charts in this figure have been corrected.

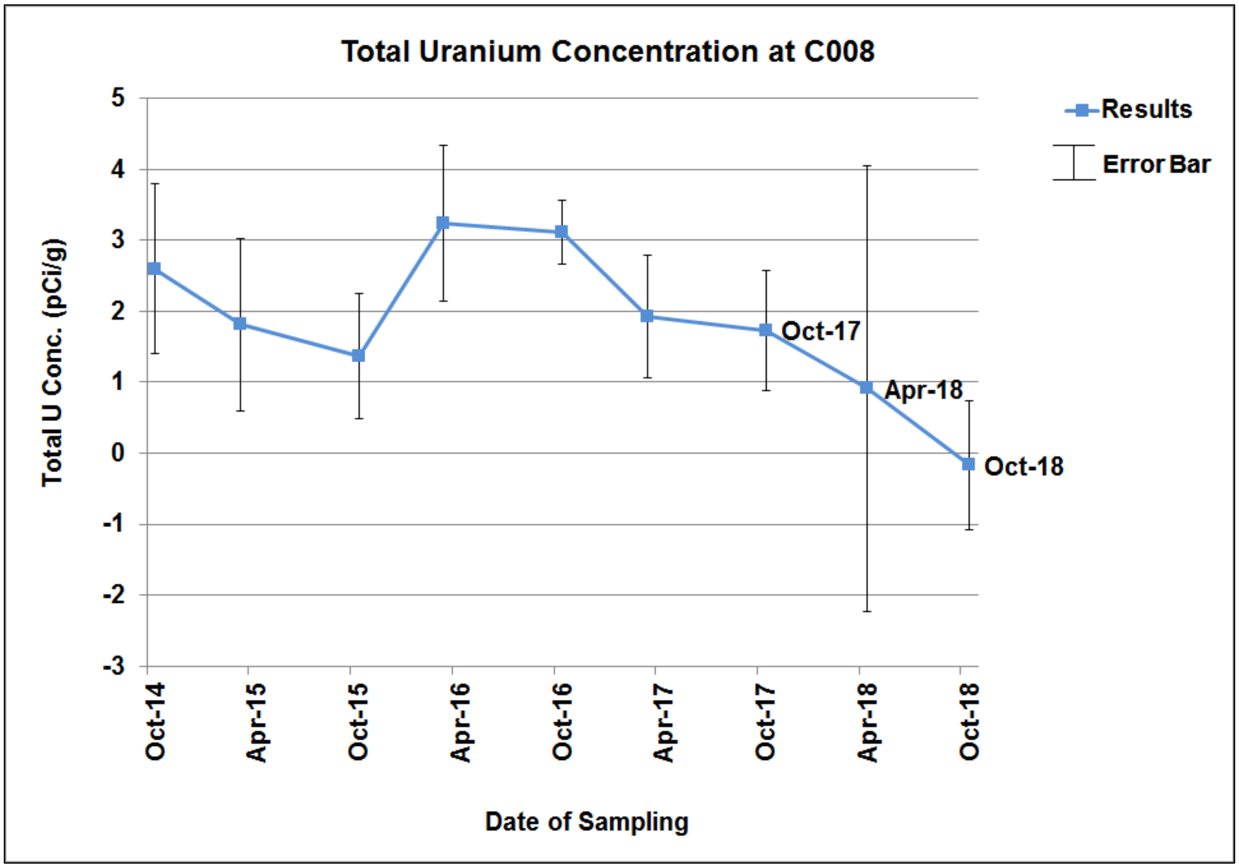
Figure 3-5. Total U Concentration Statistics in Sediment Versus Sampling Date (Continued)





* The October 2007 value was incorrectly graphed in previous reports due to the alpha and gamma results being added together, artificially increasing the value. The charts in this figure have been corrected.

Figure 3-5. Total U Concentration Statistics in Sediment Versus Sampling Date (Continued)



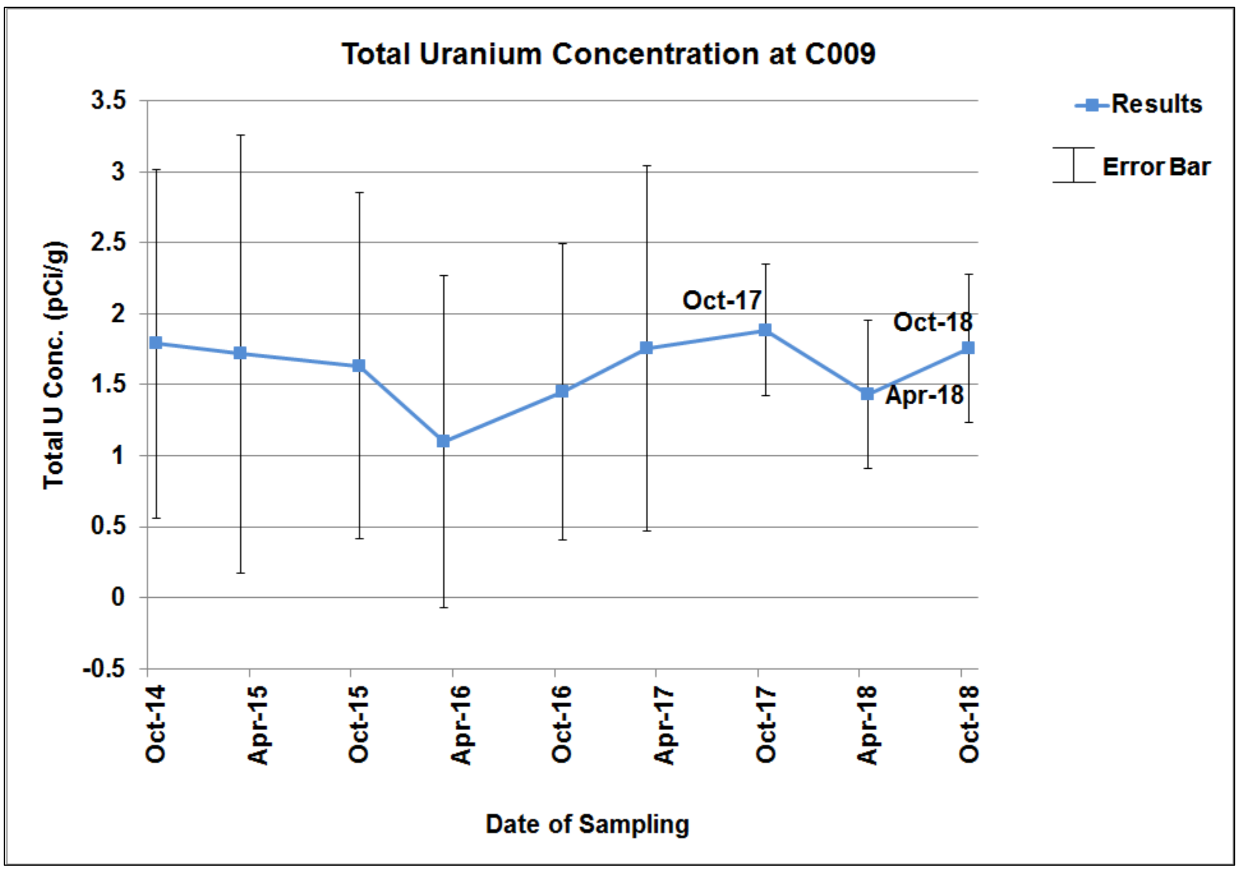


Figure 3-5. Total U Concentration Statistics in Sediment Versus Sampling Date (Continued)

Zone	Period	Epoch	Stratigraphy	Thickness (ft.)	Description
Hydrostratigraphic zone (HZ)-A	Quaternary	Holocene	FILL/TOPSOIL	0-14	**UNIT 1** Fill - Sand, silt, clay, concrete, rubble. Topsoil - Organic silts, clayey silts, wood, fine sand.
		Pleistocene	LOESS (CLAYEY SILT)	11-32	**UNIT 2** Clayey silts, fine sands, commonly mottled with iron oxide staining. Scattered roots and organic material, and a few fossils.
			GLACIOLACUSTRINE SERIES: SILTY CLAY	19-75 (3) 9-27 (3T)	**UNIT 3** Silty clay with scattered organic blebs and peat stringers. Moderate plasticity. Moist to saturated (3T).
Hydrostratigraphic zone (HZ)-B			VARVED CLAY	0-8	Alternating layers of dark and light clay as much as 1/16 inch thick (3M).
			CLAY	0-26	Dense, stiff, moist, highly plastic clay (3M).
Hydrostratigraphic zone (HZ)-C			SILTY CLAY	10-29	Similar to upper silty clay. Probable unconformable contact with highly plastic clay (3B).
			BASAL CLAYEY AND SANDY GRAVEL	0-6	**UNIT 4** Glacial clayey gravels, sands, and sandy gravels. Mostly chert.
Hydrostratigraphic zone (HZ)-D	Pennsylvanian		CHEROKEE (?) GROUP (UNDIFFERENTIATED)	0-35	**UNIT 5** BEDROCK: Interbedded silty clay/shale, lignite/coal, sandstone, and siltstone. Erosionally truncated by glaciolacustrine sequences. (Absent at the HISS).
Hydrostratigraphic zone (HZ)-E	Mississippian		STE. GENEVIEVE ST. LOUIS LIMESTONES	10+	**UNIT 6** BEDROCK: Hard, white to olive, well cemented, sandy limestone with interbedded shale laminations.

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North St. Louis County Sites
Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2018

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Figure 4-1. Generalized Stratigraphic Column for the NC Sites

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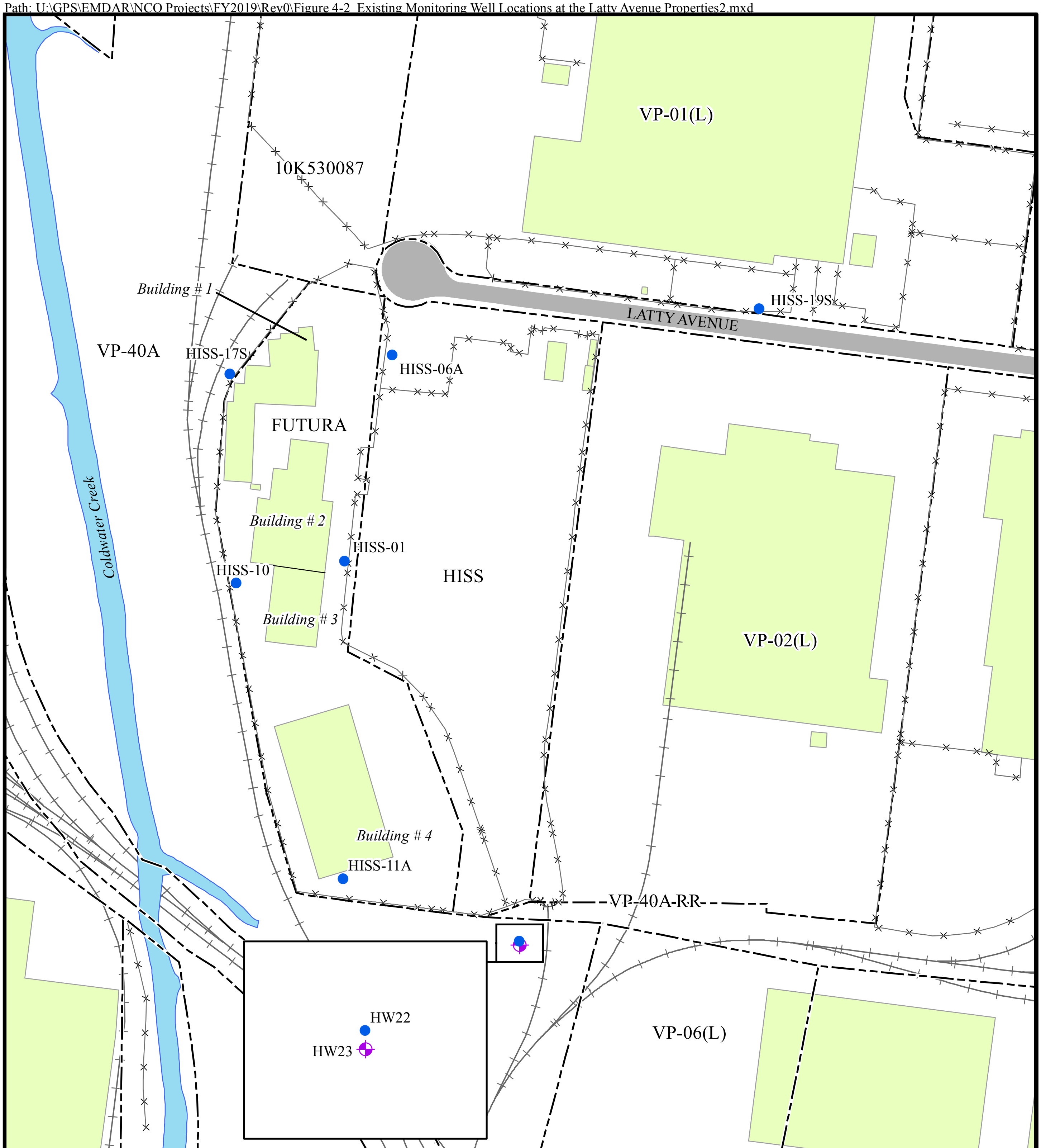

LEGEND:

- Road
- Railroad
- River/Stream
- Fence
- Parcel Boundary
- Building
- Existing Upper Zone Monitoring Well
- Existing Lower Zone Monitoring Well

N W E S

MO-East State Plane (NAD 83, Feet)

0 95 190 Feet

North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2018

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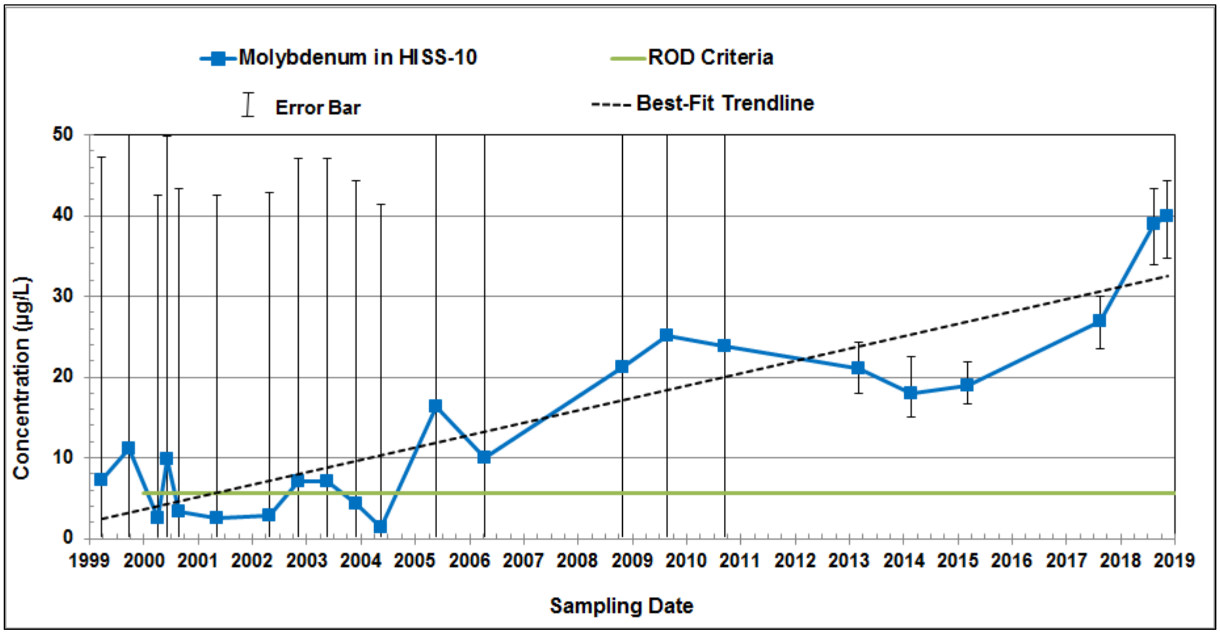
Leidos	0	6/6/2019

Figure 4-2. Existing Monitoring Well Locations at the Latty Avenue Properties



Notes:

For molybdemum results less than 3 times the reporting limit (RL), the error bar represents ± RL. The RL for molybdenum changed from 40 µg/L to 5 µg/L in CY 2011.

For molybdenum results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.

Molybdenum error bars for 2003 and earlier are based on laboratory control limits for 2003. Error bars for 2004 and later are based on laboratory control limits reported for the respective years.

Figure 4-3. Time-Versus-Concentration Plot for Molybdenum in HISS-10 at the HISS

Path: U:\GPS\EMDAR\NCO Projects\FY2019\Rev0\Figure 4-4 Selenium Concentrations in Unfiltered HZ-A Ground Water at the Latty Avenue Properties.mxd

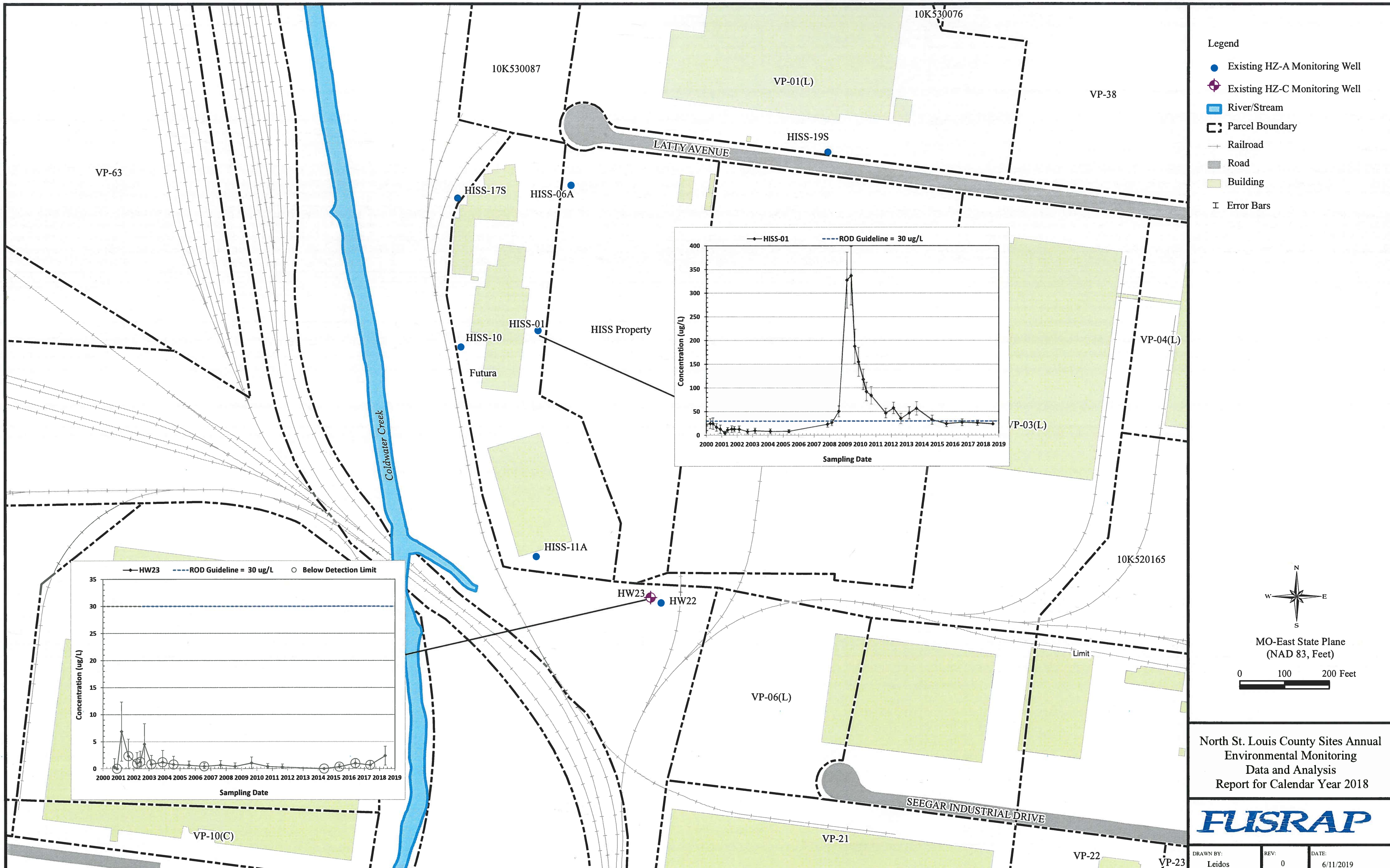


Figure 4-4. Total U Concentrations in Unfiltered Ground Water at the Latty Avenue Properties

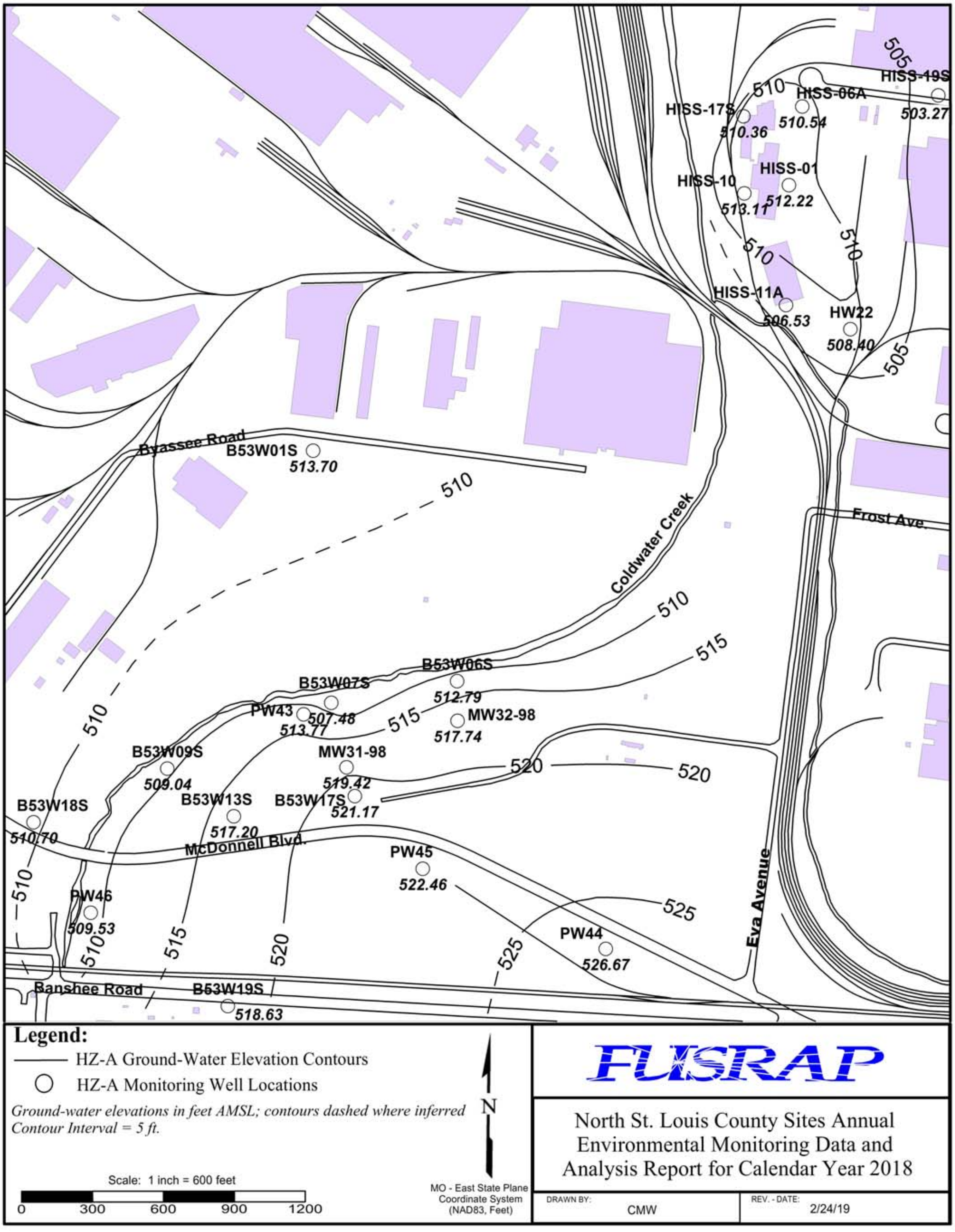
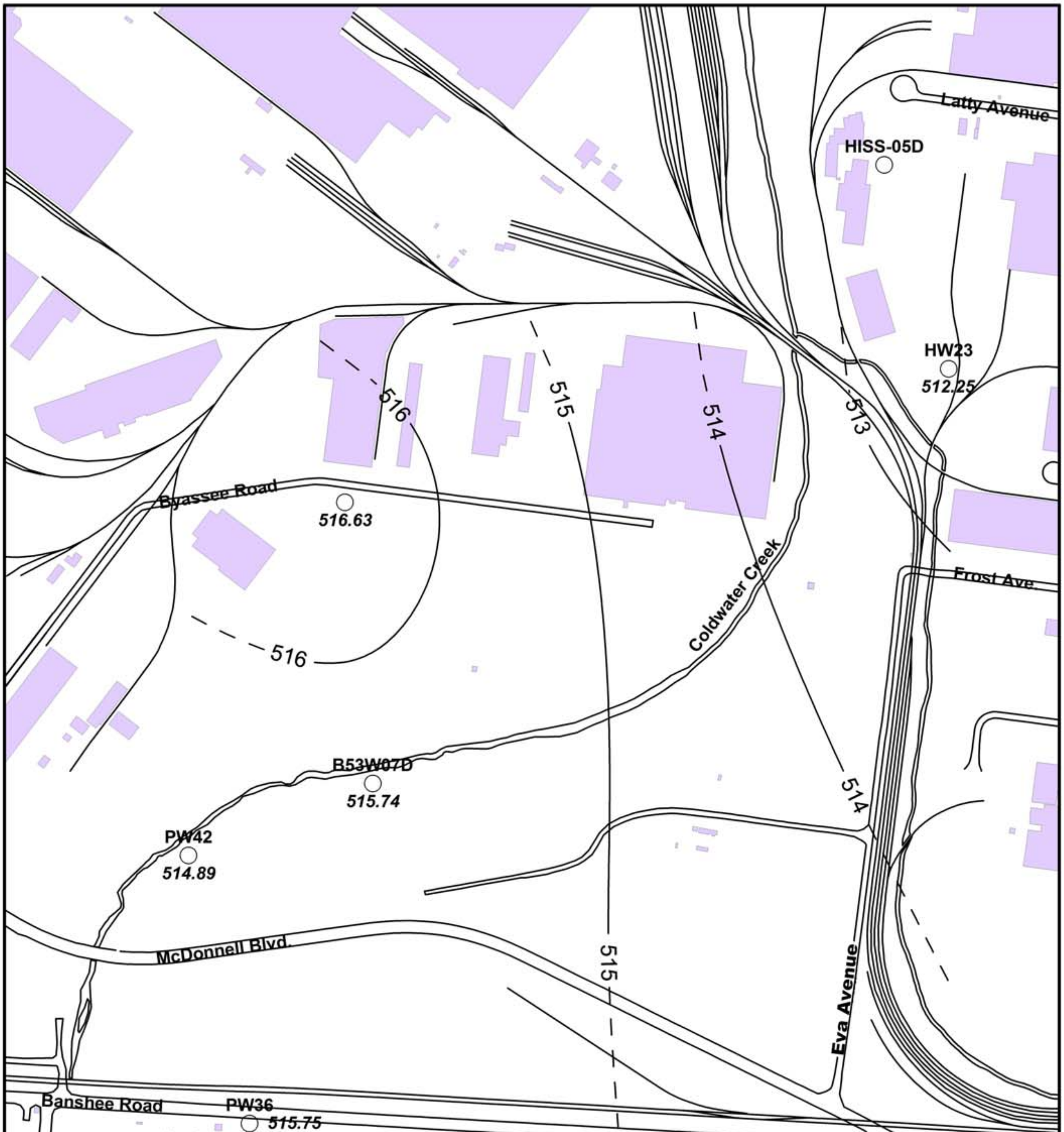


Figure 4-5. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 14, 2018)



Legend:

- HZ-C Ground-Water Elevation Contours
- HZ-C Monitoring Well Locations

Ground-water elevations in feet AMSL; contours dashed where inferred
Contour Interval = 1 ft.

N

Scale: 1 inch = 600 feet

0 300 600 900 1200

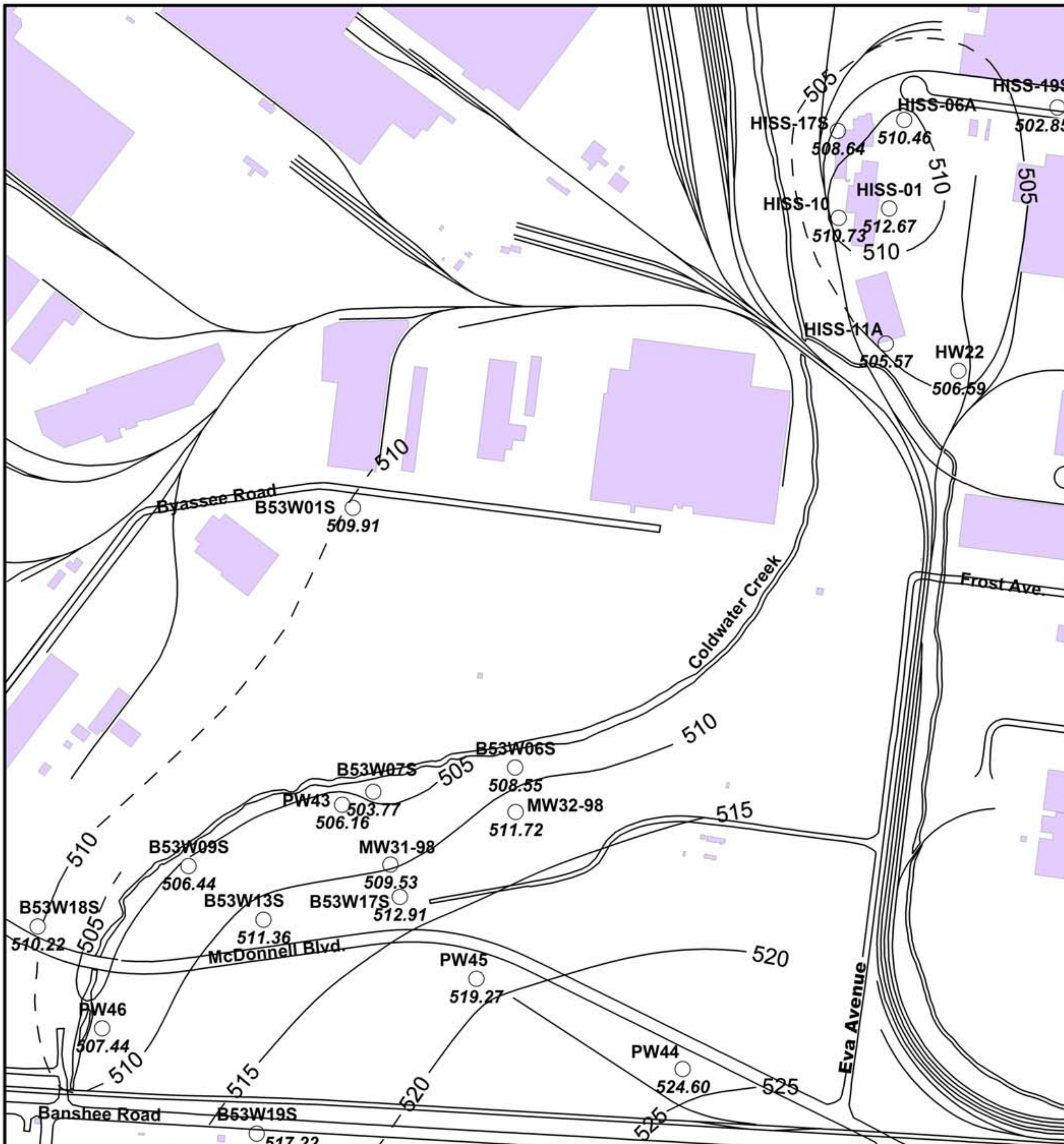
MO - East State Plane Coordinate System (NAD83, Feet)

FUSRAP

North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2018

DRAWN BY:	REV. - DATE:
CMW	2/24/19

Figure 4-6. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 14, 2018)



Legend:

—— HZ-A Ground-Water Elevation Contours

○ HZ-A Monitoring Well Locations

Ground-water elevations in feet AMSL; contours dashed where inferred
Contour Interval = 5 ft.

Scale: 1 inch = 600 feet

0 300 600 900 1200

N

MO - East State Plane Coordinate System (NAD83, Feet)

FUSRAP

North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2018

DRAWN BY: CMW	REV. - DATE: 3/12/2019

Figure 4-7. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (February 13, 2018)

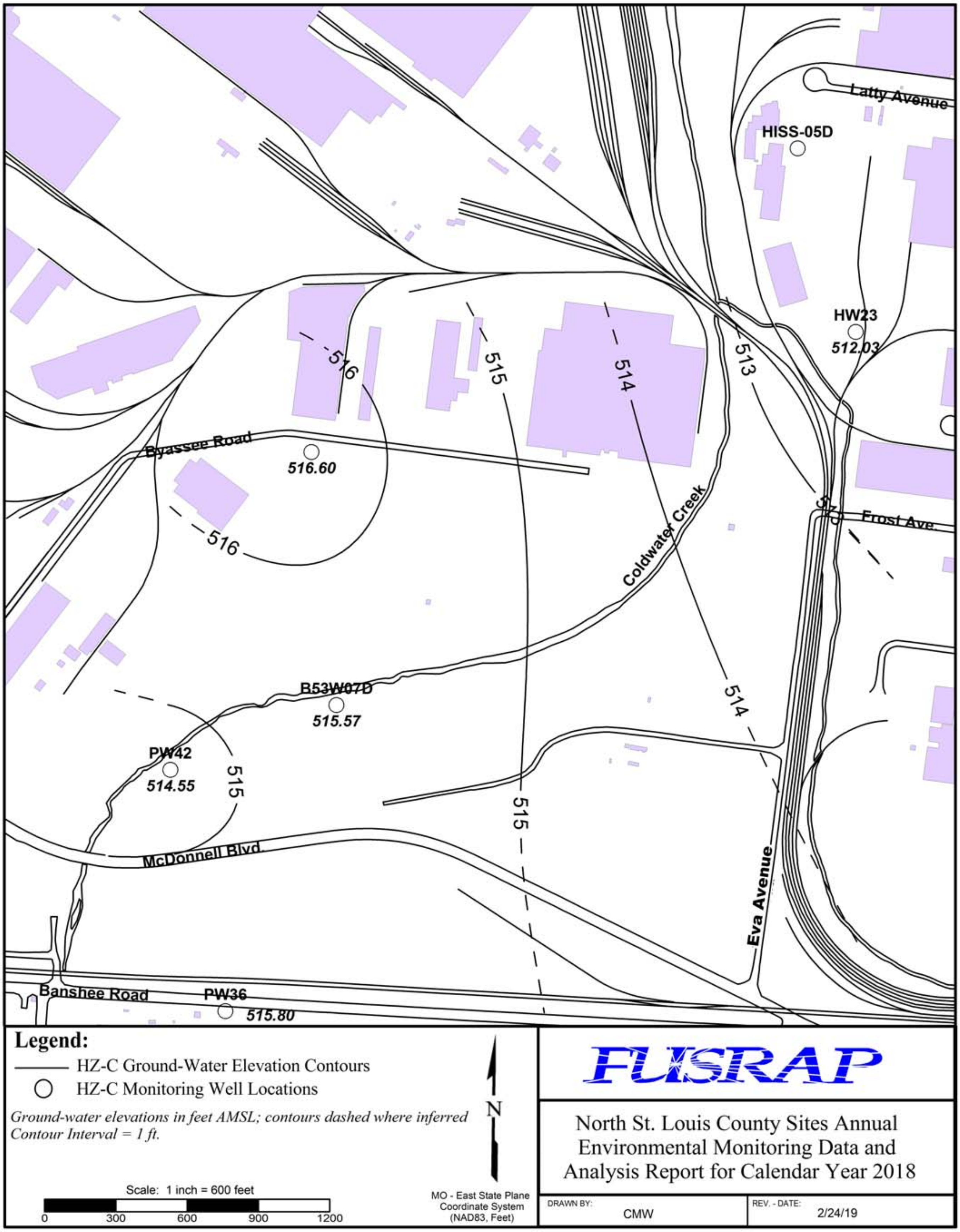


Figure 4-8. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (February 13, 2018)

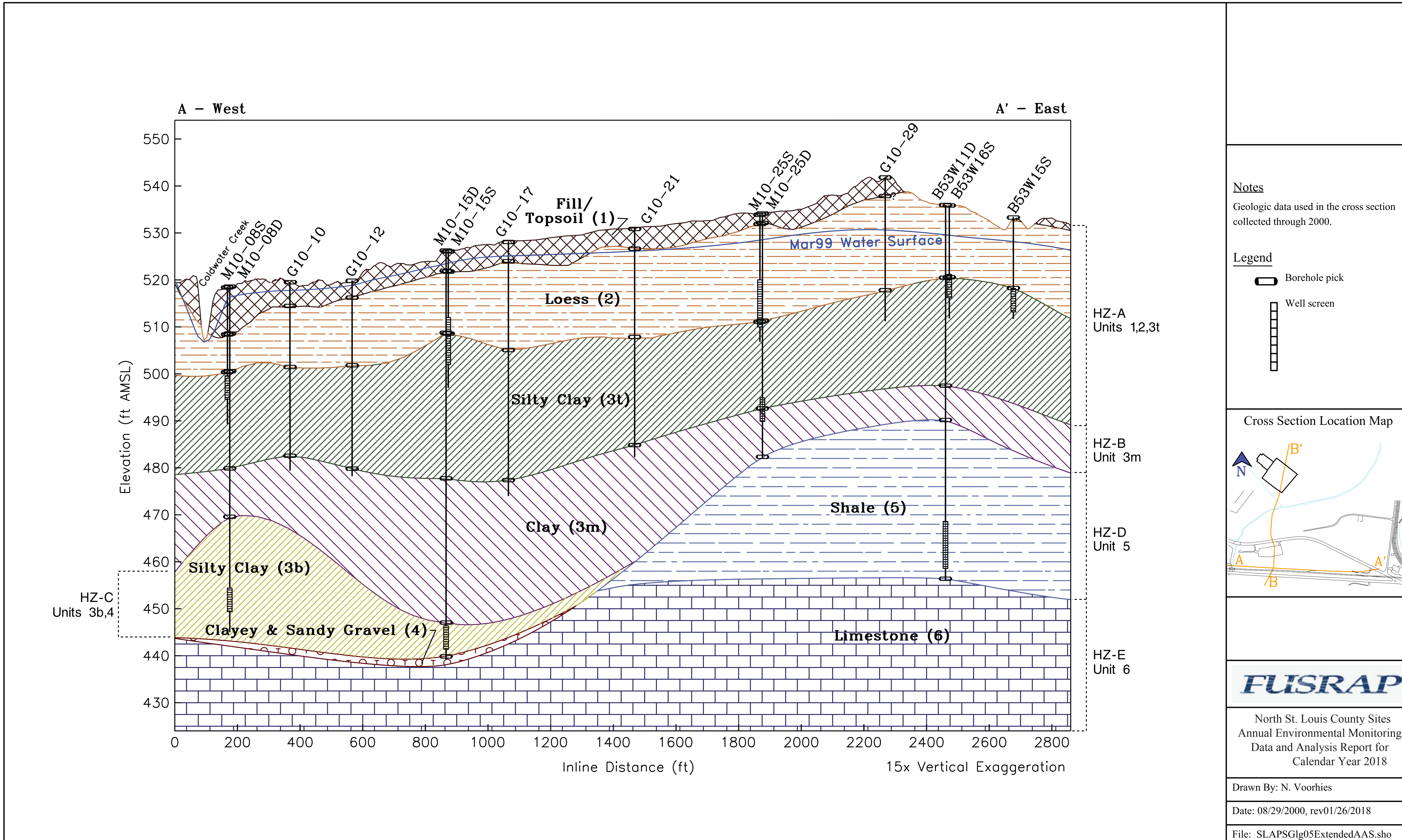
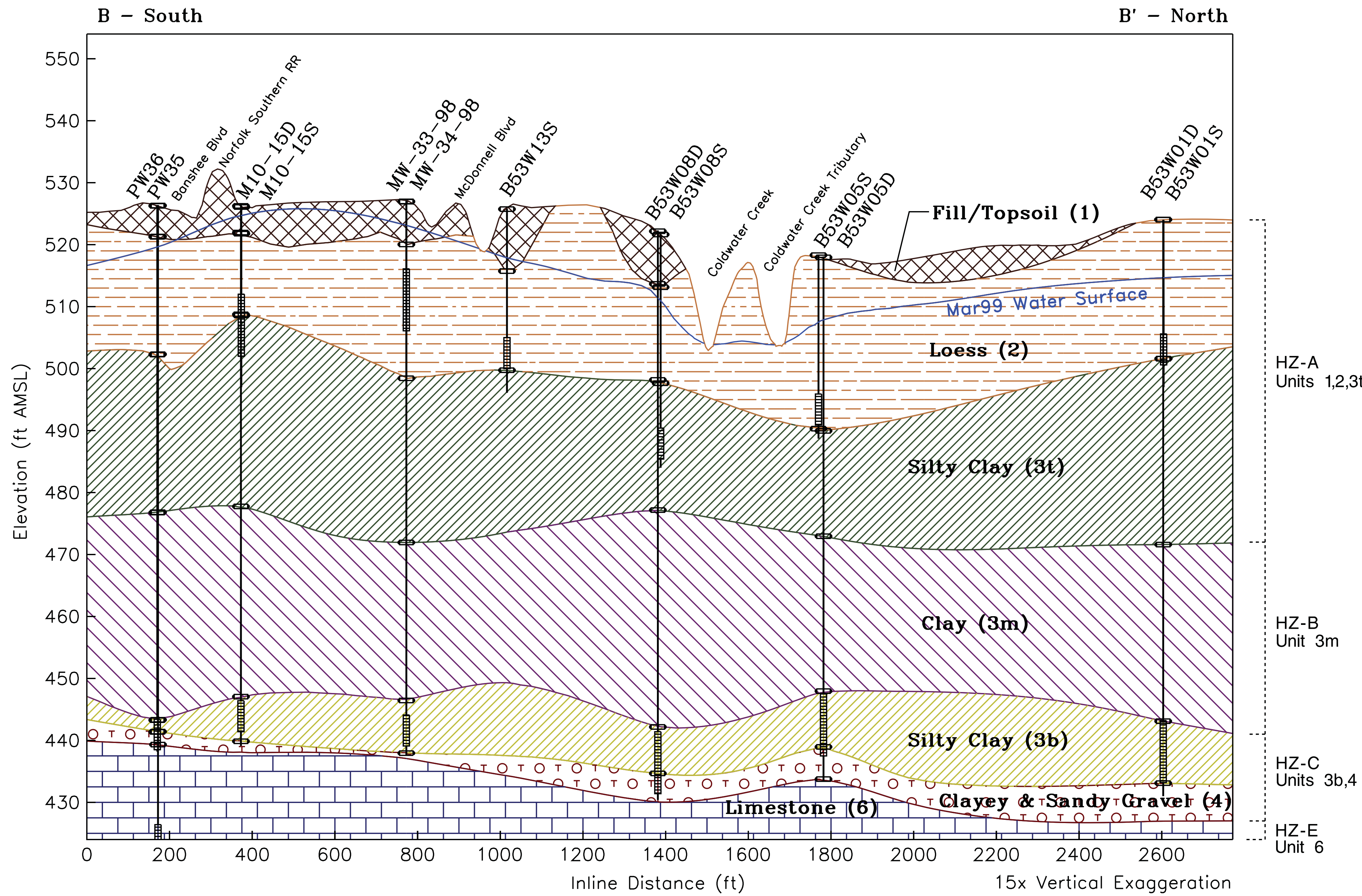


Figure 4-9. Geologic Cross-Section A-A' at the SLAPS



Notes

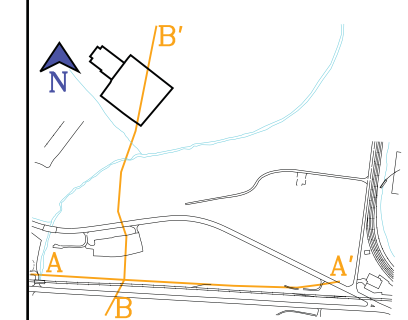
Geologic data used in the cross section collected through 2000.

Legend

Borehole pick

Well screen

Cross Section Location Map



FUSRAP

North St. Louis County Sites
Annual Environmental Monitoring
Data and Analysis Report for
Calendar Year 2018

Drawn By: N. Voorhies

Date: 8/29/2000, rev01/26/2018

File: SLAPSGlg05ExtendedBBS.sho

Figure 4-10. Geologic Cross-Section B-B' at the SLAPS and SLAPS VPs

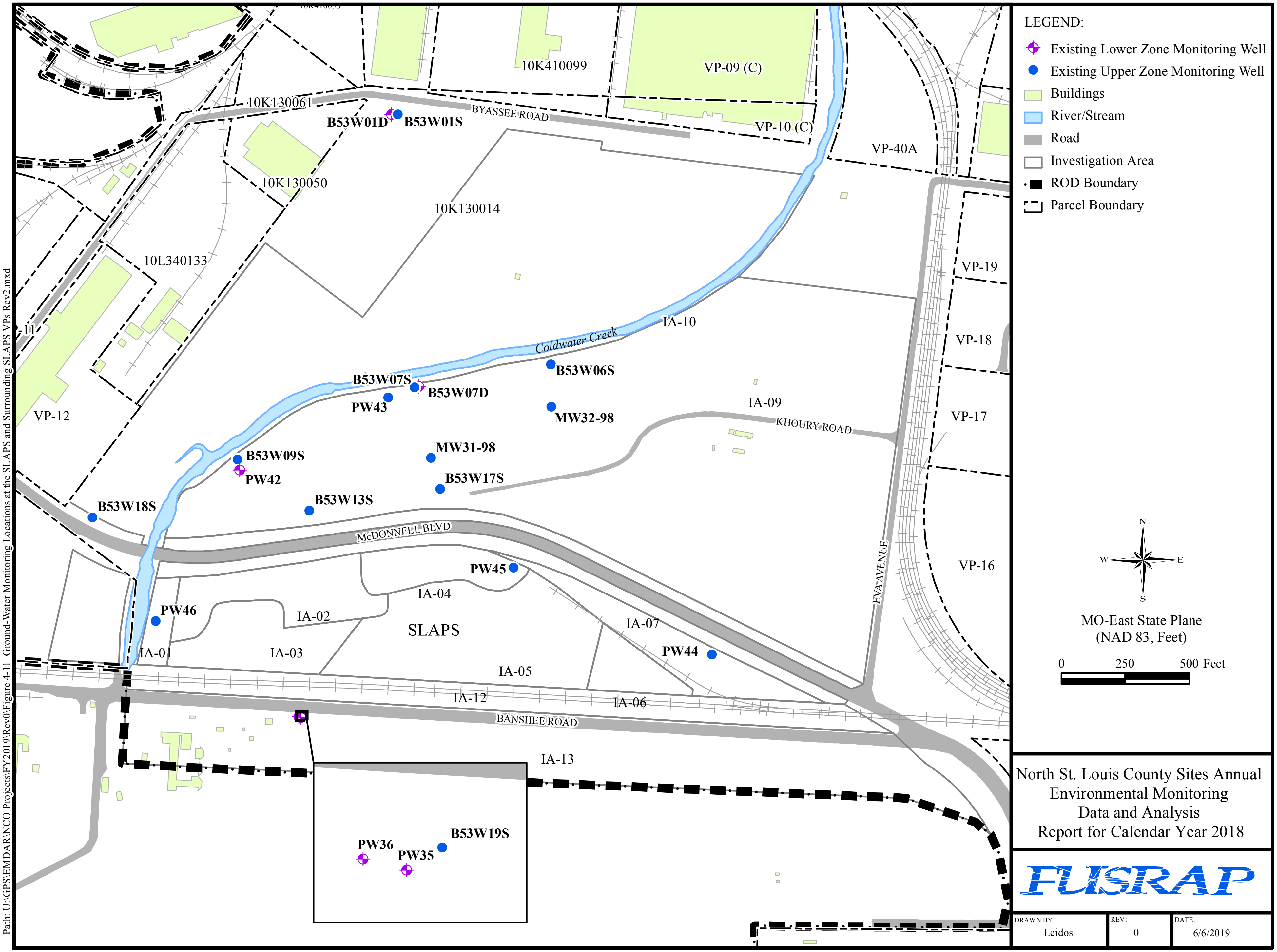
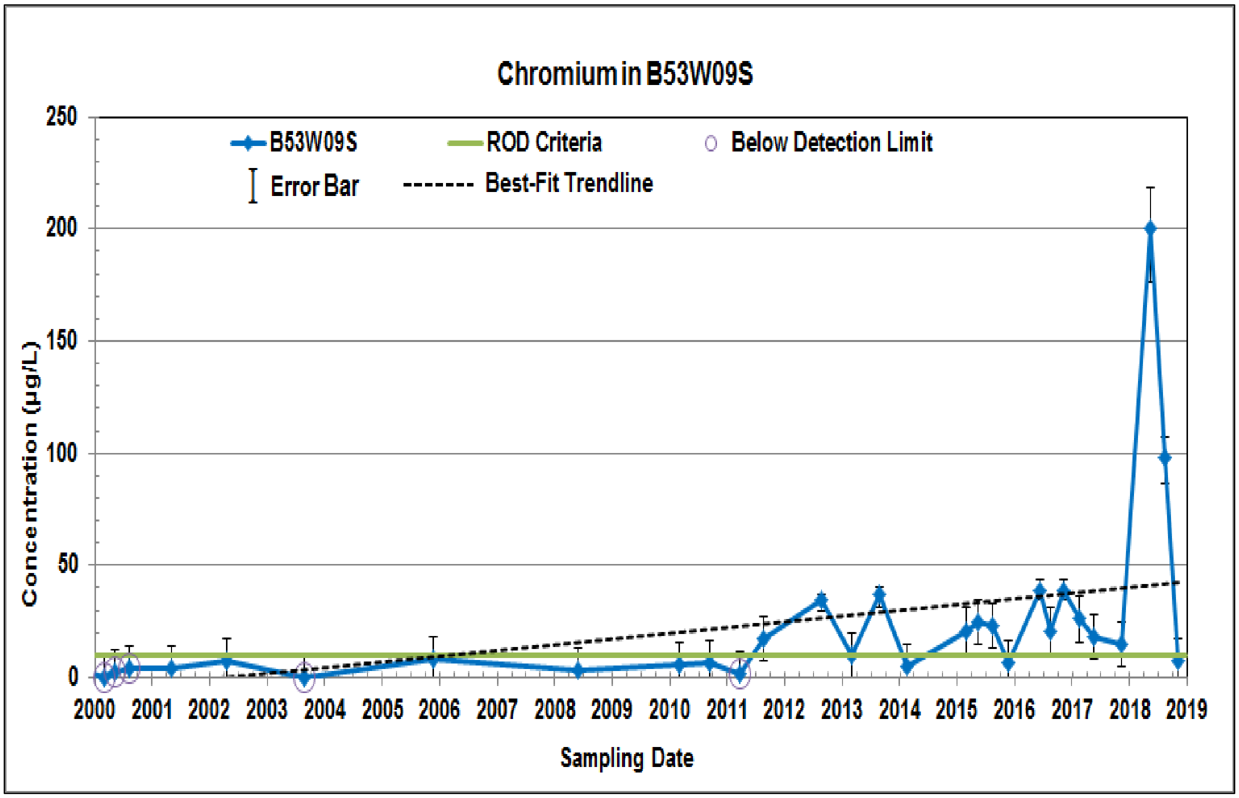
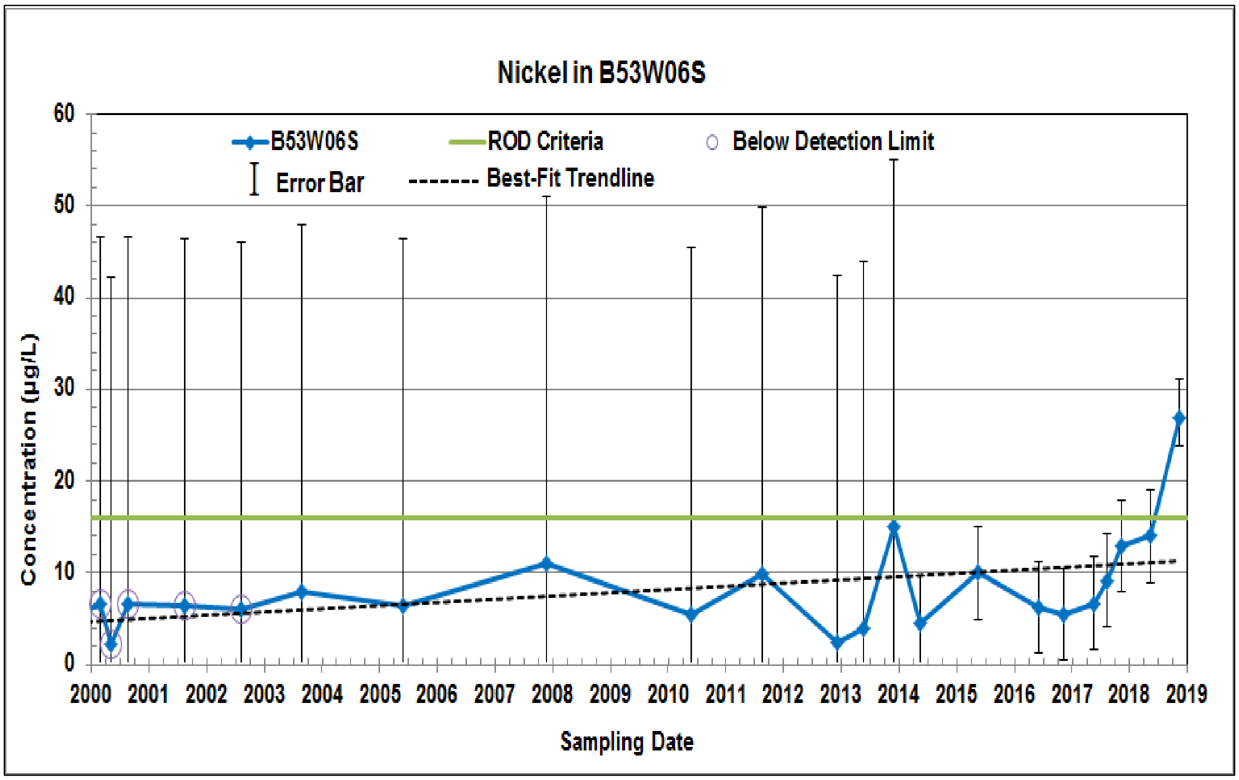


Figure 4-11. Existing Ground-Water Monitoring Locations at the SLAPS and SLAPS VPs



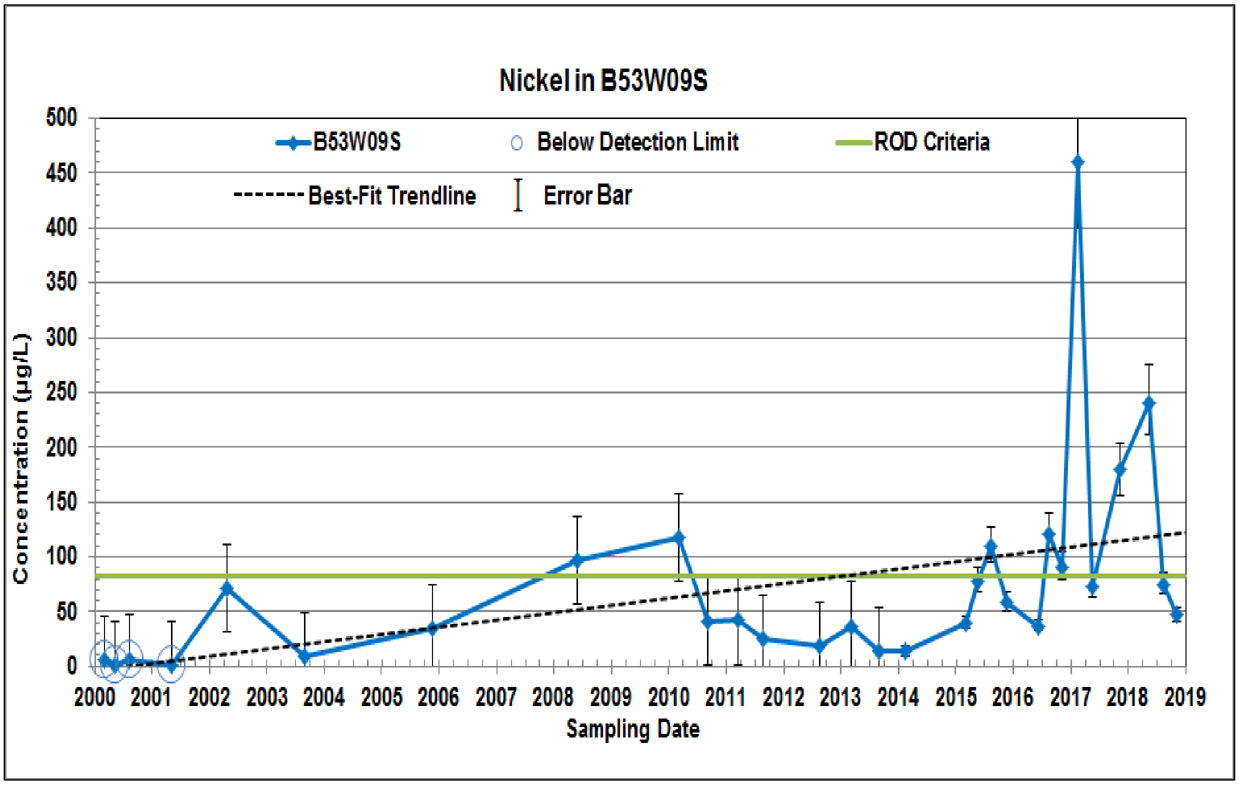


Notes:

For results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.

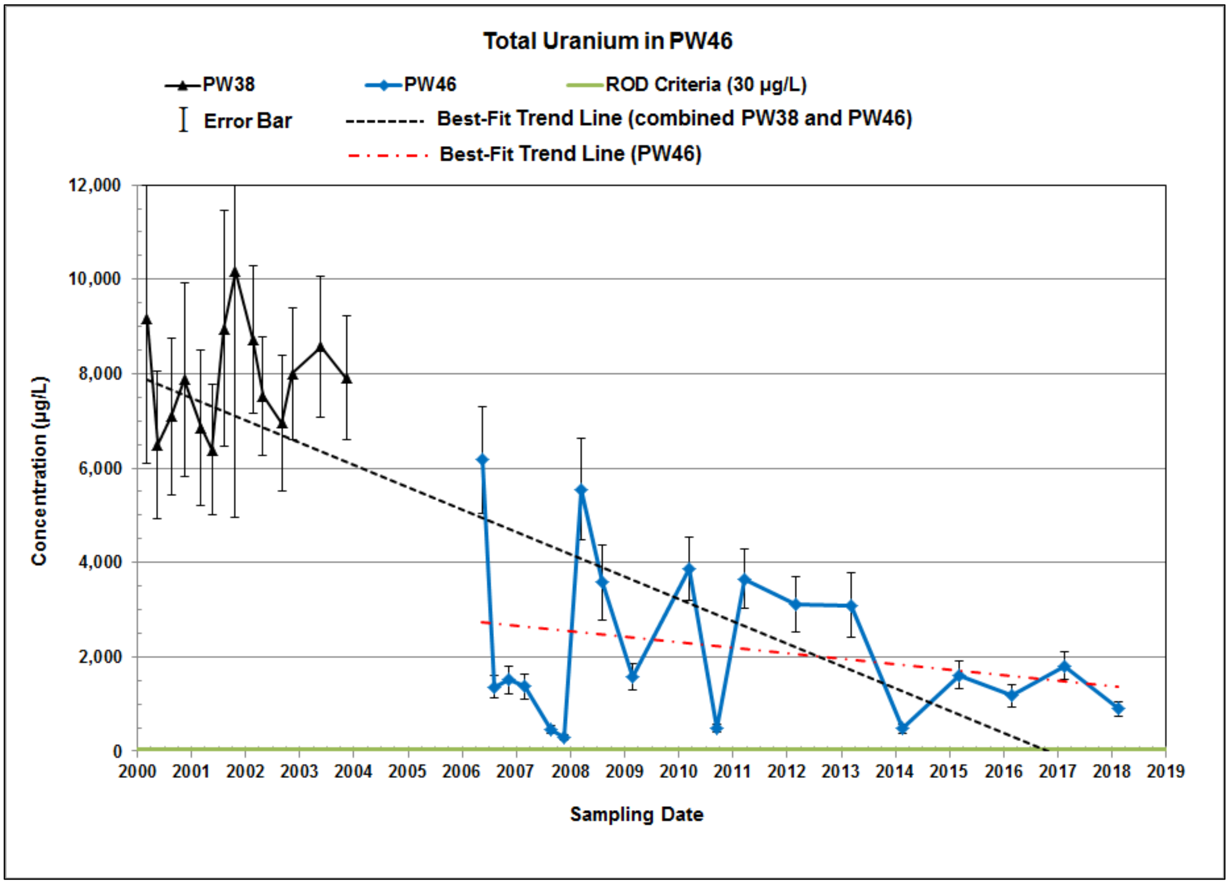
For results reported below the DL (nondetect), the value plotted is half the DL.

Figure 4-12. Time-Versus-Concentration Graphs for Chromium and Nickel in Ground Water at B53W09S and for Nickel in Ground Water at B53W06S and B53W09S



Notes:
For results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.
For results reported below the DL (nondetect), the value plotted is half the DL.

Figure 4-12. Time-Versus-Concentration Graphs for Chromium and Nickel in Ground Water at B53W09S and for Nickel in Ground Water at B53W06S and B53W09S (Continued)



Note:
For total U, the error bar represents ± the sum of the measurement errors for U-234, U-235, and U-238, converted to µg/L.

Figure 4-13. Time-Versus-Concentration Graphs for Total U in Ground Water at PW38 and PW46

Path: U:\GPS\EMDAR\NCO Projects\FY2019\Rev0\Figure 4-14 Selenium Concentrations in Ground Water at the SLAPS and SLAPS VPs.mxd

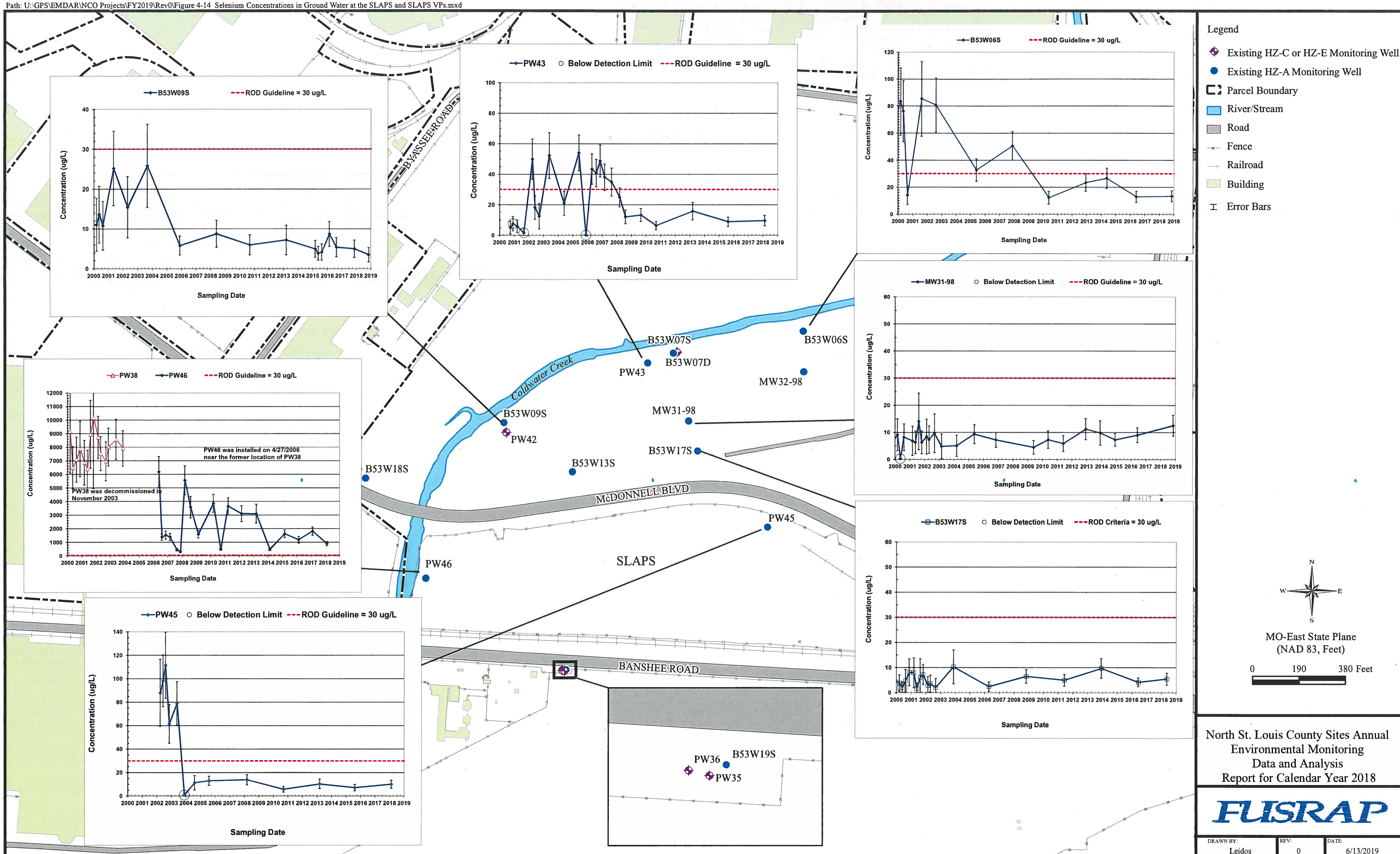


Figure 4-14. Total U Concentrations in Unfiltered Ground Water at the SLAPS and SLAPS VPs

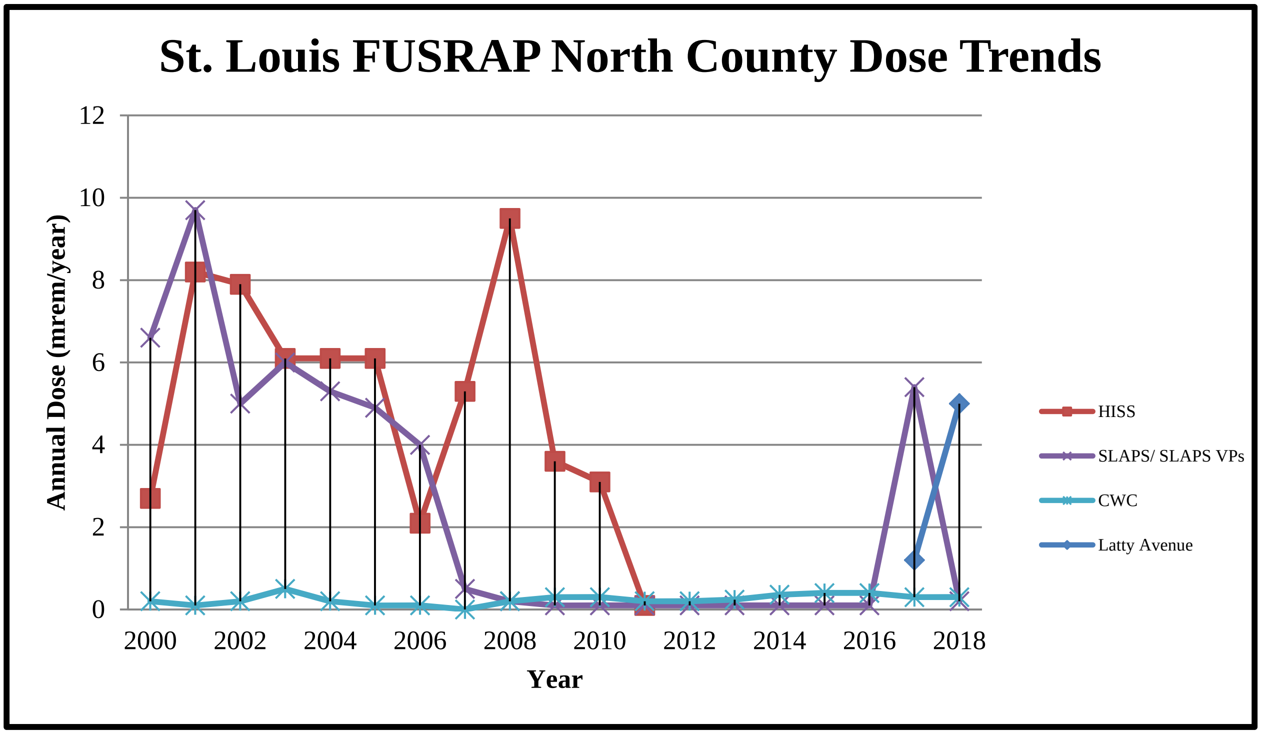


Figure 6-1. St. Louis FUSRAP NC Sites Dose Trends

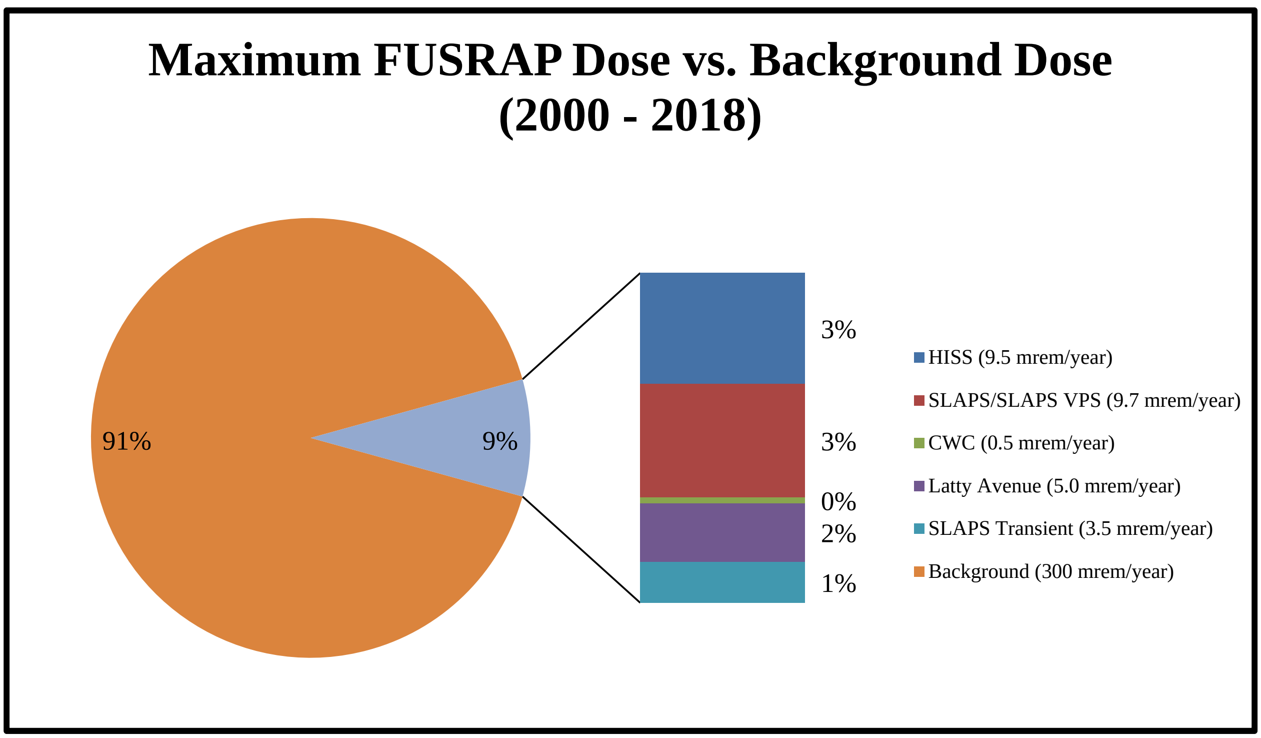


Figure 6-2. St. Louis FUSRAP NC Sites Maximum Dose Versus Background Dose

APPENDIX A

NORTH ST. LOUIS COUNTY FUSRAP SITES
2018 RADIONUCLIDE EMISSIONS NESHAP REPORT
SUBMITTED IN ACCORDANCE WITH REQUIREMENTS OF 40 *CFR* 61, SUBPART I

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ACRONYMS AND ABBREVIATIONS

Ac	actinium
AEC	Atomic Energy Commission
BNI	Bechtel National Inc.
CFR	*Code of Federal Regulations*
CWC	Coldwater Creek
CY	calendar year
DOE	U.S. Department of Energy
EDE	effective dose equivalent
FUSRAP	Formerly Utilized Sites Remedial Action Program
Futura	Futura Coatings Company
GIS	geographic information system
HEPA	high efficiency particulate air
HISS	Hazelwood Interim Storage Site
IA	investigation area
IAAAP	Iowa Army Ammunition Plant
MED	Manhattan Engineer District
NC	North St. Louis County
NESHAP	National Emission Standard for Hazardous Air Pollutants
Pa	protactinium
Ra	radium
RA	remedial action
SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site
STLAA	St. Louis Airport Authority
SU	survey unit
Th	thorium
U	uranium
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VP	vicinity property

UNIT ABBREVIATIONS

Both English and metric units are used in this report. The units used in a specific situation are based on common unit usage or regulatory language (e.g., depths are given in feet, and areas are given in square meters). Units included in the following list are not defined at first use in this report.

°C	degrees Celsius (centigrade)
$\mu Ci/cm^3$	microcurie(s) per cubic centimeter
µCi/mL	microcurie(s) per milliliter
Ci	curie(s)
cm	centimeter(s)
cm^3	cubic centimeter(s)
g	gram(s)
kg	kilogram(s)
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
mL	milliliter(s)
mrem	millirem
pCi/g	picocurie(s) per gram
yd^3	cubic yard(s)

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EXECUTIVE SUMMARY AND DECLARATION STATEMENT

This report presents the results of National Emission Standard for Hazardous Air Pollutants (NESHAP) calculations for the St. Louis Formerly Utilized Sites Remedial Action Program (FUSRAP) North St. Louis County (NC) Sites for calendar year (CY) 2018. The NESHAP requires the calculation of the effective dose equivalent (EDE) from radionuclide emissions to critical receptors. The report follows the requirements and procedures contained in 40 *Code of Federal Regulations (CFR)* 61, Subpart I, *National Emission Standards for Radionuclide Emissions from Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H.*

This report describes evaluations of sites at which a reasonable potential exists for radionuclide emissions due to St. Louis FUSRAP activities. These sites include the following: the Futura Coatings Company (Futura), Eva Avenue, the investigation area (IA)-09 Ballfields, the Chez Paree Properties, and the St. Louis Airport Site (SLAPS) Loadout area. This report also evaluates radionuclide emissions from the U.S. Army Corps of Engineers (USACE) St. Louis District FUSRAP Radioanalytical Laboratory operations. Emissions from the sites and laboratory were evaluated for the entire CY 2018 to provide a conservative estimate of total emissions.

The NESHAP standard of EDE to a critical receptor from radionuclide emissions is 10 mrem per year. None of the sites exceeded this standard. The EDEs from radionuclide emissions at the sites were calculated using soil characterization data, air particulate monitoring data, and the U.S. Environmental Protection Agency (USEPA) CAP88-PC modeling code, which resulted in an EDE of less than 0.1 mrem per year from the SLAPS, 0.2 mrem per year from the SLAPS vicinity properties (VPs), and less than 0.1 mrem per year from Futura. The EDE from the laboratory emissions was calculated using the methodology prescribed in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions,* soil characterization data, and the USEPA CAP88-PC modeling code (USEPA 2014), resulting in an EDE of less than 0.1 mrem per year.

Evaluations for the Latty Avenue Properties, the SLAPS, the SLAPS VPs, and the USACE St. Louis FUSRAP laboratory resulted in an EDE of less than 10 percent of the dose standard prescribed in 40 *CFR* 61.102. These sites are exempt from the reporting requirements of 40 *CFR* 61.104(a).

DECLARATION STATEMENT – 40 *CFR* 61.104(a)(xvi)

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. See 18 *U.S. Code* 1001.

____________________________________ _______________

Signature Date

Office: U.S. Army Corps of Engineers, St. Louis District Office
Address: 8945 Latty Ave.
Berkeley, MO 63134
Contact: Jon Rankins

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1.0 PURPOSE

This NESHAP report contains the EDE calculations from radionuclide emissions (exclusive of radon) to critical receptors from the NC Sites at which a reasonable potential existed for radionuclide emissions due to St. Louis FUSRAP activities. These sites include the following: Futura, Eva Avenue, the IA-09 Ballfields, the Chez Paree Properties, the SLAPS Loadout area, and the USACE St. Louis FUSRAP laboratory. The air emissions from the laboratory include fume hood stack releases of particulate radionuclides from sample preparation and separation activities. The air emissions from the other sites are ground releases of particulate radionuclides in soil as a result of windblown action and remedial action (RA) in the form of excavation and off-site disposal of soil.

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2.0 METHOD

Emission rates for the NC Sites were modeled using guidance documents (i.e., *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities* [USEPA 1989]) referenced in 40 *CFR* 61, Appendix E, *Compliance Procedures Methods for Determining Compliance with Subpart I*, and were measured by collection of environmental air samples. Emission rates for the laboratory were modeled using guidance in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions*. Emission rates were input into the USEPA computer code CAP88-PC, along with appropriate meteorological data and distances to critical receptors[1], to obtain the EDE from the air emissions.

Although 40 *CFR* 61.103 requires the use of the USEPA computer code COMPLY, USEPA no longer supplies technical support for COMPLY. However, the USEPA lists both COMPLY and CAP88-PC as atmospheric models for assessing dose and risk from radioactive air emissions (USEPA 2014). The USEPA continues to maintain and update the CAP88-PC modeling program and has updated it as recently as September 2014. In previous FUSRAP NESHAP reports, both COMPLY and CAP88-PC results have been compared. This comparison indicated that CAP88-PC is a comparable and conservative method of demonstrating compliance with 40 *CFR* 61, Subpart I. For these reasons, CAP88-PC was used in this report to demonstrate compliance with the NESHAP.

2.1 EMISSION RATE

Two methods were used to determine particulate radionuclide emission rates from the sites: (1) 40 *CFR* 61 Appendix D, *Methods for Estimating Radionuclide Emissions*, and (2) environmental air samples collected from the perimeter of a site.

For method one, emissions from laboratory fume hood exhaust during soil sample grinding operations and the dissolution of soil and water samples were evaluated using data from soil samples analyzed during CY 2018.

For method two, emissions during excavations and waste loadout were evaluated using air sampling data at the excavation and waste loadout perimeters.

2.2 EFFECTIVE DOSE EQUIVALENT

The EDE to critical receptors[1] is obtained using USEPA computer code CAP88-PC, Version 4.0 (USEPA 2014). CAP88-PC uses a Gaussian plume equation to estimate the dispersion of radionuclides and is referenced by the USEPA to demonstrate compliance with the NESHAP emissions criterion in 40 *CFR* 61. An area ground release at a height of 1 m is modeled for the sites, and a stack release at a height of 3 m is modeled for the laboratory.

The EDE is calculated by combining doses from ingestion, inhalation, air immersion, and external ground surface. CAP88-PC contains historical weather data libraries for major airports across the country, and the results can be modeled for receptors at multiple distances from the emissions source.

[1] "Critical receptors," as used in this report, are the locations for the nearest residence, farm, business, and school.

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3.0 METEOROLOGICAL DATA

Meteorological data were obtained from the CAP88-PC code for the Lambert – St. Louis International Airport (wind file 13994.WND). Data in the file were accumulated from 1988 through 1992.

- Average Annual Wind Velocity: 4.446 m per second
- Average Annual Precipitation Rate: 111 cm per year
- Average Annual Air Temperature: 14.18 °C

Wind speed frequency data were obtained from Lambert – St. Louis International Airport (see Table A-1).

Table A-1. St. Louis Wind Speed Frequency

Wind Speed Group (Knots)	Frequency (Percent)
0 – 3	10
4 – 7	29
8 – 12	36
13 – 18	21
19 – 24	3
25 – 31	1

Knot = 1.151 miles per hour

Wind direction frequency data were obtained from the CAP88-PC wind file, 13994.WND (see Table A-2).

Table A-2. St. Louis Wind Rose Frequency

Wind Direction		Wind Frequency (Percent)	Wind Direction		Wind Frequency (Percent)
Wind Toward	Wind From		Wind Toward	Wind From	
N	S	13.1	S	N	5.6
NNW	SSE	7.4	SSE	NNW	4.3
NW	SE	6.8	SE	NW	6.1
WNW	ESE	6.9	ESE	WNW	8.7
W	E	5.5	E	W	9.0
WSW	ENE	2.8	ENE	WSW	6.8
SW	NE	3.1	NE	SW	5.4
SSW	NNE	3.7	NNE	SSW	5.0

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4.0 LATTY AVENUE PROPERTIES UNDER ACTIVE REMEDIATION

4.1 SITE HISTORY

In 1966, Continental Mining and Milling Company of Chicago, Illinois, purchased the wastes stored at the SLAPS and began moving them to a property at 9200 Latty Avenue (known as Futura since 1979) for storage. In 1967, the Commercial Discount Corporation of Chicago, Illinois, purchased the residues, dried the materials, and shipped much of the material to Canon City, Colorado. Cotter Corporation purchased the remaining residues in 1969 and dried and shipped more material to Canon City during 1970. In 1973, the remaining undried material was shipped to Canon City, and leached barium sulfate was mixed with soil and transported to a St. Louis County landfill. During these activities, improper storage, handling, and transportation of materials caused the spread of materials along haul routes and to the adjacent VPs.

In 1979, the owner of the 9200 Latty Avenue property excavated approximately 13,000 yd^3 from the western half of the property prior to constructing a manufacturing facility. The material excavated at this time was stockpiled on the eastern half of the property at 9170 Latty Avenue, which has been known as the Hazelwood Interim Storage Site (HISS) since 1979. In 1984, Bechtel National Inc. (BNI) performed removal actions, including clearing, cleanup, and excavation of the property at 9200 Latty Avenue and the surrounding VPs. This action created approximately 14,000 yd^3 of additional contaminated soil, which was stockpiled at the HISS.

In 1986, the U.S. Department of Energy (DOE) provided radiological support to the cities of Hazelwood and Berkeley, Missouri, for a drainage and road improvement project. Soil with constituents in excess of DOE RA guidelines was excavated and stored at the HISS. This action resulted in an additional 4,600 yd^3 of material being placed at the HISS in a supplemental storage pile.

In 1996, the owner of the property to the east of the HISS, General Investment Funds Real Estate Holding Company, in consultation with the DOE, made commercial parking and drainage improvements on the property. This action resulted in the stockpiling of approximately 8,000 yd^3 of soil and debris in two interim storage piles located in the southwestern portion of the Latty Avenue VP-02(L). These piles were referred to as the Eastern Piles.

In 2000 and 2001, the USACE removed the Main, Supplemental, and Eastern Piles and shipped the material by rail to properly permitted disposal facilities. The ground surface on which the piles were previously located was covered by a layer of plastic and approximately 6 inches of gravel.

Beginning in 2001, pre-design investigation surveys and sampling were performed on the Latty Avenue Properties to determine soil areas and building surfaces requiring remediation or decontamination. The USACE remediated contaminated areas, decontaminated building surfaces, and performed final status surveys between 2007 and 2012. No additional remediation activities on Latty Avenue Properties occurred between 2013 and 2017.

4.2 MATERIAL HANDLING AND PROCESSING FOR CALENDAR YEAR 2018

During CY 2018, excavations were conducted in a small area adjacent to power poles on the Futura property that had previously been an inaccessible area. Air particulate samples were collected around excavation and loadout area perimeters during active excavation. Analytical results of air particulate samples were used to determine windblown in situ emissions.

4.3 SOURCE DESCRIPTION – RADIONUCLIDE SOIL CONCENTRATIONS

The radionuclide concentrations for Futura were determined based on soil sample data for the excavated area that was obtained from the St. Louis FUSRAP database. Attachment A-1 contains Table A-1-1, a summary table of the radionuclide concentrations used to calculate the emission rate from the site.

4.4 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2018

Ground releases of particulate radionuclides in soil as a result of windblown action and remedial activity in the form of excavation and off-site disposal of soil are assumed for the particulate radionuclide emission determinations from the Latty Avenue Properties at which excavation occurred in CY 2018. Other Latty Avenue Properties do not contribute to the emission determinations for periods of inactivity due to the low activity and vegetative cover.

4.5 DISTANCES TO CRITICAL RECEPTORS

The distances and direction to critical receptors are shown on Figure A-1 and presented in Table A-3. Distances and directions to critical receptors are determined using tools in a geographic information system (GIS).

Table A-3. Latty Avenue Critical Receptors for CY 2018

Sources	Nearest Residence		Farm		Business		School	
	Distance (m)	Direction	Distance (m)	Direction	Distance (m)[a]	Direction	Distance (m)	Direction
Futura	640	NE	720	NE	55	SW	2,025	ESE

[a] Distance from business receptor to fenceline is 160 m. Distance from business receptor to center of source from the SLAPS Loadout is 500 m for emissions determination.

4.6 EMISSIONS DETERMINATIONS

4.6.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from around the perimeter of active excavations during excavation activities to measure the radionuclide emissions. The air samples provide the basis for determining the radionuclide emission rates during all of CY 2018. The average gross alpha and gross beta concentrations (in µCi/mL) were determined for each sample location for CY 2018. The site average concentrations are presented in Table A-4.

Table A-4. Latty Avenue Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2018

Monitoring Location	Average Concentration (µCi/mL)[a]	
	Gross Alpha	Gross Beta
Futura	1.35E-15	4.78E-14
Background Concentration[b]	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only. As a conservative approach, background values were not subtracted from the gross average concentration during the determination of EDE.

Alpha and beta radionuclide activity fractions are determined from the average radionuclide concentration data established using soil sample data for the excavated area. The soil sample data were obtained through a geospatial query of the St. Louis FUSRAP database. The product of each radionuclide activity fraction and the gross concentration provide the radionuclide emission concentration as measured in $\mu Ci/cm^3$. The gross average concentration (in $\mu Ci/cm^3$) is converted to a release (emission) rate (in Ci per year) using Equations 1 and 2 from *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities* (USEPA 1989). Equation 1 is used to determine the effective diameter of a non-circular stack or vent.

$$D = (1.3\ A)^{1/2}$$ *Equation 1*

where:

D = the effective diameter of the release (in m)
A = the area of the stack, vent, or release point (in m^2)

Table A-5 provides the effective surface area available for release of airborne radionuclides normalized to 1 year and the effective diameter for the Latty Avenue Properties that were excavated in CY 2018. Calculation of the effective surface area is contained in Attachment A-1 of this NESHAP report.

Table A-5. Latty Avenue Excavation Effective Area and Effective Diameter for CY 2018

Location	Effective Area (m^2)	Effective Diameter (m)
Futura	1.7	1.5

The average annual wind speed for the Lambert – St. Louis International Airport is provided in CAP88-PC as 4.446 m per second. Conversion of this wind speed to a flow rate through stacks with the listed effective diameters for each area is completed using Equation 2.

$$F = V\ \pi\ (D)^2 / 4$$ *Equation 2*

where:

V = the wind velocity (in m per minute) = 266.76 m per minute
F = the flow rate (in m^3 per minute)
π = a mathematical constant
D = the effective diameter of the release (in m) determined using Equation 13 from *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities* (USEPA 1989)

Converting the velocity of emissions from the sites to an effective flow rate results in the following site release flow rates for the Latty Avenue Properties, as listed in Table A-6. The product of the flow rate, the activity fraction associated with each radionuclide, and the appropriate conversion factors provide the site emission rate for each radionuclide, as contained in Table A-7. Attachment A-1 of this NESHAP report contains flow rate and average radionuclide concentration data.

Table A-6. Latty Avenue Site Release Flow Rate for CY 2018

Location	Site Release Flow Rate (m^3/minute)
Futura	4.5E+02

4.6.2 Latty Avenue Total Airborne Radioactive Particulate Emission Rates

The total CY 2018 emission/release rates input into the USEPA codes for the Latty Avenue Properties are shown in Table A-7 and are based on the measured emission rates from the air samples collected from the perimeter of the excavation.

Table A-7. Latty Avenue Total Airborne Radioactive Particulate Emission Rates for CY 2018

Radionuclide	Emission (Ci/year)[a]
	Futura
Uranium (U)-238	7.3E-09
U-235	5.1E-10
U-234	7.3E-09
Radium (Ra)-226	7.0E-09
Thorium (Th)-232	2.1E-09
Th-230	2.8E-07
Th-228	2.2E-09
Ra-224	2.2E-09
Th-234	4.3E-06
Protactinium (Pa)-234m	4.3E-06
Th-231	3.0E-07
Ra-228	1.2E-06
Actinium (Ac)-228	1.2E-06
Pa-231	5.7E-09
Ac-227	5.2E-09

[a] Release rate based on a 365-day period at a respective flow rate (as presented in Table A-6) as determined from the average annual wind speed (4.446 m per second) and the effective site area (as presented in Table A-5) for each location.

4.7 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The effective area factor input was taken from Table A-5. Results show compliance with the 10 mrem per year criterion for all critical receptors. The results are summarized in Table A-8.

Table A-8. Latty Avenue CAP88-PC Results for Critical Receptors for CY 2018

Source	Dose (mrem/year)			
	Nearest Residence[a]	Farm[a]	Business[b]	School[b]
Futura	<0.1	<0.1	<0.1	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).

5.0 ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES UNDER ACTIVE REMEDIATION

5.1 SITE HISTORY

The Manhattan Engineer District (MED) acquired the SLAPS in 1946 to store uranium-bearing residuals generated at the St. Louis Downtown Site (SLDS) from 1946 through 1966. In 1966, these residuals were purchased by Continental Mining and Milling Company of Chicago, removed from the SLAPS, and placed in storage at 9200 Latty Avenue (known as Futura since 1979) under an Atomic Energy Commission (AEC) license. After most of the residuals were removed, site structures were demolished and buried on the property, along with approximately 60 truckloads of scrap metal and a vehicle that had become contaminated. In 1973, the U.S. Congress and the City of St. Louis agreed to transfer ownership from the AEC to the St. Louis Airport Authority (STLAA). The USACE conducted cleanup operations on the SLAPS from 1998 through 2007. Although remediation concluded at the SLAPS in 2007, a small portion of the site is still used to conduct waste storage and loadout activities.

5.2 MATERIAL HANDLING AND PROCESSING FOR CALENDAR YEAR 2018

During CY 2018, excavations were conducted on Eva Avenue, the IA-09 Ballfields, and the Chez Paree Properties; and waste loadout activities were conducted at the SLAPS Loadout facility. Air particulate samples were collected around excavation perimeters during active excavation on the SLAPS VPs and around the SLAPS Loadout area throughout CY 2018. Analytical results of air particulate samples were used to determine windblown in situ emissions.

5.3 SOURCE DESCRIPTION – RADIONUCLIDE SOIL CONCENTRATIONS

The radionuclide concentrations on Eva Avenue, the IA-09 Ballfields, and the Chez Paree Properties were determined by using soil sample data for remediated areas. The soil sample data were obtained using a geospatial query of the St. Louis FUSRAP database. The radionuclide concentrations for the SLAPS Loadout facility were determined by 2018 railcar waste characterization data collected by the remedial action contractor. Attachment A-1 of this NESHAP report contains Table A-1-6, a summary table of the radionuclide concentrations used to calculate the emission rate from each site.

5.4 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2018

Ground releases of particulate radionuclides in soil, as a result of windblown action and RA in the form of excavation of soil for Eva Avenue, the IA-09 Ballfields, and the Chez Paree Properties, are assumed for the particulate radionuclide emission determinations from the SLAPS VPs at which excavations occurred in CY 2018. Other SLAPS VPs do not contribute to the emission determinations for periods of inactivity due to the low activity and vegetative cover.

Ground releases of particulate radionuclides as a result of windblown action during waste loadout activities are assumed for the particulate radionuclide emission determinations from the SLAPS Loadout facility.

5.5 DISTANCES TO CRITICAL RECEPTORS

The distances to critical receptors are shown on Figures A-2 and A-3 and presented in Table A-9. Distances and directions to critical receptors are determined using tools in a GIS.

Table A-9. SLAPS and SLAPS VPs Critical Receptors for CY 2018

Sources	Nearest Residence		Farm		Business		School	
	Distance (m)	Direction	Distance (m)	Direction	Distance (m)[a]	Direction	Distance (m)	Direction
Eva Avenue	205	E	1,050	NE	100	E	2,045	ESE
IA-09 Ballfields	780	NE	1,675	NE	485	WSW	2,500	E
Chez Paree	70	W	1,535	SSE	240	N	1,510	WNW
SLAPS Loadout	770	NE	1,710	NE	500	WSW	2,580	E

[a] Distance from business receptor to fenceline is 160 m. Distance from business receptor to center of source from the SLAPS Loadout is 500 m for emissions determination.

5.6 EMISSIONS DETERMINATION

5.6.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from around the perimeter of active excavations and the SLAPS Loadout area to measure the radionuclide emissions. The sample results provide the basis for determining the radionuclide emission rates during all of CY 2018. The average gross alpha and gross beta concentrations (in µCi/mL) were determined for each monitoring location for CY 2018. The site average concentrations are presented in Table A-10.

Table A-10. SLAPS and SLAPS VPs Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2018

Monitoring Location	Average Concentration (µCi/mL)[a]	
	Gross Alpha	Gross Beta
Eva Avenue	2.50E-15	3.72E-14
IA-09 Ballfields	4.87E-15	3.19E-14
Chez Paree	3.55E-15	2.73E-14
SLAPS Loadout	4.06E-15	2.97E-14
Background Concentration[b]	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only. As a conservative approach, background values were not subtracted from the gross average concentration during the determination of EDE.

Alpha and beta radionuclide activity fractions are determined from the average radionuclide concentration data established using soil sample data for the excavated area for the SLAPS VPs and using 2018 railcar data for the SLAPS Loadout facility. Soil sample data for SLAPS VPs were obtained through a geospatial query of the St. Louis FUSRAP database. The product of each radionuclide activity fraction and the gross concentration provide the radionuclide emission concentration as measured in µCi/cm^3. The gross average concentration (in µCi/cm^3) is converted to a release (emission) rate (in Ci per year) using Equations 1 and 2.

A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities (USEPA 1989) includes Equation 1 for determination of the effective diameter of a non-circular stack or vent.

$$D = (1.3\ A)^{1/2}$$ *Equation 1*

where:

D = the effective diameter of the release (in m)
A = the area of the stack, vent, or release point (in m^2)

Table A-11 provides the effective surface area available for release of airborne radionuclides normalized to 1 year and the effective diameter for the SLAPS and excavated SLAPS VPs. Calculation of the effective surface area is contained in Attachment A-1 of this NESHAP report.

Table A-11. SLAPS and SLAPS VPs Excavation Effective Areas and Effective Diameters for CY 2018

Location	Effective Area (m^2)	Effective Diameters (m)
Eva Avenue	89	11
IA-09 Ballfields	2,547	58
Chez Paree	109	12
SLAPS Loadout	600	28

The average annual wind speed for the Lambert – St. Louis International Airport is provided in CAP88-PC as 4.446 m per second. Conversion of this wind speed to a flow rate through stacks with the listed effective diameters for each area is completed using Equation 2.

$$F = V\ \pi\ (D)^2 / 4$$ *Equation 2*

where:

V = the wind velocity (in m per minute) = 266.76 m per minute
F = the flow rate (in m^3 per minute)
π = a mathematical constant
D = the effective diameter of the release (in m) determined using Equation 13 from *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities* (USEPA 1989)

Converting the velocity of emissions from the sites to an effective flow rate results in the following site release flow rates for the SLAPS and SLAPS VPs, as listed in Table A-12. The product of the flow rate, the activity fraction associated with each radionuclide, and the appropriate conversion factors provide the site emission rate for each radionuclide, as contained in Table A-13. Attachment A-1 of this NESHAP report contains flow rate and average radionuclide concentration data.

Table A-12. SLAPS and SLAPS VPs Site Release Flow Rates for CY 2018

Location	Site Release Flow Rate (m^3/minute)
Eva Avenue	2.4E+04
IA-09 Ballfields	6.9E+05
Chez Paree	3.0E+04
SLAPS Loadout	1.6E+05

5.6.2 St. Louis Airport Site and St. Louis Airport Site Vicinity Properties Total Airborne Radioactive Particulate Emission Rates

The total CY 2018 emission/release rates input into the USEPA codes for the SLAPS and SLAPS VPs are shown in Table A-13 and are based on the measured emission rates from the air samples collected from the perimeter of the excavation or loadout area as appropriate.

Table A-13. SLAPS and SLAPS VPs Total Airborne Radioactive Particulate Emission Rates for CY 2018

Radionuclide	Emission (Ci/year)[a]			
	Eva Avenue	IA-09 Ballfields	Chez Paree	SLAPS Loadout
U-238	1.9E-06	1.7E-04	4.2E-06	2.7E-05
U-235	5.4E-08	4.0E-06	1.8E-07	1.8E-06
U-234	1.9E-06	1.7E-04	4.2E-06	2.7E-05
Ra-226	3.2E-06	1.9E-04	4.8E-06	3.6E-05
Th-232	1.6E-06	1.4E-04	4.0E-06	2.2E-05
Th-230	2.0E-05	7.9E-04	2.9E-05	1.9E-04
Th-228	1.7E-06	1.6E-04	4.3E-06	2.2E-05
Ra-224	1.7E-06	1.6E-04	4.3E-06	2.2E-05
Th-234	1.3E-04	3.3E-03	1.2E-04	6.8E-04
Pa-234m	1.3E-04	3.3E-03	1.2E-04	6.8E-04
Th-231	3.9E-06	7.8E-05	5.0E-06	4.7E-05
Ra-228	1.0E-04	2.5E-03	9.3E-05	5.7E-04
Ac-228	1.0E-04	2.5E-03	9.3E-05	5.7E-04
Pa-231	5.4E-08	4.0E-06	1.8E-07	1.8E-06
Ac-227	5.4E-08	4.0E-06	1.8E-07	1.8E-06

[a] Release rate based on a 365-day period at a respective flow rate (as presented in Table A-12) as determined from the average annual wind speed (4.446 m per second) and the effective site area (as presented in Table A-11) for each location.

5.7 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The effective area factor input was taken from Table A-11. Results show compliance with the 10 mrem per year criterion for all critical receptors. The results are summarized in Table A-14.

Table A-14. SLAPS and SLAPS VPs CAP88-PC Results for Critical Receptors for CY 2018

Source	Dose (mrem/year)			
	Nearest Residence[a]	Farm[a]	Business[b]	School[b]
Eva Avenue	<0.1	<0.1	<0.1	<0.1
IA-09 Ballfields	0.1	< 0.1	<0.1	<0.1
Chez Paree	0.2	<0.1	<0.1	<0.1
SLAPS Loadout[c]	<0.1	<0.1	<0.1	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).
[c] Distance from the business receptor to the fenceline is 160 m. Distance from the business receptor to the center of the source is 500 m for emissions determination.

6.0 U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT FUSRAP RADIOANALYTICAL LABORATORY

6.1 SITE DESCRIPTION

The USACE St. Louis FUSRAP laboratory is located on VP-38. VP-38 is a SLAPS VP owned by SuperValue Inc. in 2018. The USACE St. Louis FUSRAP laboratory is bounded to the north, east, and west by the SuperValue Inc. property and bounded to the south by Latty Avenue. The laboratory site covers approximately 4,047 m^2 of VP-38.

6.2 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2018

Emissions from the USACE St. Louis FUSRAP laboratory operations are assumed for the particulate radionuclide emission determinations from the laboratory site. No active excavations occurred on VP-38 during CY 2018.

6.3 EFFLUENT CONTROLS

The effluent controls at the USACE St. Louis FUSRAP laboratory during operations include performing all radioanalytical activities in fume hoods that exhaust to the outside air after passing through a high efficiency particulate air (HEPA) filter.

6.4 DISTANCES TO CRITICAL RECEPTORS

The distances to critical receptors are shown on Figure A-1 and listed in Table A-15. Distances and directions to critical receptors are determined using tools in a GIS.

Table A-15. Laboratory Critical Receptors for CY 2018

Receptor	Distance (m)	Direction from Site
Nearest Residence	300	NE
Farm	310	NE
Business	110	S
School	1,830	SE

6.5 EMISSIONS DETERMINATIONS

6.5.1 Stack Emissions from U.S. Army Corps of Engineers St. Louis District FUSRAP Radioanalytical Laboratory Operations

Two potential sources of emissions from laboratory operations exist:

1. The drying and grinding operations for soil samples, and
2. The dissolution of soil and water samples.

To obtain an estimate of the emissions these operations can cause, the methodology in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions*, was utilized. For the drying and grinding operations, a factor of 0.001 (applicable to liquids and powders) was applied to the entire annual laboratory inventory to determine the emissions for the year. For the dissolution operation, however, only 5 g of any sample are used. Because the dissolution involved heating samples to near boiling temperatures, no adjustment was made to the dissolution inventory to determine the emissions (a factor of 1.0, as specified in 40 *CFR* 61, Appendix D). To account for the small aliquot utilized, the annual inventory was adjusted by a factor of 0.005 (the ratio of the

5-g aliquot to the 1-kg sample mass) to estimate emissions. The two emission sources were then summed to determine the total laboratory source term.

Note that no credit is taken for emission controls during the drying and grinding operations, although 40 *CFR* 61, Appendix D, allows for credit to be taken for the HEPA filters installed on the grinder equipment. The calculated source term therefore provides a conservative basis on which to determine compliance with USEPA guidance in 40 *CFR* 61.

To determine whether the laboratory complies with the 10 mrem per year limit specified in 40 *CFR* 61, Subpart I, the annual inventory handled by the laboratory had to be determined. The actual number of samples handled by the laboratory was reported as shown in Table A-16. With these data, the following equation was used to calculate laboratory emissions from the operations conducted in CY 2018.

$$\text{Emission Rate (Ci/year)} = C * [N_1 * F_1 * N_2 * F_2] * 1{,}000 \text{ g/sample} * 1E\text{ -12 (Ci per picocuries)}$$

where:

- C = the concentration of a radionuclide of concern in a sample type (in pCi/g)
- N_1 = the number of samples involved in a drying and grinding operation
- N_2 = the number of samples involved in a separations operation
- F = the appropriate correction factor (i.e., 0.001 for drying and grinding [F_1] or 0.005 for dissolution [F_2])

Table A-16. Laboratory Annual Sample Inventory for CY 2018

Site	Type	Gamma Spectroscopy[a]	Isotopic Ra[a,b]	Isotopic Th[a,b]	Isotopic U[a,b]	Total Drying and Grinding[a,c]	Total Separations[a,d]
Latty Avenue Properties	Soil	0	0	0	0	0	0
Latty Avenue Properties	Water	---	2	2	20	0	6
Iowa Army Ammunitions Plant (IAAAP)	Soil	411	---	---	432	432	432
IAAAP	Water	---	---	---	19	0	19
SLAPS	Soil	---	---	---	---	0	0
SLAPS	Water	---	4	4	4	0	12
SLAPS VPs	Soil	1,349	---	1,545	---	1,349	1,545
SLAPS VPs	Water	---	24	24	9	0	57
Coldwater Creek (CWC)	Sediment (soil)	2,778	---	2,642	---	2,778	2642
CWC	Water	---	18	18	18	0	54
SLDS	Soil	929	---	891	---	929	891
SLDS	Water	1	188	150	66	0	404
		Latty Avenue Properties			**Total**	0	6
		IAAAP			**Total**	432	451
		SLAPS, SLAPS VPs, and CWC			**Total**	4,127	4,310
		SLDS			**Total**	929	1,295
					Grand Total	5,488	6,062

[a] Data obtained from St. Louis FUSRAP database for samples analyzed in 2018.
[b] Assumes isotopic Ra, Th, and U occur in separate and distinct processes.
[c] Assumes all soil samples went through a drying and grinding process.
[d] Assumes all soil and water samples for isotopic Ra, Th, and U went through a separations process.
Notes: CWC samples use SLAPS characterization data to determine release rates.
--- not applicable

6.5.2 Laboratory Total Airborne Radioactive Particulate Emission Rates

The USACE St. Louis FUSRAP laboratory total CY 2018 emission rate was input into the USEPA CAP88-PC code. The total emission rates are shown in Table A-17 as the calculated emissions from laboratory operations. The result was then used to calculate total dose to the hypothetical maximally exposed receptor. Calculation of emission rates is contained in Attachment A-1 of this NESHAP report.

Table A-17. Laboratory Total Airborne Radioactive Particulate Emission Rates for CY 2018

Radionuclide	Emission (Ci/year)[a]
U-238	5.9E-08
U-235	3.1E-09
U-234	5.7E-08
Ra-226	5.2E-08
Th-232	3.2E-08
Th-230	1.0E-07
Th-228	3.4E-08
Ra-224	3.4E-08
Th-234	5.9E-08
Pa-234m	5.9E-08
Th-231	3.1E-09
Ra-228	2.9E-08
Ac-228	2.9E-08
Pa-231	3.3E-09
Ac-227	3.3E-09

[a] Total emission rate is the sum of individual emission rates determined using the calculation in Section 6.5.1 of this NESHAP report.

6.6 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The stack factor input was 3 m high and 0.3 m in diameter. This evaluation demonstrates that all USACE St. Louis FUSRAP laboratory critical receptors receive less than 10 percent of the dose standard prescribed in 40 *CFR* 61.102; therefore, the laboratory is exempt from the reporting requirement of 40 *CFR* 61.104(a). The results are summarized in Table A-18.

Table A-18. Laboratory CAP88-PC Results for Critical Receptors for CY 2018

Receptor	Distance (m)	Direction from Site	Dose (mrem/year)
Nearest Residence[a]	300	NE	<0.1
Farm[a]	310	NE	<0.1
Business[b]	110	S	<0.1
School[b]	1,830	SE	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).

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7.0 REFERENCES

USEPA 1989. U.S. Environmental Protection Agency, Office of Radiation Programs, Washington, D.C. *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities*. EPA 520/1-89-002. October.

USEPA 2014. U.S. Environmental Protection Agency. CAP88-PC Version 4.0 Computer Code, U.S. Environmental Protection Agency. September.

18 *U.S. Code* 1001. *U.S. Code,* Title 18, Crimes and Criminal Procedure; Part I, Crimes; Chapter 47, Fraud and False Statements; Section 1001, Statements or entries generally.

40 *CFR* 61, Subpart I. *National Emission Standards for Radionuclide Emissions From Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H*.

40 *CFR* 61, Appendix D. *Methods for Estimating Radionuclide Emissions.*

40 *CFR* 61, Appendix E. *Compliance Procedures Methods for Determining Compliance with Subpart I.*

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APPENDIX A

FIGURES

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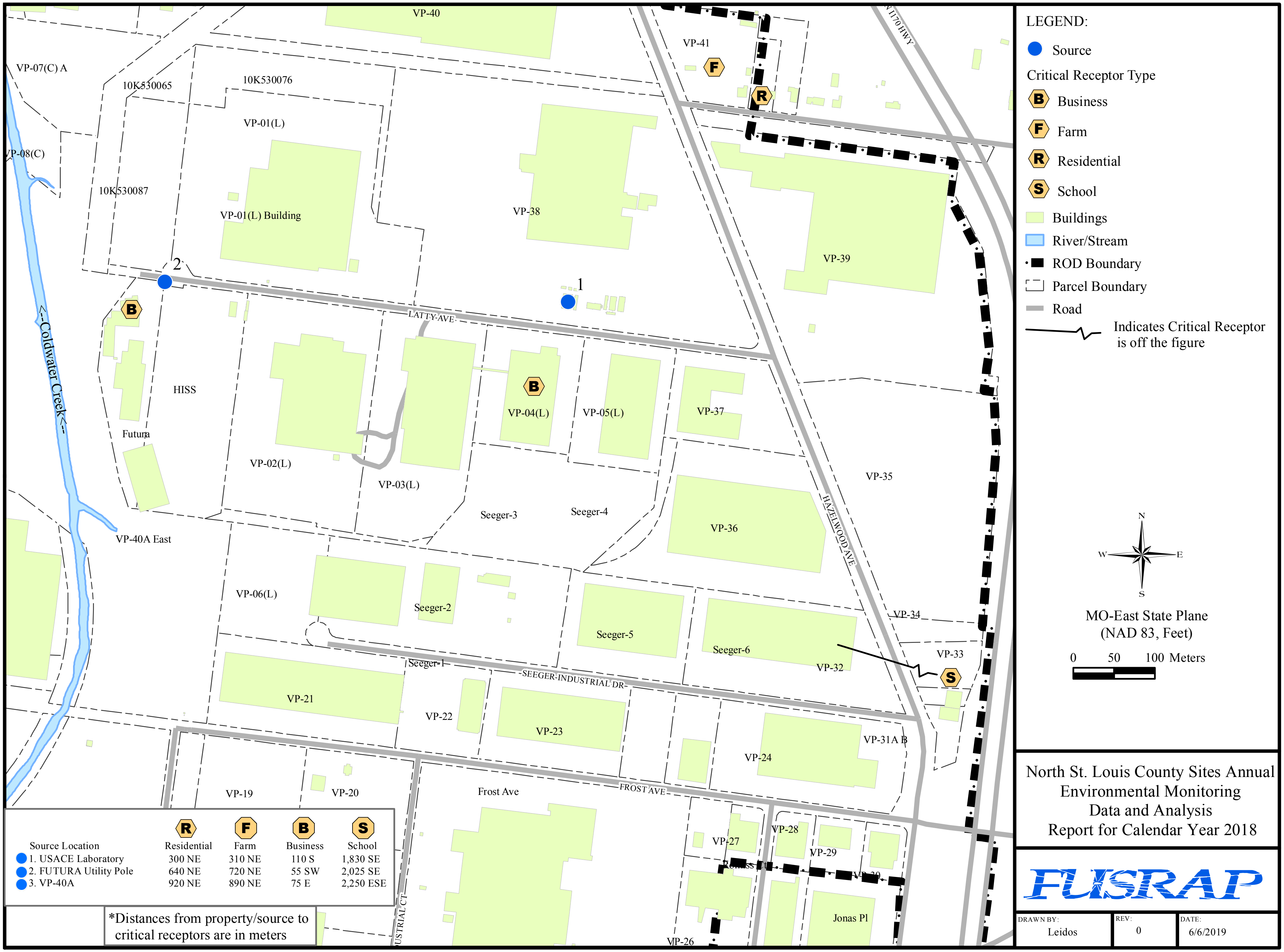

Source Location	Residential	Farm	Business	School
1. USACE Laboratory	300 NE	310 NE	110 S	1,830 SE
2. FUTURA Utility Pole	640 NE	720 NE	55 SW	2,025 SE
3. VP-40A	920 NE	890 NE	75 E	2,250 ESE

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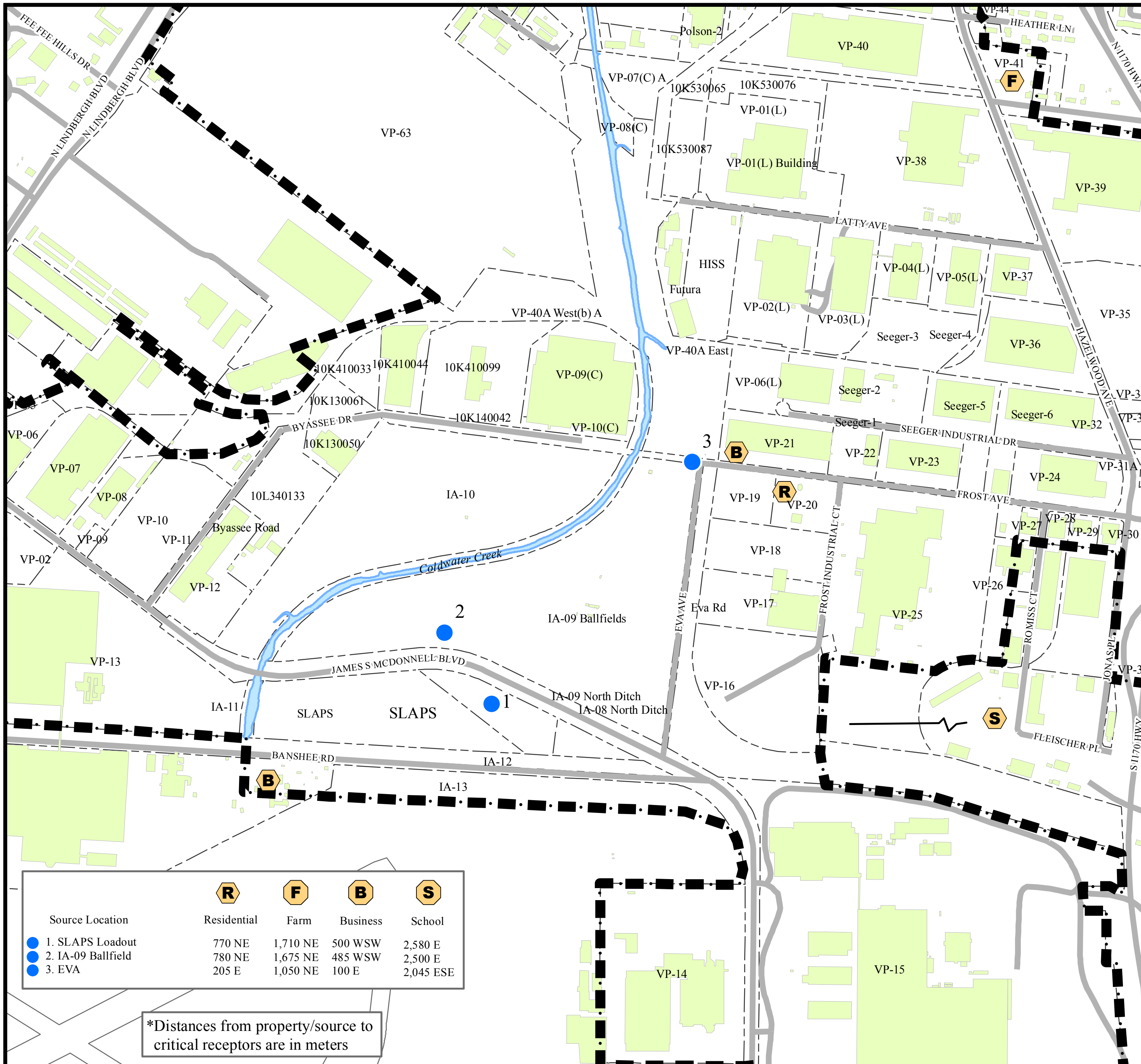
Figure A-1. Latty Avenue Properties and USACE St. Louis FUSRAP Laboratory Critical Receptors



Source Location	Residential	Farm	Business	School
1. SLAPS Loadout	770 NE	1,710 NE	500 WSW	2,580 E
2. IA-09 Ballfield	780 NE	1,675 NE	485 WSW	2,500 E
3. EVA	205 E	1,050 NE	100 E	2,045 ESE

*Distances from property/source to critical receptors are in meters

LEGEND:

Critical Receptor Type

- B Business
- F Farm
- R Residential
- S School
- Source
- Buildings
- River/Stream
- ROD Boundary
- Parcel Boundary
- Indicates Critical Receptor is off the figure

N
W E
S

MO-East State Plane
(NAD 83, Feet)

0 125 250 Meters

North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2018

FUSRAP

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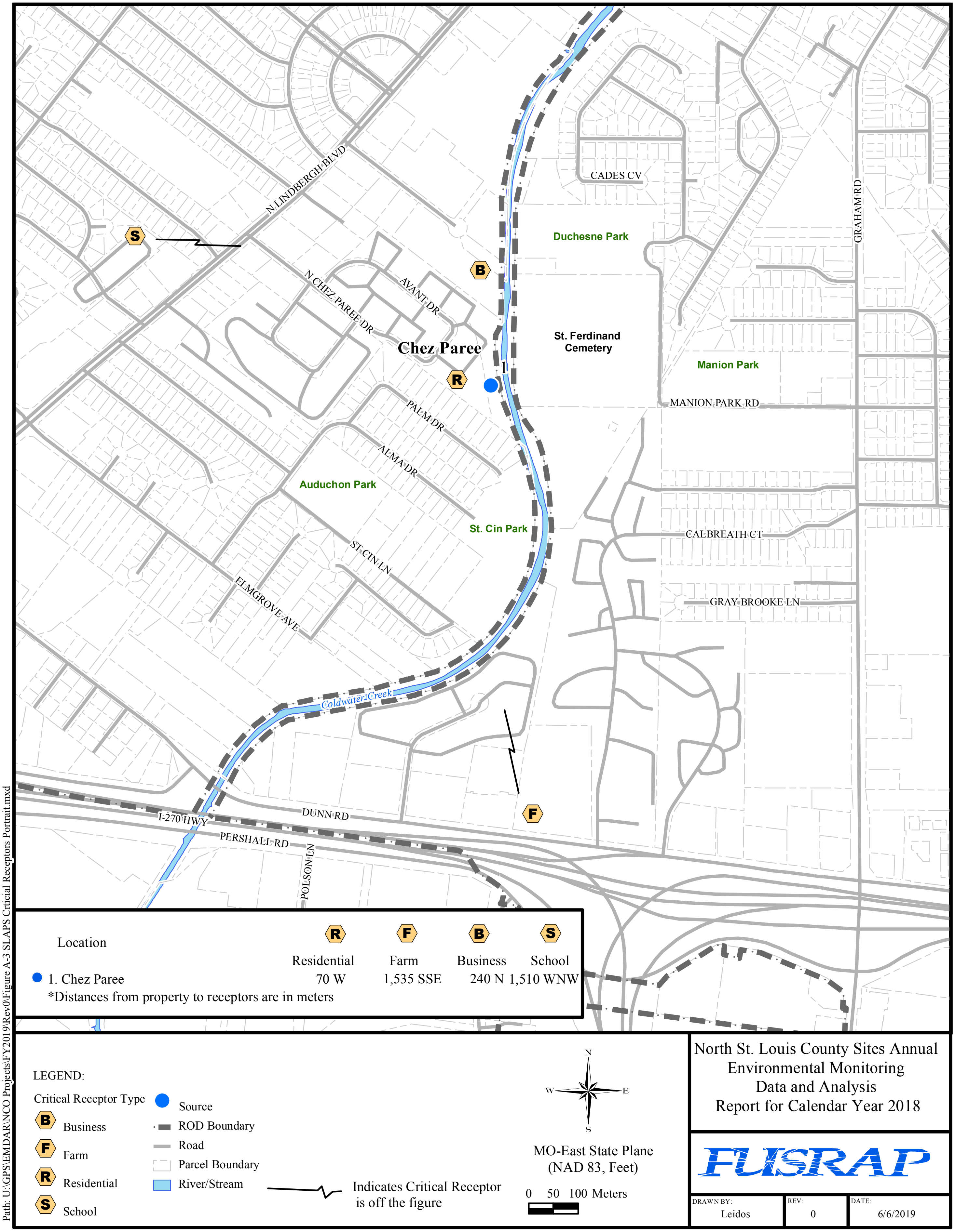
Figure A-2. SLAPS and SLAPS VPs Critical Receptors - South



Path: U:\GPS\EMDAR\NCO Projects\FY2019\Rev0\Figure A-3 SLAPS Crticial Receptors Portrait.mxd

Figure A-3. SLAPS and SLAPS VPs Critical Receptors - North

ATTACHMENT A-1

CALCULATED EMISSION RATES FROM NORTH ST. LOUIS COUNTY SITE PROPERTIES

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Table A-1-1. Latty Avenue Properties Soil Radionuclide Concentrations for CY 2018

Property	**Futura**
Radionuclide	**Average Concentration (pCi/g)[a]**
U-238	3.15
U-235	0.22
U-234	3.15
Ra-226	2.99
Ra-228	0.86
Th-232	0.89
Th-230	120
Th-228	0.96
Pa-231	2.46
Ac-227	2.25

[a] Soil radionuclide concentrations based upon excavation area average concentrations determined from data stored in the FUSRAP St. Louis database.

Table A-1-2. North St. Louis County Sites Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2018

Location	**Average Concentration (μCi/mL) for Location[a]**	
	Gross Alpha	**Gross Beta**
Futura	1.35E-15	4.78E-14
Background Concentration	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.

Table A-1-3. Latty Avenue Excavation Data for CY 2018

Location	**Area (m^2)**	**Excavation Start Date**	**Excavation End Date**
Futura Power Poles	38	12/03/18	12/18/18

Table A-1-4 Latty Avenue Average Surface Area and Flow Rate Per Location for CY 2018

Location	**Total Days**	**Surface Area × Total Days**	**Average Surface Area/Year (m^2)**	**Diameter of Stack $D = (1.3\ A)^{1/2}$ (m)**	**Flow Rate $F = V\ \pi\ (D)^2/4$ (m^3/minute)**
Futura					
Futura Power Poles	16	606	NA	NA	NA
	Total	606	1.7	1.5	**4.5E+02**

Note: NA – not applicable

Table A-1-5. Latty Avenue Airborne Radioactive Particulate Emissions Based on Site Perimeter Air Samples for CY 2018

Property	**Futura**		
Radionuclide	**Activity Fraction**[a]	**Emission Concentration ($\mu Ci/cm^3$)**[b]	**Release Rate (Ci/year)**[c]
U-238	0.02	3.1E-17	7.3E-09
U-235	0.00	2.2E-18	5.1E-10
U-234	0.02	3.1E-17	7.3E-09
Ra-226	0.02	2.9E-17	7.0E-09
Th-232	0.01	8.7E-18	2.1E-09
Th-230	0.88	1.2E-15	2.8E-07
Th-228	0.01	9.4E-18	2.2E-09
Ra-224[d]	0.01	9.4E-18	2.2E-09
Th-234[d]	0.38	1.8E-14	4.3E-06
Pa-234m[d]	0.38	1.8E-14	4.3E-06
Th-231[d]	0.03	1.3E-15	3.0E-07
Ra-228	0.10	5.0E-15	1.2E-06
Ac-228[d]	0.10	5.0E-15	1.2E-06
Pa-231	0.02	2.4E-17	5.7E-09
Ac-227	0.02	2.2E-17	5.2E-09

[a] Average soil concentrations are presented in Table A-1-1.
[b] Emission concentration is equal to the activity fraction * the gross alpha or gross beta airborne particulate concentrations listed in Table A-1-2.
[c] Release rate based on 365-day period at measured flow rate (Table A-1-4) for each site as determined from the average annual wind speed (4.446 m per second) and calculated site area (Table A-1-4). (Note: 1 mL = 1 cm^3.)
[d] If sample data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-6. SLAPS and SLAPS VPs Soil Radionuclide Concentrations for CY 2018

Property	**Eva Avenue**[a]	**IA-09 Ballfields**[a]	**Chez Paree**[a]	**SLAPS Loadout**[b]
Radionuclide	**Average Concentration (pCi/g)**			
U-238	1.03	1.26	1.18	0.72
U-235	0.03	0.03	0.05	0.05
U-234	1.03	1.26	1.18	0.72
Ra-226	1.75	1.45	1.35	0.98
Ra-228	0.77	0.97	0.93	0.60
Th-232	0.90	1.06	1.14	0.60
Th-230	11.04	5.97	8.27	5.08
Th-228	1.03	1.19	1.21	0.60
Pa-231	0.03	0.03	0.05	0.05
Ac-227	0.03	0.03	0.05	0.05

[a] Soil radionuclide concentrations based upon excavation area average concentrations determined from data stored in the FUSRAP St. Louis database.
[b] Derived from the average soil radionuclide concentrations from the 2018 railcar concentrations.

Table A-1-7. SLAPS and SLAPS VPs Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2018

Location	Average Concentration (µCi/mL) for Location[a]	
	Gross Alpha	Gross Beta
Eva Avenue	2.50E-15	3.72E-14
IA-09 Ballfields	4.87E-15	3.19E-14
Chez Paree	3.55E-15	2.73E-14
SLAPS Loadout	4.06E-15	2.97E-14
Background Concentration[b]	4.19E-15	2.01E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only.

Table A-1-8. SLAPS and SLAPS VPs Excavation Data for CY 2018

Location	Area (m^2)	Excavation Start Date[a]	Excavation End Date[a]
Eva Survey Unit (SU)-1A	775	10/30/18	12/10/18
Ballfields - Phase 2B, SU-12A	454	01/01/18	01/24/18
Ballfields - Phase 2B, SU-12B	589	01/01/18	02/12/18
Ballfields - Phase 2B, SU-13	2,010	04/26/18	07/22/18
Ballfields - Phase 2B, SU-14	1,917	05/17/18	08/16/18
Ballfields - Phase 2B, SU-15	1,883	05/17/18	08/18/18
Ballfields - Phase 2B, SU-16	1,572	05/15/18	12/31/18
Chez Paree SU-1A	257	01/16/18	02/15/18
Chez Paree SU-1B	505	01/16/18	02/26/18
Chez Paree SU-1C	60	01/16/18	04/04/18
Chez Paree SU-1D	42	04/10/18	04/10/18
Chez Paree SU-1E	72	01/16/18	04/07/18
SLAPS Loadout	600	01/01/18	12/31/18

[a] Open/close dates set to start or stop at calendar year boundary.

Table A-1-9. SLAPS and SLAPS VPs Average Surface Area and Flow Rate per Location for CY 2018

Location	Total Days	Surface Area × Total Days	Average Surface Area/Year (A) (m^2)	Diameter of Stack D = $(1.3\ A)^{1/2}$ (m)	Flow Rate $F = V\ \pi\ [(D)^2/4]*60$ (m^3/minute)
Eva Avenue					
Eva SU-1A	42	32,569	---	---	---
	Total	32,569	89	11	**2.4E+04**
IA-09 Ballfields					
Ballfields - Phase 2B, SU-12A	24	10,896	---	---	---
Ballfields - Phase 2B, SU-12B	43	25,327	---	---	---
Ballfields - Phase 2B, SU-13	88	176,917	---	---	---
Ballfields - Phase 2B, SU-14	92	176,403	---	---	---
Ballfields - Phase 2B, SU-15	94	176,998	---	---	---
Ballfields - Phase 2B, SU-16	231	363,242	---	---	---
	Total	929,784	2547	58	**6.9E+05**
Chez Paree					---
Chez Paree SU-1A	31	7,975	---	---	---
Chez Paree SU-1B	42	21,226	---	---	---
Chez Paree SU-1C	79	4,705	---	---	---
Chez Paree SU-1D	1	42	---	---	---
Chez Paree SU-1E	82	5,904	---	---	---
	Total	39,851	109	12	**3.0E+04**
SLAPS Loadout					
SLAPS Loadout	365	219,000	---	---	---
	Total	219,000	600	28	**1.6E+05**

Note: --- not applicable

Table A-1-10. SLAPS and SLAPS VPs Airborne Radioactive Particulate Emissions Based on Site Perimeter Air Samples for CY 2018

Property	Eva Avenue			IA-09 Ballfields			Chez Paree			SLAPS Loadout		
Radionuclide	Activity Fraction[a]	Emission Conc. (μCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (μCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (μCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (μCi/cm^3)[b]	Release Rate (Ci/year)[c]
U-238[a]	0.06	1.5E-16	1.9E-06	0.09	4.6E-16	1.7E-04	0.08	2.7E-16	4.2E-06	0.08	3.1E-16	2.7E-05
U-235[a]	0.002	4.2E-18	5.4E-08	0.002	1.1E-17	4.0E-06	0.003	1.1E-17	1.8E-07	0.01	2.1E-17	1.8E-06
U-234	0.06	1.5E-16	1.9E-06	0.09	4.6E-16	1.7E-04	0.08	2.7E-16	4.2E-06	0.08	3.1E-16	2.7E-05
Ra-226[a]	0.10	2.5E-16	3.2E-06	0.11	5.2E-16	1.9E-04	0.09	3.1E-16	4.8E-06	0.10	4.2E-16	3.6E-05
Th-232[a]	0.05	1.3E-16	1.6E-06	0.08	3.8E-16	1.4E-04	0.07	2.6E-16	4.0E-06	0.06	2.6E-16	2.2E-05
Th-230[a]	0.62	1.6E-15	2.0E-05	0.44	2.2E-15	7.9E-04	0.53	1.9E-15	2.9E-05	0.54	2.2E-15	1.9E-04
Th-228[a]	0.05	1.3E-16	1.7E-06	0.09	4.3E-16	1.6E-04	0.08	2.7E-16	4.3E-06	0.06	2.6E-16	2.2E-05
Ra-224[d]	0.05	1.3E-16	1.7E-06	0.09	4.3E-16	1.6E-04	0.08	2.7E-16	4.3E-06	0.06	2.6E-16	2.2E-05
Th-234[d]	0.28	1.1E-14	1.3E-04	0.28	8.9E-15	3.3E-03	0.28	7.5E-15	1.2E-04	0.27	7.9E-15	6.8E-04
Pa-234m[d]	0.28	1.1E-14	1.3E-04	0.28	8.9E-15	3.3E-03	0.28	7.5E-15	1.2E-04	0.27	7.9E-15	6.8E-04
Th-231[d]	0.01	3.1E-16	3.9E-06	0.01	2.1E-16	7.8E-05	0.01	3.2E-16	5.0E-06	0.02	5.5E-16	4.7E-05
Ra-228[a]	0.21	7.9E-15	1.0E-04	0.22	6.9E-15	2.5E-03	0.22	5.9E-15	9.3E-05	0.22	6.6E-15	5.7E-04
Ac-228[d]	0.21	7.9E-15	1.0E-04	0.22	6.9E-15	2.5E-03	0.22	5.9E-15	9.3E-05	0.22	6.6E-15	5.7E-04
Pa-231[a,d]	0.002	4.2E-18	5.4E-08	0.002	1.1E-17	4.0E-06	0.003	1.1E-17	1.8E-07	0.01	2.1E-17	1.8E-06
Ac-227[a,d]	0.002	4.2E-18	5.4E-08	0.002	1.1E-17	4.0E-06	0.003	1.1E-17	1.8E-07	0.01	2.1E-17	1.8E-06

[a] Average soil concentrations are presented in Table A-1-1.
[b] Emission concentration is equal to the activity fraction * the gross alpha or gross beta airborne particulate concentrations listed in Table A-1-2.
[c] Release rate based on 365-day period at measured flow rate (Table A-1-4) for each site as determined from the average annual wind speed (4.446 m per second) and calculated site area (Table A-1-4). (Note: 1 mL = 1 cm^3.)
[d] If sample data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-11. USACE St. Louis FUSRAP Laboratory Analyses for CY 2018

Site	Type	Gamma Spectroscopy	Isotopic Ra[a]	Isotopic Th[a]	Isotopic U[a]	Total Drying and Grinding[b]	Total Separations[c]
Latty Avenue Properties	Soil	---	---	---	---	0	0
Latty Avenue Properties	Water	0	2	2	2	0	6
IAAAP	Soil	411	---	---	432	432	432
IAAAP	Water	---	---	---	19	0	19
SLAPS	Soil	---	---	---	---	0	0
SLAPS	Water	---	4	4	4	0	12
SLAPS VPs	Soil	1,349	0	1,545	0	1,349	1,545
SLAPS VPs	Water	---	24	24	9	0	57
CWC	Sediment (soil)	2,778	---	2,642	---	2,778	2,642
CWC	Water	---	18	18	18	0	54
SLDS	Soil	929	---	891	---	929	891
SLDS	Water	1	188	150	66	0	404
		Latty Avenue Properties			**Total**	0	6
		IAAAP			**Total**	432	451
		SLAPS, SLAPS VPs, and CWC			**Total**	4,127	4,310
		SLDS			**Total**	929	1,295
					Grand Total	5,488	6,062

[a] Assumes isotopic Ra, Th, and U occur in separate and distinct processes.
[b] Assumes all soil samples went through a drying and grinding process.
[c] Assumes all soil and water samples for isotopic Ra, Th, and U went through a separations process.
Notes: Data provided by the USACE St. Louis FUSRAP laboratory for CY 2018.
--- not applicable

Table A-1-12. SLDS Property Laboratory Samples for CY 2018

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate (Ci/year)[a]
U-238[b]	3.9	929	1,295	2.9E-08
U-235[b]	0.2	929	1,295	1.6E-09
U-234[bc]	3.9	929	1,295	2.9E-08
Ra-226[b]	2.3	929	1,295	1.7E-08
Th-232[b]	0.9	929	1,295	6.6E-09
Th-230[b]	2.0	929	1,295	1.5E-08
Th-228[b]	1.0	929	1,295	7.1E-09
Ra-224[c]	1.0	929	1,295	7.1E-09
Th-234[c]	3.9	929	1,295	2.9E-08
Pa-234m[c]	3.9	929	1,295	2.9E-08
Th-231[c]	0.2	929	1,295	1.6E-09
Ra-228[b]	0.8	929	1,295	6.0E-09
Ac-228[c]	0.8	929	1,295	6.0E-09
Pa-231[c]	0.2	929	1,295	1.6E-09
Ac-227[c]	0.2	929	1,295	1.6E-09

[a] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).
[b] Average soil concentration from all data analyzed at the USACE St. Louis FUSRAP laboratory during 2018.
[c] When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-13. SLAPS and SLAPS VPs Laboratory Samples for CY 2018

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate (Ci/year)[a]
U-238[b]	1.0	4,127	4,310	2.6E-08
U-235[b]	0.1	4,127	4,310	1.3E-09
U-234[b,c]	1.0	4,127	4,310	2.6E-08
Ra-226[b]	1.3	4,127	4,310	3.2E-08
Th-232[b]	0.9	4,127	4,310	2.3E-08
Th-230[b]	2.8	4,127	4,310	7.2E-08
Th-228[b]	1.0	4,127	4,310	2.5E-08
Ra-224[c]	1.0	4,127	4,310	2.5E-08
Th-234[c]	1.0	4,127	4,310	2.6E-08
Pa-234m[c]	1.0	4,127	4,310	2.6E-08
Th-231[c]	0.1	4,127	4,310	1.3E-09
Ra-228[b]	0.8	4,127	4,310	2.1E-08
Ac-228[c]	0.8	4,127	4,310	2.1E-08
Pa-231[c]	0.1	4,127	4,310	1.3E-09
Ac-227[c]	0.1	4,127	4,310	1.3E-09

[a] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).
[b] Average soil concentration from all data analyzed at the USACE St. Louis FUSRAP laboratory during 2018.
[c] When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-14. Latty Avenue Property Laboratory Samples for CY 2018

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples[a] (Separations)	Emission Rate (Ci/year)[a]
U-238[b]	5.4	0	6	1.6E-10
U-235[b]	0.4	0	6	1.1E-11
U-234[bc]	5.4	0	6	1.6E-10
Ra-226[b]	7.5	0	6	2.3E-10
Th-232[b]	3.0	0	6	8.9E-11
Th-230[b]	412.7	0	6	1.2E-08
Th-228[b]	1.2	0	6	3.5E-11
Ra-224[c]	1.2	0	6	3.5E-11
Th-234[c]	5.4	0	6	1.6E-10
Pa-234m[c]	5.4	0	6	1.6E-10
Th-231[c]	0.4	0	6	1.2E-11
Ra-228[b]	0.9	0	6	2.7E-11
Ac-228[c]	0.9	0	6	2.7E-11
Pa-231[b]	8.3	0	6	2.5E-10
Ac-227[b]	8.0	0	6	2.4E-10

[a] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).
[b] Average soil concentration from all data analyzed at the USACE St. Louis FUSRAP laboratory during 2018.
[c] When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-15. Iowa Army Ammunition Plant Laboratory Samples for CY 2018

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate (Ci/year)[a]
U-238[b]	1.6	432	451	4.2E-09
U-235[b]	0.1	432	451	1.4E-10
U-234[c]	0.9	432	451	2.4E-09
Ra-226[b]	0.9	432	451	2.4E-09
Th-232[b]	0.8	432	451	2.1E-09
Th-230[b]	0.6	432	451	1.7E-09
Th-228[b]	0.8	432	451	2.1E-09
Ra-224[c]	0.8	432	451	2.1E-09
Th-234[c]	1.6	432	451	4.2E-09
Pa-234m[c]	1.6	432	451	4.2E-09
Th-231[c]	0.1	432	451	1.4E-10
Ra-228[b]	0.8	432	451	2.1E-09
Ac-228[c]	0.8	432	451	2.1E-09
Pa-231[c]	0.1	432	451	1.4E-10
Ac-227[c]	0.1	432	451	1.4E-10

[a] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding]+ 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).
[b] Average soil concentration from all IAAAP data analyzed at the USACE St. Louis FUSRAP laboratory during 2018.
[c] When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent radionuclide.

Table A-1-16. Total Laboratory Airborne Radioactive Particulate Emission Rate for CY 2018

Radionuclide	Emission Rate (Ci/year)				
	SLDS	SLAPS and SLAPS VPs	Latty Avenue Properties	IAAAP	Total Across Laboratory[a]
U-238	2.9E-08	2.6E-08	1.6E-10	4.2E-09	5.9E-08
U-235	1.6E-09	1.3E-09	1.1E-11	1.4E-10	3.1E-09
U-234	2.9E-08	2.6E-08	1.6E-10	2.4E-09	5.7E-08
Ra-226	1.7E-08	3.2E-08	2.3E-10	2.4E-09	5.2E-08
Th-232	6.6E-09	2.3E-08	8.9E-11	2.1E-09	3.2E-08
Th-230	1.5E-08	7.2E-08	1.2E-08	1.7E-09	1.0E-07
Th-228	7.1E-09	2.5E-08	3.5E-11	2.1E-09	3.4E-08
Ra-224	7.1E-09	2.5E-08	3.5E-11	2.1E-09	3.4E-08
Th-234	2.9E-08	2.6E-08	1.6E-10	4.2E-09	5.9E-08
Pa-234m	2.9E-08	2.6E-08	1.6E-10	4.2E-09	5.9E-08
Th-231	1.6E-09	1.3E-09	1.2E-11	1.4E-10	3.1E-09
Ra-228	6.0E-09	2.1E-08	2.7E-11	2.1E-09	2.9E-08
Ac-228	6.0E-09	2.1E-08	2.7E-11	2.1E-09	2.9E-08
Pa-231	1.6E-09	1.3E-09	2.5E-10	1.4E-10	3.3E-09
Ac-227	1.6E-09	1.3E-09	2.4E-10	1.4E-10	3.3E-09

[a] Total emission rate is the sum of the SLDS, SLAPS and SLAPS VPs, and IAAAP emission rates.

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ATTACHMENT A-2

CAP88-PC RUNS FOR NORTH ST. LOUIS COUNTY SITE PROPERTIES

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CAP88-PC RUNS FOR THE SLAPS AND SLAPS VICINITY PROPERTIES

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CAP88 OUTPUT RESULTS

Futura

CAP88-PC

Version 4.0

Clean Air Act Assessment Package – 1988

D O S E   A N D   R I S K   S U M M A R I E S

Non-Radon Individual Assessment
Mon Mar 11 13:06:42 2019

```
         Facility:  Futura
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042

    Source Category:  Area
        Source Type:  Area
      Emission Year:  2018
     DOSE Age Group:  Adult

           Comments:  Air

       Dataset Name:  Futura 2018.
       Dataset Date:  Mar 11, 2019 01:06 PM
          Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	1.11E-03
UB_Wall	1.21E-03
Bone_Sur	7.44E-02
Brain	1.16E-03
Breasts	1.25E-03
St_Wall	1.17E-03
SI_Wall	1.16E-03
ULI_Wall	1.23E-03
LLI_Wall	1.36E-03
Kidneys	2.32E-03
Liver	3.68E-03
Muscle	1.29E-03
Ovaries	1.58E-03
Pancreas	1.12E-03
R_Marrow	5.65E-03
Skin	7.25E-03
Spleen	1.18E-03
Testes	1.73E-03
Thymus	1.16E-03
Thyroid	1.20E-03
GB_Wall	1.12E-03
Ht_Wall	1.16E-03
Uterus	1.15E-03
ET_Reg	4.95E-03
Lung_66	1.11E-02
Effectiv	3.95E-03

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	4.73E-04
INHALATION	2.44E-03
AIR IMMERSION	1.04E-07
GROUND SURFACE	1.05E-03
INTERNAL	2.91E-03
EXTERNAL	1.05E-03
TOTAL	3.95E-03

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SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	5.23E-06
Th-234	1.17E-05
Pa-234m	4.38E-06
Pa-234	8.62E-08
U-234	6.31E-06
Th-230	1.17E-03
Ra-226	7.96E-06
Rn-222	9.55E-09
Po-218	1.71E-13
Pb-214	6.24E-06
At-218	6.42E-13
Bi-214	3.65E-05
Rn-218	3.72E-15
Po-214	2.02E-09
Tl-210	1.42E-08
Pb-210	2.94E-08
Bi-210	4.75E-07
Hg-206	3.83E-14
Po-210	1.23E-10
Tl-206	1.11E-12
U-235	5.69E-07
Th-231	4.23E-08
Pa-231	1.63E-04
Ac-227	1.13E-04
Th-227	1.45E-06
Fr-223	1.36E-08
Ra-223	1.62E-06
Rn-219	7.01E-07
At-219	0.00E+00
Bi-215	3.15E-12
Po-215	2.14E-09
Pb-211	1.38E-06
Bi-211	5.67E-07
Tl-207	7.13E-07
Po-211	2.73E-10
Th-232	1.62E-05
Ra-228	1.38E-03
Ac-228	3.94E-04
Th-228	2.39E-05
Ra-224	5.70E-06
Rn-220	2.65E-07
Po-216	6.39E-09
Pb-212	5.82E-05
Bi-212	6.79E-05
Po-212	0.00E+00
Tl-208	4.69E-04
TOTAL	3.95E-03

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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.17E-11
INHALATION	4.81E-10
AIR IMMERSION	5.47E-14
GROUND SURFACE	5.51E-10
INTERNAL	5.12E-10
EXTERNAL	5.51E-10
TOTAL	1.06E-09

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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.75E-12
Th-234	3.87E-12
Pa-234m	7.69E-13
Pa-234	4.68E-14
U-234	2.17E-12
Th-230	2.60E-10
Ra-226	4.04E-12
Rn-222	5.21E-15
Po-218	7.63E-20
Pb-214	3.34E-12
At-218	7.91E-20
Bi-214	1.93E-11
Rn-218	2.03E-21
Po-214	1.11E-15
Tl-210	7.60E-15
Pb-210	1.32E-14
Bi-210	5.27E-14
Hg-206	1.70E-20
Po-210	6.75E-17
Tl-206	1.25E-19
U-235	2.28E-13
Th-231	1.62E-14
Pa-231	7.07E-12
Ac-227	1.41E-11
Th-227	7.83E-13
Fr-223	5.08E-15
Ra-223	8.74E-13
Rn-219	3.83E-13
At-219	0.00E+00
Bi-215	1.41E-18
Po-215	1.17E-15
Pb-211	4.92E-13
Bi-211	3.10E-13
Tl-207	9.16E-14
Po-211	1.49E-16
Th-232	3.56E-12
Ra-228	2.06E-10
Ac-228	2.08E-10
Th-228	8.71E-12
Ra-224	2.85E-12
Rn-220	1.45E-13
Po-216	3.51E-15
Pb-212	3.16E-11
Bi-212	2.62E-11
Po-212	0.00E+00
Tl-208	2.55E-10
TOTAL	1.06E-09

Mon Mar 11 13:06:42 2019 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)				
Direction	55	640	720	2025	
N	4.0E-03	3.8E-04	3.7E-04	3.3E-04	
NNW	2.2E-03	3.5E-04	3.5E-04	3.3E-04	
NW	2.5E-03	3.6E-04	3.5E-04	3.3E-04	
WNW	2.9E-03	3.6E-04	3.6E-04	3.3E-04	
W	2.3E-03	3.5E-04	3.5E-04	3.3E-04	
WSW	1.3E-03	3.4E-04	3.4E-04	3.3E-04	
SW	1.7E-03	3.5E-04	3.4E-04	3.3E-04	Business
SSW	2.0E-03	3.5E-04	3.5E-04	3.3E-04	
S	1.8E-03	3.5E-04	3.4E-04	3.3E-04	
SSE	1.4E-03	3.4E-04	3.4E-04	3.3E-04	
SSE	1.9E-03	3.5E-04	3.4E-04	3.3E-04	
ESE	2.9E-03	3.6E-04	3.6E-04	3.3E-04	School
E	3.6E-03	3.7E-04	3.6E-04	3.3E-04	ENE 3.0E-03 3.6E-04 3.6E-04 3.3E-04
NE	2.0E-03	3.5E-04	3.5E-04	3.3E-04	Resident(640); Farm(720)
NNE	1.8E-03	3.5E-04	3.4E-04	3.3E-04	

Note: Highlighted EDE values (mrem) are applicable to the critical receptors as defined in the 2018 Radionuclide Emissions NESHAP Report (Appendix A) taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

Mon Mar 11 13:06:42 2019 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	55	640	720	2025
N	1.1E-09	3.6E-11	3.3E-11	2.4E-11
NNW	5.6E-10	2.9E-11	2.8E-11	2.3E-11
NW	6.4E-10	3.0E-11	2.9E-11	2.3E-11
WNW	7.7E-10	3.2E-11	3.0E-11	2.3E-11
W	5.9E-10	2.9E-11	2.8E-11	2.3E-11
WSW	3.0E-10	2.6E-11	2.5E-11	2.2E-11
SW	4.0E-10	2.7E-11	2.6E-11	2.3E-11
SSW	4.9E-10	2.8E-11	2.7E-11	2.3E-11
S	4.5E-10	2.8E-11	2.6E-11	2.3E-11
SSE	3.3E-10	2.6E-11	2.5E-11	2.2E-11
SSE	4.6E-10	2.8E-11	2.7E-11	2.3E-11
ESE	7.5E-10	3.2E-11	3.0E-11	2.3E-11
E	9.6E-10	3.5E-11	3.2E-11	2.4E-11
ENE	7.9E-10	3.2E-11	3.0E-11	2.3E-11
NE	5.1E-10	2.8E-11	2.7E-11	2.3E-11
NNE	4.4E-10	2.7E-11	2.6E-11	2.3E-11

CAP88 OUTPUT RESULTS

EVA AVENUE

CAP88-PC

Version 4.0

Clean Air Act Assessment Package – 1988

D O S E   A N D   R I S K   S U M M A R I E S

Non-Radon Individual Assessment
Mon Mar 11 14:08:33 2019

```
         Facility:  Eva Avenue
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042


    Source Category:  Area
        Source Type:  Area
      Emission Year:  2018
     DOSE Age Group:  Adult

           Comments:  Air


       Dataset Name:  Eva Avenue.
       Dataset Date:  Mar 11, 2019 02:08 PM
          Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

Mon Mar 11 14:08:33 2019 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	4.05E-02
UB_Wall	4.46E-02
Bone_Sur	2.13E+00
Brain	4.25E-02
Breasts	4.60E-02
St_Wall	4.30E-02
SI_Wall	4.27E-02
ULI_Wall	4.45E-02
LLI_Wall	4.85E-02
Kidneys	7.78E-02
Liver	1.05E-01
Muscle	4.74E-02
Ovaries	5.31E-02
Pancreas	4.09E-02
R_Marrow	1.84E-01
Skin	2.77E-01
Spleen	4.32E-02
Testes	5.89E-02
Thymus	4.27E-02
Thyroid	4.41E-02
GB_Wall	4.10E-02
Ht_Wall	4.25E-02
Uterus	4.22E-02
ET_Reg	1.76E-01
Lung_66	4.18E-01
Effectiv	1.35E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.85E-02
INHALATION	7.68E-02
AIR IMMERSION	3.03E-06
GROUND SURFACE	3.99E-02
INTERNAL	9.53E-02
EXTERNAL	3.99E-02
TOTAL	1.35E-01

Mon Mar 11 14:08:33 2019 SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	5.24E-04
Th-234	1.53E-04
Pa-234m	2.20E-04
Pa-234	4.34E-06
U-234	6.33E-04
Th-230	3.23E-02
Ra-226	1.46E-03
Rn-222	1.16E-06
Po-218	2.07E-11
Pb-214	7.55E-04
At-218	7.77E-11
Bi-214	4.41E-03
Rn-218	4.50E-13
Po-214	2.44E-07
Tl-210	1.72E-06
Pb-210	3.68E-06
Bi-210	5.96E-05
Hg-206	4.81E-12
Po-210	1.54E-08
Tl-206	1.39E-10
U-235	2.32E-05
Th-231	8.61E-07
Pa-231	5.94E-04
Ac-227	4.50E-04
Th-227	5.51E-06
Fr-223	5.20E-08
Ra-223	6.17E-06
Rn-219	2.67E-06
At-219	0.00E+00
Bi-215	1.20E-11
Po-215	8.16E-09
Pb-211	5.24E-06
Bi-211	2.16E-06
Tl-207	2.72E-06
Po-211	1.04E-09
Th-232	4.74E-03
Ra-228	4.72E-02
Ac-228	1.36E-02
Th-228	6.83E-03
Ra-224	5.81E-04
Rn-220	9.19E-06
Po-216	2.22E-07
Pb-212	2.02E-03
Bi-212	2.36E-03
Po-212	0.00E+00
Tl-208	1.63E-02
TOTAL	1.35E-01

Mon Mar 11 14:08:33 2019 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.54E-09
INHALATION	1.73E-08
AIR IMMERSION	1.63E-12
GROUND SURFACE	2.09E-08
INTERNAL	1.89E-08
EXTERNAL	2.10E-08
TOTAL	3.98E-08

Mon Mar 11 14:08:33 2019 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.75E-10
Th-234	5.24E-11
Pa-234m	3.86E-11
Pa-234	2.36E-12
U-234	2.17E-10
Th-230	7.14E-09
Ra-226	7.73E-10
Rn-222	6.31E-13
Po-218	9.23E-18
Pb-214	4.04E-10
At-218	9.57E-18
Bi-214	2.33E-09
Rn-218	2.46E-19
Po-214	1.34E-13
Tl-210	9.20E-13
Pb-210	1.65E-12
Bi-210	6.60E-12
Hg-206	2.13E-18
Po-210	8.47E-15
Tl-206	1.56E-17
U-235	9.27E-12
Th-231	3.78E-13
Pa-231	2.57E-11
Ac-227	5.63E-11
Th-227	2.99E-12
Fr-223	1.94E-14
Ra-223	3.33E-12
Rn-219	1.46E-12
At-219	0.00E+00
Bi-215	5.36E-18
Po-215	4.47E-15
Pb-211	1.87E-12
Bi-211	1.18E-12
Tl-207	3.49E-13
Po-211	5.70E-16
Th-232	1.04E-09
Ra-228	6.78E-09
Ac-228	7.19E-09
Th-228	2.46E-09
Ra-224	2.38E-10
Rn-220	5.03E-12
Po-216	1.22E-13
Pb-212	1.10E-09
Bi-212	9.08E-10
Po-212	0.00E+00
Tl-208	8.85E-09
TOTAL	3.98E-08

Mon Mar 11 14:08:33 2019 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)				
Direction	100	205	1050	2045	
N	1.4E-01	4.8E-02	1.5E-02	1.4E-02	
NNW	7.6E-02	3.1E-02	1.5E-02	1.4E-02	
NW	8.7E-02	3.4E-02	1.5E-02	1.4E-02	
WNW	1.0E-01	3.9E-02	1.5E-02	1.4E-02	
W	8.2E-02	3.3E-02	1.5E-02	1.4E-02	
WSW	4.6E-02	2.3E-02	1.4E-02	1.4E-02	
SW	6.0E-02	2.7E-02	1.4E-02	1.4E-02	
SSW	7.1E-02	3.0E-02	1.5E-02	1.4E-02	
S	6.4E-02	2.8E-02	1.4E-02	1.4E-02	
SSE	4.9E-02	2.3E-02	1.4E-02	1.4E-02	
SSE	6.4E-02	2.8E-02	1.5E-02	1.4E-02	
ESE	1.0E-01	3.8E-02	1.5E-02	1.4E-02	School
E	1.3E-01	4.6E-02	1.5E-02	1.4E-02	Business(10);Resident(205)
ENE	1.1E-01	4.0E-02	1.5E-02	1.4E-02	
NE	7.1E-02	3.0E-02	1.5E-02	1.4E-02	Farm
NNE	6.2E-02	2.7E-02	1.4E-02	1.4E-02	

Note: Highlighted EDE values (mrem) are applicable to the critical receptors as defined in the 2018 Radionuclide Emissions NESHAP Report (Appendix A) taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

Mon Mar 11 14:08:33 2019 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	100	205	1050	2045
N	4.0E-08	1.2E-08	1.7E-09	1.3E-09
NNW	2.1E-08	6.7E-09	1.4E-09	1.2E-09
NW	2.4E-08	7.7E-09	1.5E-09	1.3E-09
WNW	3.0E-08	9.1E-09	1.5E-09	1.3E-09
W	2.3E-08	7.2E-09	1.4E-09	1.2E-09
WSW	1.2E-08	4.0E-09	1.3E-09	1.2E-09
SW	1.6E-08	5.2E-09	1.3E-09	1.2E-09
SSW	1.9E-08	6.2E-09	1.4E-09	1.2E-09
S	1.7E-08	5.6E-09	1.4E-09	1.2E-09
SSE	1.2E-08	4.2E-09	1.3E-09	1.2E-09
SSE	1.7E-08	5.6E-09	1.4E-09	1.2E-09
ESE	2.9E-08	8.9E-09	1.5E-09	1.3E-09
E	3.8E-08	1.1E-08	1.6E-09	1.3E-09
ENE	3.1E-08	9.6E-09	1.5E-09	1.3E-09
NE	1.9E-08	6.2E-09	1.4E-09	1.2E-09
NNE	1.7E-08	5.4E-09	1.4E-09	1.2E-09

CAP88 OUTPUT RESULTS

IA-09 BALLFIELDS

CAP88-PC

Version 4.0

Clean Air Act Assessment Package – 1988

D O S E   A N D   R I S K   S U M M A R I E S

```
Non-Radon Individual Assessment
     Mon Mar 11 12:21:32 2019



         Facility:  IA-09 Ballfields
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042


    Source Category:  Area
        Source Type:  Area
      Emission Year:  2018
     DOSE Age Group:  Adult

           Comments:  Air


       Dataset Name:  IA-09 Ballfields
       Dataset Date:  Mar 11, 2019 12:21 PM
          Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

Mon Mar 11 12:21:32 2019 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	1.34E-01
UB_Wall	1.49E-01
Bone_Sur	5.56E+00
Brain	1.41E-01
Breasts	1.54E-01
St_Wall	1.43E-01
SI_Wall	1.42E-01
ULI_Wall	1.46E-01
LLI_Wall	1.55E-01
Kidneys	2.28E-01
Liver	2.76E-01
Muscle	1.59E-01
Ovaries	1.70E-01
Pancreas	1.36E-01
R_Marrow	4.53E-01
Skin	9.93E-01
Spleen	1.44E-01
Testes	1.91E-01
Thymus	1.42E-01
Thyroid	1.47E-01
GB_Wall	1.36E-01
Ht_Wall	1.41E-01
Uterus	1.40E-01
ET_Reg	6.44E-01
Lung_66	1.84E+00
Effectiv	4.64E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	3.57E-02
INHALATION	2.88E-01
AIR IMMERSION	4.17E-06
GROUND SURFACE	1.41E-01
INTERNAL	3.23E-01
EXTERNAL	1.41E-01
TOTAL	4.64E-01

Mon Mar 11 12:21:32 2019 SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	2.60E-03
Th-234	2.79E-04
Pa-234m	1.06E-03
Pa-234	2.08E-05
U-234	3.13E-03
Th-230	7.04E-02
Ra-226	5.10E-03
Rn-222	3.94E-06
Po-218	7.04E-11
Pb-214	2.57E-03
At-218	2.65E-10
Bi-214	1.50E-02
Rn-218	1.53E-12
Po-214	8.34E-07
Tl-210	5.87E-06
Pb-210	1.26E-05
Bi-210	2.04E-04
Hg-206	1.64E-11
Po-210	5.28E-08
Tl-206	4.76E-10
U-235	9.73E-05
Th-231	3.37E-06
Pa-231	2.43E-03
Ac-227	1.83E-03
Th-227	2.42E-05
Fr-223	2.28E-07
Ra-223	2.70E-05
Rn-219	1.17E-05
At-219	0.00E+00
Bi-215	5.26E-11
Po-215	3.57E-08
Pb-211	2.30E-05
Bi-211	9.46E-06
Tl-207	1.19E-05
Po-211	4.55E-09
Th-232	1.29E-01
Ra-228	7.10E-02
Ac-228	4.81E-02
Th-228	3.53E-02
Ra-224	2.77E-03
Rn-220	3.26E-05
Po-216	7.87E-07
Pb-212	7.17E-03
Bi-212	8.36E-03
Po-212	0.00E+00
Tl-208	5.77E-02
TOTAL	4.64E-01

Mon Mar 11 12:21:32 2019 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	3.75E-09
INHALATION	6.83E-08
AIR IMMERSION	2.24E-12
GROUND SURFACE	7.41E-08
INTERNAL	7.21E-08
EXTERNAL	7.41E-08
TOTAL	1.46E-07

Mon Mar 11 12:21:32 2019 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	8.61E-10
Th-234	1.04E-10
Pa-234m	1.85E-10
Pa-234	1.13E-11
U-234	1.08E-09
Th-230	1.55E-08
Ra-226	2.86E-09
Rn-222	2.15E-12
Po-218	3.15E-17
Pb-214	1.38E-09
At-218	3.26E-17
Bi-214	7.94E-09
Rn-218	8.39E-19
Po-214	4.58E-13
Tl-210	3.14E-12
Pb-210	5.64E-12
Bi-210	2.26E-11
Hg-206	7.29E-18
Po-210	2.90E-14
Tl-206	5.35E-17
U-235	3.90E-11
Th-231	1.52E-12
Pa-231	1.05E-10
Ac-227	2.29E-10
Th-227	1.31E-11
Fr-223	8.48E-14
Ra-223	1.46E-11
Rn-219	6.40E-12
At-219	0.00E+00
Bi-215	2.35E-17
Po-215	1.96E-14
Pb-211	8.21E-12
Bi-211	5.17E-12
Tl-207	1.53E-12
Po-211	2.49E-15
Th-232	2.82E-08
Ra-228	9.69E-09
Ac-228	2.55E-08
Th-228	1.27E-08
Ra-224	1.10E-09
Rn-220	1.79E-11
Po-216	4.33E-13
Pb-212	3.90E-09
Bi-212	3.22E-09
Po-212	0.00E+00
Tl-208	3.14E-08
TOTAL	1.46E-07

Mon Mar 11 12:21:32 2019 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 485	780	1675	2500	
N	4.6E-01	2.1E-01	7.6E-02	5.3E-02	
NNW	2.5E-01	1.2E-01	5.3E-02	4.1E-02	
NW	2.9E-01	1.4E-01	5.7E-02	4.3E-02	
WNW	3.5E-01	1.6E-01	6.3E-02	4.6E-02	
W	2.7E-01	1.3E-01	5.4E-02	4.1E-02	
WSW	1.4E-01	7.5E-02	4.0E-02	3.4E-02	Business
SW	1.9E-01	9.4E-02	4.5E-02	3.7E-02	
SSW	2.3E-01	1.1E-01	4.9E-02	3.9E-02	
S	2.1E-01	1.0E-01	4.8E-02	3.8E-02	
SSE	1.5E-01	8.0E-02	4.2E-02	3.5E-02	
SSE	2.1E-01	1.0E-01	4.8E-02	3.8E-02	
ESE	3.4E-01	1.6E-01	6.2E-02	4.5E-02	
E	4.3E-01	1.9E-01	7.1E-02	5.0E-02	School
ENE	3.6E-01	1.6E-01	6.4E-02	4.6E-02	
NE	2.3E-01	1.1E-01	5.0E-02	3.9E-02	Resident(780), Farm(1675)
NNE	2.0E-01	9.9E-02	4.7E-02	3.8E-02	

Note: Highlighted EDE values (mrem) are applicable to the critical receptors as defined in the 2018 Radionuclide Emissions NESHAP Report (Appendix A) taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

Mon Mar 11 12:21:32 2019

SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	485	780	1675	2500
N	1.5E-07	6.3E-08	1.9E-08	1.1E-08
NNW	7.7E-08	3.4E-08	1.1E-08	7.4E-09
NW	8.9E-08	3.9E-08	1.3E-08	8.0E-09
WNW	1.1E-07	4.6E-08	1.5E-08	9.0E-09
W	8.2E-08	3.6E-08	1.2E-08	7.5E-09
WSW	4.1E-08	1.9E-08	7.2E-09	5.1E-09
SW	5.6E-08	2.5E-08	8.8E-09	6.0E-09
SSW	6.9E-08	3.0E-08	1.0E-08	6.7E-09
S	6.2E-08	2.8E-08	9.7E-09	6.5E-09
SSE	4.4E-08	2.0E-08	7.7E-09	5.4E-09
SSE	6.3E-08	2.8E-08	9.8E-09	6.5E-09
ESE	1.0E-07	4.5E-08	1.4E-08	8.9E-09
E	1.4E-07	5.7E-08	1.7E-08	1.0E-08
ENE	1.1E-07	4.8E-08	1.5E-08	9.1E-09
NE	7.0E-08	3.1E-08	1.0E-08	6.9E-09
NNE	6.0E-08	2.6E-08	9.3E-09	6.3E-09

CAP88 OUTPUT RESULTS

CHEZ PAREE

CAP88-PC

Version 4.0

Clean Air Act Assessment Package - 1988

D O S E   A N D   R I S K   S U M M A R I E S

Non-Radon Individual Assessment
Mon Mar 18 16:21:44 2019

```
         Facility:  Chez Paree
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042

     Source Category:  Area
         Source Type:  Area
       Emission Year:  2018
      DOSE Age Group:  Adult

            Comments:  Air

        Dataset Name:  Chez Paree.
        Dataset Date:  Mar 18, 2019 04:21 PM
           Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

Mon Mar 18 16:21:44 2019 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	7.99E-02
UB_Wall	8.80E-02
Bone_Sur	4.52E+00
Brain	8.39E-02
Breasts	9.10E-02
St_Wall	8.48E-02
SI_Wall	8.42E-02
ULI_Wall	8.76E-02
LLI_Wall	9.48E-02
Kidneys	1.58E-01
Liver	2.05E-01
Muscle	9.37E-02
Ovaries	1.08E-01
Pancreas	8.07E-02
R_Marrow	3.50E-01
Skin	5.86E-01
Spleen	8.53E-02
Testes	1.20E-01
Thymus	8.43E-02
Thyroid	8.72E-02
GB_Wall	8.09E-02
Ht_Wall	8.39E-02
Uterus	8.33E-02
ET_Reg	4.47E-01
Lung_66	1.16E+00
Effectiv	3.09E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	2.89E-02
INHALATION	2.00E-01
AIR IMMERSION	5.09E-06
GROUND SURFACE	8.01E-02
INTERNAL	2.29E-01
EXTERNAL	8.01E-02
TOTAL	3.09E-01

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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	2.09E-03
Th-234	2.82E-04
Pa-234m	8.09E-04
Pa-234	1.59E-05
U-234	2.52E-03
Th-230	8.44E-02
Ra-226	3.83E-03
Rn-222	3.11E-06
Po-218	5.55E-11
Pb-214	2.03E-03
At-218	2.09E-10
Bi-214	1.19E-02
Rn-218	1.21E-12
Po-214	6.57E-07
Tl-210	4.63E-06
Pb-210	9.91E-06
Bi-210	1.60E-04
Hg-206	1.29E-11
Po-210	4.15E-08
Tl-206	3.74E-10
U-235	1.39E-04
Th-231	4.71E-06
Pa-231	3.58E-03
Ac-227	1.81E-03
Th-227	2.81E-05
Fr-223	2.65E-07
Ra-223	3.15E-05
Rn-219	1.36E-05
At-219	0.00E+00
Bi-215	6.13E-11
Po-215	4.16E-08
Pb-211	2.68E-05
Bi-211	1.10E-05
Tl-207	1.39E-05
Po-211	5.31E-09
Th-232	2.14E-02
Ra-228	7.62E-02
Ac-228	2.56E-02
Th-228	3.11E-02
Ra-224	2.26E-03
Rn-220	1.74E-05
Po-216	4.21E-07
Pb-212	3.83E-03
Bi-212	4.47E-03
Po-212	0.00E+00
Tl-208	3.09E-02
TOTAL	3.09E-01

Mon Mar 18 16:21:44 2019 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.78E-09
INHALATION	4.77E-08
AIR IMMERSION	2.74E-12
GROUND SURFACE	4.20E-08
INTERNAL	5.05E-08
EXTERNAL	4.20E-08
TOTAL	9.24E-08

Mon Mar 18 16:21:44 2019 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	6.99E-10
Th-234	1.03E-10
Pa-234m	1.42E-10
Pa-234	8.66E-12
U-234	8.66E-10
Th-230	1.87E-08
Ra-226	1.98E-09
Rn-222	1.70E-12
Po-218	2.48E-17
Pb-214	1.09E-09
At-218	2.57E-17
Bi-214	6.26E-09
Rn-218	6.61E-19
Po-214	3.61E-13
Tl-210	2.47E-12
Pb-210	4.44E-12
Bi-210	1.77E-11
Hg-206	5.73E-18
Po-210	2.28E-14
Tl-206	4.20E-17
U-235	5.57E-11
Th-231	2.12E-12
Pa-231	1.55E-10
Ac-227	2.26E-10
Th-227	1.52E-11
Fr-223	9.88E-14
Ra-223	1.70E-11
Rn-219	7.46E-12
At-219	0.00E+00
Bi-215	2.73E-17
Po-215	2.28E-14
Pb-211	9.57E-12
Bi-211	6.02E-12
Tl-207	1.78E-12
Po-211	2.91E-15
Th-232	4.70E-09
Ra-228	1.12E-08
Ac-228	1.35E-08
Th-228	1.12E-08
Ra-224	8.72E-10
Rn-220	9.55E-12
Po-216	2.31E-13
Pb-212	2.08E-09
Bi-212	1.72E-09
Po-212	0.00E+00
Tl-208	1.68E-08
TOTAL	9.24E-08

Mon Mar 18 16:21:44 2019

SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)				
Direction	70	240	1510	1535	
N	3.1E-01	5.4E-02	2.2E-02	2.2E-02	Business
NNW	1.7E-01	3.8E-02	2.1E-02	2.1E-02	
NW	1.9E-01	4.1E-02	2.1E-02	2.1E-02	
WNW	2.3E-01	4.5E-02	2.2E-02	2.2E-02	School
W	1.8E-01	3.9E-02	2.1E-02	2.1E-02	Resident
WSW	9.8E-02	3.0E-02	2.1E-02	2.1E-02	
SW	1.3E-01	3.3E-02	2.1E-02	2.1E-02	
SSW	1.5E-01	3.6E-02	2.1E-02	2.1E-02	
S	1.4E-01	3.4E-02	2.1E-02	2.1E-02	
SSE	1.0E-01	3.0E-02	2.1E-02	2.1E-02	Farm
SE	1.4E-01	3.4E-02	2.1E-02	2.1E-02	
ESE	2.2E-01	4.4E-02	2.2E-02	2.1E-02	
E	2.9E-01	5.2E-02	2.2E-02	2.2E-02	
ENE	2.4E-01	4.7E-02	2.2E-02	2.2E-02	
NE	1.6E-01	3.6E-02	2.1E-02	2.1E-02	
NNE	1.4E-01	3.4E-02	2.1E-02	2.1E-02	

Mon Mar 18 16:21:44 2019

SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	70	240	1510	1535
N	9.2E-08	1.2E-08	2.4E-09	2.3E-09
NNW	4.9E-08	7.3E-09	2.2E-09	2.2E-09
NW	5.6E-08	8.3E-09	2.2E-09	2.2E-09
WNW	6.8E-08	9.7E-09	2.2E-09	2.2E-09
W	5.2E-08	7.8E-09	2.2E-09	2.2E-09
WSW	2.6E-08	4.8E-09	2.1E-09	2.1E-09
SW	3.6E-08	5.9E-09	2.1E-09	2.1E-09
SSW	4.4E-08	6.9E-09	2.1E-09	2.1E-09
S	3.9E-08	6.3E-09	2.1E-09	2.1E-09
SSE	2.8E-08	5.0E-09	2.1E-09	2.1E-09
SSE	4.0E-08	6.3E-09	2.1E-09	2.1E-09
ESE	6.6E-08	9.5E-09	2.2E-09	2.2E-09
E	8.6E-08	1.2E-08	2.3E-09	2.3E-09
ENE	7.1E-08	1.0E-08	2.3E-09	2.2E-09
NE	4.5E-08	6.9E-09	2.1E-09	2.1E-09
NNE	3.8E-08	6.1E-09	2.1E-09	2.1E-09

CAP88 OUTPUT RESULTS

SLAPS Loadout

CAP88-PC

Version 4.0

Clean Air Act Assessment Package - 1988

```
D O S E   A N D   R I S K   S U M M A R I E S

                        Non-Radon Individual Assessment
                             Mon Mar 11 12:42:50 2019



         Facility:  SLAPS Loadout
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042


     Source Category:  Area
         Source Type:  Area
       Emission Year:  2018
      DOSE Age Group:  Adult

            Comments:  Air


        Dataset Name:  SLAPS Loadout 20
        Dataset Date:  Mar 11, 2019 12:42 PM
           Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

Mon Mar 11 12:42:50 2019 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	1.59E-02
UB_Wall	1.75E-02
Bone_Sur	9.25E-01
Brain	1.67E-02
Breasts	1.81E-02
St_Wall	1.69E-02
SI_Wall	1.68E-02
ULI_Wall	1.75E-02
LLI_Wall	1.90E-02
Kidneys	3.12E-02
Liver	4.39E-02
Muscle	1.86E-02
Ovaries	2.16E-02
Pancreas	1.61E-02
R_Marrow	7.24E-02
Skin	1.15E-01
Spleen	1.70E-02
Testes	2.39E-02
Thymus	1.68E-02
Thyroid	1.73E-02
GB_Wall	1.61E-02
Ht_Wall	1.67E-02
Uterus	1.66E-02
ET_Reg	8.02E-02
Lung_66	2.03E-01
Effectiv	5.90E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	7.41E-03
INHALATION	3.59E-02
AIR IMMERSION	8.93E-07
GROUND SURFACE	1.57E-02
INTERNAL	4.33E-02
EXTERNAL	1.57E-02
TOTAL	5.90E-02

Mon Mar 11 12:42:50 2019 SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	3.90E-04
Th-234	5.11E-05
Pa-234m	1.61E-04
Pa-234	3.17E-06
U-234	4.70E-04
Th-230	1.60E-02
Ra-226	9.18E-04
Rn-222	7.18E-07
Po-218	1.28E-11
Pb-214	4.69E-04
At-218	4.82E-11
Bi-214	2.74E-03
Rn-218	2.79E-13
Po-214	1.52E-07
Tl-210	1.07E-06
Pb-210	2.29E-06
Bi-210	3.70E-05
Hg-206	2.99E-12
Po-210	9.59E-09
Tl-206	8.65E-11
U-235	4.14E-05
Th-231	1.46E-06
Pa-231	1.03E-03
Ac-227	7.79E-04
Th-227	1.03E-05
Fr-223	9.70E-08
Ra-223	1.15E-05
Rn-219	4.98E-06
At-219	0.00E+00
Bi-215	2.24E-11
Po-215	1.52E-08
Pb-211	9.78E-06
Bi-211	4.03E-06
Tl-207	5.07E-06
Po-211	1.94E-09
Th-232	3.40E-03
Ra-228	1.54E-02
Ac-228	4.79E-03
Th-228	4.58E-03
Ra-224	3.44E-04
Rn-220	3.26E-06
Po-216	7.86E-08
Pb-212	7.16E-04
Bi-212	8.35E-04
Po-212	0.00E+00
Tl-208	5.77E-03
TOTAL	5.90E-02

Mon Mar 11 12:42:50 2019 SUMMARY
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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	7.58E-10
INHALATION	8.32E-09
AIR IMMERSION	4.81E-13
GROUND SURFACE	8.19E-09
INTERNAL	9.07E-09
EXTERNAL	8.19E-09
TOTAL	1.73E-08

Mon Mar 11 12:42:50 2019 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.29E-10
Th-234	1.86E-11
Pa-234m	2.81E-11
Pa-234	1.72E-12
U-234	1.62E-10
Th-230	3.53E-09
Ra-226	5.18E-10
Rn-222	3.92E-13
Po-218	5.73E-18
Pb-214	2.51E-10
At-218	5.94E-18
Bi-214	1.45E-09
Rn-218	1.53E-19
Po-214	8.33E-14
Tl-210	5.71E-13
Pb-210	1.03E-12
Bi-210	4.11E-12
Hg-206	1.33E-18
Po-210	5.27E-15
Tl-206	9.72E-18
U-235	1.66E-11
Th-231	6.55E-13
Pa-231	4.46E-11
Ac-227	9.73E-11
Th-227	5.57E-12
Fr-223	3.61E-14
Ra-223	6.21E-12
Rn-219	2.73E-12
At-219	0.00E+00
Bi-215	9.99E-18
Po-215	8.34E-15
Pb-211	3.50E-12
Bi-211	2.20E-12
Tl-207	6.51E-13
Po-211	1.06E-15
Th-232	7.41E-10
Ra-228	2.09E-09
Ac-228	2.53E-09
Th-228	1.64E-09
Ra-224	1.34E-10
Rn-220	1.78E-12
Po-216	4.32E-14
Pb-212	3.89E-10
Bi-212	3.22E-10
Po-212	0.00E+00
Tl-208	3.14E-09
TOTAL	1.73E-08

Mon Mar 11 12:42:50 2019 SUMMARY
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INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 500	770	1710	2580	
N	5.9E-02	3.0E-02	1.2E-02	8.9E-03	
NNW	3.3E-02	1.8E-02	8.9E-03	7.4E-03	
NW	3.8E-02	2.0E-02	9.4E-03	7.6E-03	
WNW	4.5E-02	2.3E-02	1.0E-02	8.0E-03	
W	3.5E-02	1.9E-02	9.1E-03	7.5E-03	
WSW	2.0E-02	1.2E-02	7.4E-03	6.6E-03	Business
SW	2.6E-02	1.5E-02	8.0E-03	6.9E-03	
SSW	3.0E-02	1.7E-02	8.5E-03	7.2E-03	
S	2.8E-02	1.6E-02	8.3E-03	7.1E-03	
SSE	2.1E-02	1.3E-02	7.6E-03	6.7E-03	
SSE	2.8E-02	1.6E-02	8.3E-03	7.1E-03	
ESE	4.4E-02	2.3E-02	1.0E-02	8.0E-03	
E	5.5E-02	2.8E-02	1.1E-02	8.5E-03	School
ENE	4.7E-02	2.4E-02	1.0E-02	8.1E-03	
NE	3.1E-02	1.7E-02	8.6E-03	7.2E-03	Resident(770), Farm(1710)
NNE	2.7E-02	1.5E-02	8.2E-03	7.0E-03	

Note: Highlighted EDE values (mrem) are applicable to the critical receptors as defined in the 2018 Radionuclide Emissions NESHAP Report (Appendix A) taking into account the distance and direction from the applicable site to each receptor. The highlighted value assumes 100 percent occupancy.

Mon Mar 11 12:42:50 2019

SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	500	770	1710	2580
N	1.7E-08	8.1E-09	2.5E-09	1.6E-09
NNW	9.2E-09	4.5E-09	1.6E-09	1.1E-09
NW	1.1E-08	5.1E-09	1.7E-09	1.2E-09
WNW	1.3E-08	6.0E-09	2.0E-09	1.3E-09
W	9.8E-09	4.7E-09	1.6E-09	1.1E-09
WSW	5.0E-09	2.6E-09	1.1E-09	8.5E-10
SW	6.8E-09	3.4E-09	1.3E-09	9.5E-10
SSW	8.3E-09	4.0E-09	1.5E-09	1.0E-09
S	7.4E-09	3.7E-09	1.4E-09	1.0E-09
SSE	5.4E-09	2.8E-09	1.2E-09	8.8E-10
SSE	7.6E-09	3.8E-09	1.4E-09	1.0E-09
ESE	1.2E-08	5.9E-09	2.0E-09	1.3E-09
E	1.6E-08	7.5E-09	2.3E-09	1.5E-09
ENE	1.3E-08	6.3E-09	2.0E-09	1.3E-09
NE	8.4E-09	4.1E-09	1.5E-09	1.1E-09
NNE	7.2E-09	3.6E-09	1.4E-09	9.8E-10

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CAP88-PC RUNS FOR THE USACE ST. LOUIS FUSRAP LABORATORY

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CAP88 OUTPUT RESULTS

USACE Laboratory

CAP88-PC

Version 4.0

Clean Air Act Assessment Package - 1988

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                    D O S E   A N D   R I S K   S U M M A R I E S

                         Non-Radon Individual Assessment
                              Wed Mar 20 12:32:39 2019


         Facility:  USACE Laboratory
          Address:
             City:  St. Louis
            State:  MO          Zip:  63042


    Source Category:  Area
        Source Type:  Stack
      Emission Year:  2018
     DOSE Age Group:  Adult

           Comments:  Air


       Dataset Name:  USACE Laboratory
       Dataset Date:  Mar 20, 2019 12:32 PM
          Wind File:  C:\Users\finkenbinec\Documents\CAP88\Wind Files\Wind
Files\13994.WND
```

Wed Mar 20 12:32:39 2019 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	7.40E-05
UB_Wall	8.17E-05
Bone_Sur	4.31E-03
Brain	7.80E-05
Breasts	8.50E-05
St_Wall	7.88E-05
SI_Wall	7.83E-05
ULI_Wall	8.08E-05
LLI_Wall	8.66E-05
Kidneys	1.43E-04
Liver	2.22E-04
Muscle	8.76E-05
Ovaries	1.06E-04
Pancreas	7.48E-05
R_Marrow	2.58E-04
Skin	7.75E-04
Spleen	7.95E-05
Testes	1.18E-04
Thymus	7.83E-05
Thyroid	8.13E-05
GB_Wall	7.52E-05
Ht_Wall	7.80E-05
Uterus	7.74E-05
ET_Reg	5.52E-04
Lung_66	1.65E-03
Effectiv	3.55E-04

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.02E-05
INHALATION	2.65E-04
AIR IMMERSION	4.85E-10
GROUND SURFACE	7.93E-05
INTERNAL	2.75E-04
EXTERNAL	7.93E-05
TOTAL	3.55E-04

Wed Mar 20 12:32:39 2019 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	8.34E-06
Th-234	2.60E-07
Pa-234m	3.11E-06
Pa-234	6.14E-08
U-234	9.72E-06
Th-230	8.25E-05
Ra-226	1.24E-05
Rn-222	9.23E-09
Po-218	1.65E-13
Pb-214	6.03E-06
At-218	6.20E-13
Bi-214	3.52E-05
Rn-218	3.59E-15
Po-214	1.95E-09
Tl-210	1.38E-08
Pb-210	2.96E-08
Bi-210	4.79E-07
Hg-206	3.87E-14
Po-210	1.24E-10
Tl-206	1.12E-12
U-235	6.88E-07
Th-231	2.22E-08
Pa-231	1.86E-05
Ac-227	1.40E-05
Th-227	1.76E-07
Fr-223	1.66E-09
Ra-223	1.97E-07
Rn-219	8.53E-08
At-219	0.00E+00
Bi-215	3.83E-13
Po-215	2.60E-10
Pb-211	1.67E-07
Bi-211	6.90E-08
Tl-207	8.67E-08
Po-211	3.32E-11
Th-232	4.85E-05
Ra-228	7.26E-06
Ac-228	1.25E-05
Th-228	6.94E-05
Ra-224	4.58E-06
Rn-220	8.96E-09
Po-216	2.16E-10
Pb-212	1.97E-06
Bi-212	2.30E-06
Po-212	0.00E+00
Tl-208	1.59E-05
TOTAL	3.55E-04

Wed Mar 20 12:32:39 2019 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	4.25E-12
INHALATION	6.76E-11
AIR IMMERSION	2.59E-16
GROUND SURFACE	4.05E-11
INTERNAL	7.18E-11
EXTERNAL	4.06E-11
TOTAL	1.12E-10

Wed Mar 20 12:32:39 2019 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	2.78E-12
Th-234	1.28E-13
Pa-234m	5.45E-13
Pa-234	3.33E-14
U-234	3.34E-12
Th-230	1.82E-11
Ra-226	6.74E-12
Rn-222	5.04E-15
Po-218	7.37E-20
Pb-214	3.23E-12
At-218	7.64E-20
Bi-214	1.86E-11
Rn-218	1.97E-21
Po-214	1.07E-15
Tl-210	7.35E-15
Pb-210	1.33E-14
Bi-210	5.31E-14
Hg-206	1.71E-20
Po-210	6.81E-17
Tl-206	1.26E-19
U-235	2.74E-13
Th-231	1.01E-14
Pa-231	8.03E-13
Ac-227	1.76E-12
Th-227	9.54E-14
Fr-223	6.18E-16
Ra-223	1.06E-13
Rn-219	4.67E-14
At-219	0.00E+00
Bi-215	1.71E-19
Po-215	1.43E-16
Pb-211	5.98E-14
Bi-211	3.77E-14
Tl-207	1.11E-14
Po-211	1.82E-17
Th-232	1.06E-11
Ra-228	1.02E-12
Ac-228	6.62E-12
Th-228	2.49E-11
Ra-224	1.69E-12
Rn-220	4.91E-15
Po-216	1.19E-16
Pb-212	1.07E-12
Bi-212	8.86E-13
Po-212	0.00E+00
Tl-208	8.63E-12
TOTAL	1.12E-10

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SUMMARY
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INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)				
Direction	110	300	310	1830	
N	3.5E-04	9.3E-05	8.9E-05	1.1E-05	
NNW	2.0E-04	5.2E-05	4.9E-05	9.4E-06	
NW	2.0E-04	5.9E-05	5.6E-05	9.7E-06	
WNW	2.3E-04	7.0E-05	6.7E-05	1.0E-05	
W	1.9E-04	5.5E-05	5.2E-05	9.6E-06	
WSW	9.7E-05	3.0E-05	2.9E-05	8.5E-06	
SW	1.2E-04	4.0E-05	3.8E-05	8.9E-06	
SSW	1.4E-04	4.7E-05	4.5E-05	9.2E-06	
S	1.6E-04	4.3E-05	4.1E-05	9.1E-06	Business
SSE	1.2E-04	3.2E-05	3.1E-05	8.6E-06	
SE	1.6E-04	4.3E-05	4.2E-05	9.1E-06	School
ESE	2.4E-04	6.8E-05	6.5E-05	1.0E-05	
E	2.8E-04	8.7E-05	8.3E-05	1.1E-05	
ENE	2.3E-04	7.3E-05	6.9E-05	1.0E-05	
NE	1.6E-04	4.8E-05	4.6E-05	9.3E-06	Resident(300); Farm(310)
NNE	1.4E-04	4.2E-05	4.0E-05	9.0E-06	

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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	110	300	310	1830
N	1.1E-10	3.0E-11	2.9E-11	4.4E-12
NNW	6.2E-11	1.7E-11	1.6E-11	3.8E-12
NW	6.4E-11	1.9E-11	1.9E-11	3.9E-12
WNW	7.4E-11	2.3E-11	2.2E-11	4.0E-12
W	6.0E-11	1.8E-11	1.7E-11	3.8E-12
WSW	3.1E-11	1.0E-11	1.0E-11	3.5E-12
SW	3.9E-11	1.3E-11	1.3E-11	3.6E-12
SSW	4.6E-11	1.6E-11	1.5E-11	3.7E-12
S	5.0E-11	1.4E-11	1.4E-11	3.7E-12
SSE	3.7E-11	1.1E-11	1.1E-11	3.5E-12
SSE	5.1E-11	1.5E-11	1.4E-11	3.7E-12
ESE	7.6E-11	2.2E-11	2.1E-11	4.0E-12
E	8.9E-11	2.8E-11	2.7E-11	4.3E-12
ENE	7.2E-11	2.4E-11	2.3E-11	4.1E-12
NE	5.2E-11	1.6E-11	1.5E-11	3.7E-12
NNE	4.6E-11	1.4E-11	1.3E-11	3.7E-12

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APPENDIX B

ENVIRONMENTAL THERMOLUMINESCENT DOSIMETER, ALPHA TRACK DETECTOR, AND PERIMETER AIR DATA

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Table B-1. Background Air Particulate Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
BKG200023	BAP-001	01/02/18	Gross Alpha/Beta	Gross Alpha	6.14E-15	1.30E-15	5.31E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200023	BAP-001	01/02/18	Gross Alpha/Beta	Gross Beta	2.72E-14	2.84E-15	9.29E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200023	BAP-001	01/02/18	Gross Alpha/Beta	Gross Alpha	7.27E-15	1.42E-15	5.31E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200023	BAP-001	01/02/18	Gross Alpha/Beta	Gross Beta	2.80E-14	2.90E-15	9.29E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200024	BAP-001	01/08/18	Gross Alpha/Beta	Gross Alpha	1.22E-14	2.21E-15	7.50E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200024	BAP-001	01/08/18	Gross Alpha/Beta	Gross Beta	3.62E-14	3.85E-15	1.31E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200025	BAP-001	01/16/18	Gross Alpha/Beta	Gross Alpha	5.23E-15	1.12E-15	4.66E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200025	BAP-001	01/16/18	Gross Alpha/Beta	Gross Beta	2.11E-14	2.28E-15	8.15E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200026	BAP-001	01/22/18	Gross Alpha/Beta	Gross Alpha	6.56E-15	1.64E-15	8.09E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200026	BAP-001	01/22/18	Gross Alpha/Beta	Gross Beta	2.59E-14	3.17E-15	1.42E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200027	BAP-001	01/29/18	Gross Alpha/Beta	Gross Alpha	4.69E-15	1.11E-15	5.21E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200027	BAP-001	01/29/18	Gross Alpha/Beta	Gross Beta	1.73E-14	2.08E-15	9.12E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200028	BAP-001	02/05/18	Gross Alpha/Beta	Gross Alpha	4.94E-15	1.19E-15	5.62E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200028	BAP-001	02/05/18	Gross Alpha/Beta	Gross Beta	1.97E-14	2.33E-15	9.84E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200029	BAP-001	02/12/18	Gross Alpha/Beta	Gross Alpha	2.23E-15	7.96E-16	5.61E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200029	BAP-001	02/12/18	Gross Alpha/Beta	Gross Beta	2.36E-14	2.62E-15	9.81E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200030	BAP-001	02/20/18	Gross Alpha/Beta	Gross Alpha	3.91E-15	9.76E-16	4.82E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200030	BAP-001	02/20/18	Gross Alpha/Beta	Gross Beta	2.14E-14	2.34E-15	8.44E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200031	BAP-001	02/26/18	Gross Alpha/Beta	Gross Alpha	2.03E-15	8.12E-16	6.34E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200031	BAP-001	02/26/18	Gross Alpha/Beta	Gross Beta	7.99E-15	1.49E-15	1.11E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200032	BAP-001	03/05/18	Gross Alpha/Beta	Gross Alpha	4.26E-15	1.16E-15	6.28E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200032	BAP-001	03/05/18	Gross Alpha/Beta	Gross Beta	2.46E-14	2.80E-15	1.10E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200033	BAP-001	03/12/18	Gross Alpha/Beta	Gross Alpha	2.30E-15	7.85E-16	5.32E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200033	BAP-001	03/12/18	Gross Alpha/Beta	Gross Beta	1.85E-14	2.19E-15	9.31E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200034	BAP-001	03/19/18	Gross Alpha/Beta	Gross Alpha	2.12E-15	8.04E-16	5.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200034	BAP-001	03/19/18	Gross Alpha/Beta	Gross Beta	2.53E-14	2.81E-15	1.05E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200035	BAP-001	03/26/18	Gross Alpha/Beta	Gross Alpha	2.40E-15	7.99E-16	5.28E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200035	BAP-001	03/26/18	Gross Alpha/Beta	Gross Beta	1.87E-14	2.20E-15	9.25E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200036	BAP-001	04/02/18	Gross Alpha/Beta	Gross Alpha	6.49E-15	1.37E-15	5.99E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200036	BAP-001	04/02/18	Gross Alpha/Beta	Gross Beta	1.69E-14	2.08E-15	9.39E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200036	BAP-001	04/02/18	Gross Alpha/Beta	Gross Alpha	5.14E-15	1.22E-15	5.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200036	BAP-001	04/02/18	Gross Alpha/Beta	Gross Beta	1.68E-14	2.07E-15	9.39E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200037	BAP-001	04/09/18	Gross Alpha/Beta	Gross Alpha	4.71E-15	1.16E-15	5.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200037	BAP-001	04/09/18	Gross Alpha/Beta	Gross Beta	1.57E-14	1.99E-15	9.39E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200038	BAP-001	04/17/18	Gross Alpha/Beta	Gross Alpha	1.98E-15	6.97E-16	4.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200038	BAP-001	04/17/18	Gross Alpha/Beta	Gross Beta	1.08E-14	1.47E-15	7.83E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200039	BAP-001	04/22/18	Gross Alpha/Beta	Gross Alpha	4.46E-15	1.32E-15	8.10E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200039	BAP-001	04/22/18	Gross Alpha/Beta	Gross Beta	1.45E-14	2.15E-15	1.27E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200040	BAP-001	04/30/18	Gross Alpha/Beta	Gross Alpha	4.03E-15	1.10E-15	6.26E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200040	BAP-001	04/30/18	Gross Alpha/Beta	Gross Beta	1.55E-14	2.00E-15	9.82E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200041	BAP-001	05/07/18	Gross Alpha/Beta	Gross Alpha	3.42E-15	9.93E-16	5.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200041	BAP-001	05/07/18	Gross Alpha/Beta	Gross Beta	1.84E-14	2.20E-15	9.39E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200042	BAP-001	05/14/18	Gross Alpha/Beta	Gross Alpha	3.59E-15	1.03E-15	6.17E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200042	BAP-001	05/14/18	Gross Alpha/Beta	Gross Beta	2.33E-14	2.59E-15	9.67E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
BKG200043	BAP-001	05/14/18	Gross Alpha/Beta	Gross Beta	2.27E-14	1.46E-14	2.03E-14	µCi/mL	J	T04, T20	Background Air (Particulate Air)-Environmental Monitoring
BKG200043	BAP-001	05/14/18	Gross Alpha/Beta	Gross Alpha	-3.32E-16	6.35E-15	1.30E-14	µCi/mL	UJ	T06	Background Air (Particulate Air)-Environmental Monitoring
BKG200044	BAP-001	05/29/18	Gross Alpha/Beta	Gross Alpha	3.03E-15	9.77E-16	6.48E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200044	BAP-001	05/29/18	Gross Alpha/Beta	Gross Beta	2.32E-14	2.63E-15	1.02E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200045	BAP-001	06/05/18	Gross Alpha/Beta	Gross Alpha	2.36E-15	8.43E-16	6.11E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200045	BAP-001	06/05/18	Gross Alpha/Beta	Gross Beta	1.53E-14	1.97E-15	9.58E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200046	BAP-001	06/11/18	Gross Alpha/Beta	Gross Alpha	2.15E-15	8.93E-16	7.29E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200046	BAP-001	06/11/18	Gross Alpha/Beta	Gross Beta	2.40E-14	2.79E-15	1.14E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200047	BAP-001	06/18/18	Gross Alpha/Beta	Gross Alpha	1.24E-15	6.40E-16	6.11E-16	µCi/mL	J	T04, T20	Background Air (Particulate Air)-Environmental Monitoring
BKG200047	BAP-001	06/18/18	Gross Alpha/Beta	Gross Beta	1.97E-14	2.31E-15	9.58E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200048	BAP-001	06/25/18	Gross Alpha/Beta	Gross Alpha	1.46E-15	6.77E-16	5.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200048	BAP-001	06/25/18	Gross Alpha/Beta	Gross Beta	1.39E-14	1.85E-15	9.39E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200049	BAP-001	07/02/18	Gross Alpha/Beta	Gross Alpha	5.32E-15	1.33E-15	5.66E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200049	BAP-001	07/02/18	Gross Alpha/Beta	Gross Beta	1.58E-14	2.22E-15	1.41E-15	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200049	BAP-001	07/02/18	Gross Alpha/Beta	Gross Alpha	5.25E-15	1.32E-15	5.66E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200049	BAP-001	07/02/18	Gross Alpha/Beta	Gross Beta	1.50E-14	2.15E-15	1.41E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200050	BAP-001	07/09/18	Gross Alpha/Beta	Gross Alpha	5.64E-15	1.30E-15	5.09E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200050	BAP-001	07/09/18	Gross Alpha/Beta	Gross Beta	2.11E-14	2.52E-15	1.27E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200051	BAP-001	07/14/18	Gross Alpha/Beta	Gross Alpha	5.80E-15	1.55E-15	7.03E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200051	BAP-001	07/14/18	Gross Alpha/Beta	Gross Beta	1.45E-14	2.35E-15	1.76E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200052	BAP-001	07/23/18	Gross Alpha/Beta	Gross Alpha	6.65E-15	1.41E-15	5.01E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200052	BAP-001	07/23/18	Gross Alpha/Beta	Gross Beta	2.27E-14	2.62E-15	1.25E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200053	BAP-001	07/30/18	Gross Alpha/Beta	Gross Alpha	6.30E-15	1.43E-15	5.50E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200053	BAP-001	07/30/18	Gross Alpha/Beta	Gross Beta	1.99E-14	2.50E-15	1.37E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200054	BAP-001	08/06/18	Gross Alpha/Beta	Gross Alpha	4.76E-15	1.22E-15	5.36E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200054	BAP-001	08/06/18	Gross Alpha/Beta	Gross Beta	2.73E-14	3.02E-15	1.34E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200055	BAP-001	08/13/18	Gross Alpha/Beta	Gross Alpha	5.04E-15	1.27E-15	5.44E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200055	BAP-001	08/13/18	Gross Alpha/Beta	Gross Beta	2.18E-14	2.63E-15	1.36E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200056	BAP-001	08/20/18	Gross Alpha/Beta	Gross Alpha	4.08E-15	1.11E-15	5.11E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200056	BAP-001	08/20/18	Gross Alpha/Beta	Gross Beta	2.01E-14	2.44E-15	1.28E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200057	BAP-001	08/27/18	Gross Alpha/Beta	Gross Alpha	6.27E-15	1.49E-15	6.01E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200057	BAP-001	08/27/18	Gross Alpha/Beta	Gross Beta	2.40E-14	2.90E-15	1.50E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200058	BAP-001	09/04/18	Gross Alpha/Beta	Gross Alpha	2.29E-15	7.86E-16	4.56E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200058	BAP-001	09/04/18	Gross Alpha/Beta	Gross Beta	1.29E-14	1.80E-15	1.14E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200059	BAP-001	09/10/18	Gross Alpha/Beta	Gross Alpha	2.70E-15	1.00E-15	6.19E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200059	BAP-001	09/10/18	Gross Alpha/Beta	Gross Beta	1.61E-14	2.33E-15	1.55E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200060	BAP-001	09/17/18	Gross Alpha/Beta	Gross Alpha	2.00E-15	7.90E-16	5.19E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200060	BAP-001	09/17/18	Gross Alpha/Beta	Gross Beta	1.68E-14	2.21E-15	1.29E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200061	BAP-001	09/24/18	Gross Alpha/Beta	Gross Alpha	2.13E-15	8.29E-16	5.36E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200061	BAP-001	09/24/18	Gross Alpha/Beta	Gross Beta	2.21E-14	2.64E-15	1.34E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200062	BAP-001	10/01/18	Gross Alpha/Beta	Gross Alpha	6.05E-15	1.37E-15	5.13E-16	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200062	BAP-001	10/01/18	Gross Alpha/Beta	Gross Beta	1.83E-14	2.34E-15	1.32E-15	µCi/mL			Background Air (Particulate Air)-Environmental Monitoring
BKG200062	BAP-001	10/01/18	Gross Alpha/Beta	Gross Alpha	6.05E-15	1.37E-15	5.13E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200062	BAP-001	10/01/18	Gross Alpha/Beta	Gross Beta	1.89E-14	2.39E-15	1.32E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
BKG200063	BAP-001	10/08/18	Gross Alpha/Beta	Gross Alpha	5.57E-15	1.33E-15	5.26E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200063	BAP-001	10/08/18	Gross Alpha/Beta	Gross Beta	1.79E-14	2.34E-15	1.35E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200064	BAP-001	10/15/18	Gross Alpha/Beta	Gross Alpha	4.98E-15	1.20E-15	4.82E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200064	BAP-001	10/15/18	Gross Alpha/Beta	Gross Beta	1.54E-14	2.07E-15	1.24E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200065	BAP-001	10/22/18	Gross Alpha/Beta	Gross Alpha	4.67E-15	1.23E-15	5.43E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200065	BAP-001	10/22/18	Gross Alpha/Beta	Gross Beta	1.89E-14	2.45E-15	1.39E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200066	BAP-001	10/29/18	Gross Alpha/Beta	Gross Alpha	3.97E-15	1.08E-15	4.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200066	BAP-001	10/29/18	Gross Alpha/Beta	Gross Beta	1.90E-14	2.37E-15	1.28E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200067	BAP-001	11/05/18	Gross Alpha/Beta	Gross Alpha	5.21E-15	1.29E-15	5.38E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200067	BAP-001	11/05/18	Gross Alpha/Beta	Gross Beta	1.87E-14	2.42E-15	1.38E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200068	BAP-001	11/12/18	Gross Alpha/Beta	Gross Alpha	4.23E-15	1.12E-15	4.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200068	BAP-001	11/12/18	Gross Alpha/Beta	Gross Beta	1.75E-14	2.26E-15	1.28E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200069	BAP-001	11/19/18	Gross Alpha/Beta	Gross Alpha	5.53E-15	1.31E-15	5.15E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200069	BAP-001	11/19/18	Gross Alpha/Beta	Gross Beta	2.28E-14	2.69E-15	1.32E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200070	BAP-001	11/26/18	Gross Alpha/Beta	Gross Alpha	4.11E-15	1.09E-15	4.85E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200070	BAP-001	11/26/18	Gross Alpha/Beta	Gross Beta	3.09E-14	3.21E-15	1.24E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200071	BAP-001	12/03/18	Gross Alpha/Beta	Gross Alpha	3.66E-15	1.07E-15	5.31E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200071	BAP-001	12/03/18	Gross Alpha/Beta	Gross Beta	1.75E-14	2.32E-15	1.36E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200072	BAP-001	12/10/18	Gross Alpha/Beta	Gross Alpha	3.72E-15	1.06E-15	5.10E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200072	BAP-001	12/10/18	Gross Alpha/Beta	Gross Beta	2.66E-14	2.95E-15	1.31E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200073	BAP-001	12/17/18	Gross Alpha/Beta	Gross Alpha	2.84E-15	9.37E-16	5.22E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200073	BAP-001	12/17/18	Gross Alpha/Beta	Gross Beta	2.64E-14	2.96E-15	1.34E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200074	BAP-001	12/26/18	Gross Alpha/Beta	Gross Alpha	1.75E-15	6.39E-16	3.89E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG200074	BAP-001	12/26/18	Gross Alpha/Beta	Gross Beta	2.09E-14	2.30E-15	9.99E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG209168	BAP-001	12/31/18	Gross Alpha/Beta	Gross Alpha	2.22E-15	1.02E-15	7.62E-16	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring
BKG209168	BAP-001	12/31/18	Gross Alpha/Beta	Gross Beta	2.27E-14	3.14E-15	1.95E-15	µCi/mL	=		Background Air (Particulate Air)-Environmental Monitoring

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainty 50 to 100 percent of the result.

Table B-2. NC Sites Ra-222 Results for CY 2018

Sample Name	Station Name	Collect Date	Method Type	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS200289	BA-1	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	Background Air (Alpha Tracks)-Environmental Monitoring
HIS207162	BA-1	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	Background Air (Alpha Tracks)-Environmental Monitoring
HIS200290	HF-1	07/03/18	Radiological	Ra-222	2.2	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207163	HF-1	01/03/19	Radiological	Ra-222	2.7	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200291	HF-2	07/03/18	Radiological	Ra-222	5.8	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207164	HF-2	01/03/19	Radiological	Ra-222	6.8	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200292	HF-3	07/03/18	Radiological	Ra-222	0.6	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207165	HF-3	01/03/19	Radiological	Ra-222	0.4	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200293	HF-4	07/03/18	Radiological	Ra-222	1	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207166	HF-4	01/03/19	Radiological	Ra-222	0.9	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200294	HF-5	07/03/18	Radiological	Ra-222	0.8	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207167	HF-5	01/03/19	Radiological	Ra-222	0.8	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200295	HF-6	07/03/18	Radiological	Ra-222	0.8	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207168	HF-6	01/03/19	Radiological	Ra-222	1.1	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200296	HF-7	07/03/18	Radiological	Ra-222	1.2	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207169	HF-7	01/03/19	Radiological	Ra-222	1.4	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200297	HF-8	07/03/18	Radiological	Ra-222	0.9	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207170	HF-8	01/03/19	Radiological	Ra-222	1.3	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200298	HF-9	07/03/18	Radiological	Ra-222	1.1	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207171	HF-9	01/03/19	Radiological	Ra-222	1.2	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS200299	HF-10	07/03/18	Radiological	Ra-222	1.1	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
HIS207172	HF-10	01/03/19	Radiological	Ra-222	1.4	0	0.2	pCi/L	J	Y01	Futura Air (Alpha Tracks)-Environmental Monitoring
SLA200319	PA-1	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA207176	PA-1	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA200320	PA-2	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA207177	PA-2	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA207177-1	PA-2 dup	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA200320-1	PA-2dup	07/03/18	Radiological	Ra-222	0.4	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA200321	PA-3	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA207178	PA-3	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA200322	PA-4	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA207179	PA-4	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
HIS200300	FA-1	07/03/18	Radiological	Ra-222	0.3	0	0.2	pCi/L	J	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring
HIS207173	FA-1	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring
HIS200301	FA-2	07/03/18	Radiological	Ra-222	0.5	0	0.2	pCi/L	J	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring
HIS207174	FA-2	01/03/19	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring
HIS200302	FA-3	07/03/18	Radiological	Ra-222	0.2	0	0.2	pCi/L	J	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring
HIS207175	FA-3	01/03/19	Radiological	Ra-222	0.5	0	0.2	pCi/L	J	Y01	VP-40A Air (Alpha Tracks)-Environmental Monitoring

Note: ATD stations on VP-40A were not set up until July 2017.

VQs:

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

Y01 FUSRAP Only: Not enough supporting documentation to perform validation.

Table B-3. NC Sites External Gamma Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
HIS200326	BA-1	04/03/18	Radiological	External gamma radiation	18.8	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
HIS200329	BA-1	07/03/18	Radiological	External gamma radiation	19.8	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
HIS200332	BA-1	10/02/18	Radiological	External gamma radiation	21.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
HIS207147	BA-1	01/03/19	Radiological	External gamma radiation	20.8	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
SLA200355	PA-1	04/03/18	Radiological	External gamma radiation	18.3	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
SLA200359	PA-1	07/03/18	Radiological	External gamma radiation	20.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
SLA200363	PA-1	10/02/18	Radiological	External gamma radiation	19.3	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
SLA207150	PA-1	01/03/19	Radiological	External gamma radiation	20.6	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
SLA200356	PA-2	04/03/18	Radiological	External gamma radiation	21.8	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
SLA200360	PA-2	07/03/18	Radiological	External gamma radiation	24.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
SLA200364	PA-2	10/02/18	Radiological	External gamma radiation	23.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
SLA207151	PA-2	01/03/19	Radiological	External gamma radiation	23.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
SLA200356-1	PA-2dup	04/03/18	Radiological	External gamma radiation	20.7	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
SLA200360-1	PA-2dup	07/03/18	Radiological	External gamma radiation	23.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
SLA200364-1	PA-2dup	10/02/18	Radiological	External gamma radiation	24.4	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
SLA207151-1	PA-2dup	01/03/19	Radiological	External gamma radiation	23.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
SLA200357	PA-3	04/03/18	Radiological	External gamma radiation	19.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
SLA200361	PA-3	07/03/18	Radiological	External gamma radiation	20.7	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
SLA200365	PA-3	10/02/18	Radiological	External gamma radiation	21	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
SLA207152	PA-3	01/03/19	Radiological	External gamma radiation	21.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
SLA200358	PA-4	04/03/18	Radiological	External gamma radiation	22.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
SLA200362	PA-4	07/03/18	Radiological	External gamma radiation	24.9	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
SLA200366	PA-4	10/02/18	Radiological	External gamma radiation	27.2	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
SLA207153	PA-4	01/03/19	Radiological	External gamma radiation	26.6	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
HIS200327	FA-2	04/03/18	Radiological	External gamma radiation	22	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
HIS200330	FA-2	07/03/18	Radiological	External gamma radiation	23.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
HIS200333	FA-2	10/02/18	Radiological	External gamma radiation	23.2	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
HIS207148	FA-2	01/03/19	Radiological	External gamma radiation	22.1	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018
HIS200328	FA-3	04/03/18	Radiological	External gamma radiation	16.7	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-1Q2018
HIS200331	FA-3	07/03/18	Radiological	External gamma radiation	19.1	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-2Q2018
HIS200334	FA-3	10/02/18	Radiological	External gamma radiation	20.3	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-3Q2018
HIS207149	FA-3	01/03/19	Radiological	External gamma radiation	17.5	0	0.1	mrem	J	Y01	Environmental Monitoring (TLDs)-4Q2018

VQs:

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

Validation Reason Code:

Y01 FUSRAP Only: Not enough supporting documentation to perform validation.

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205525	FUTURA	12/10/18	Gross Alpha/Beta	Gross Alpha	2.896E-15	8.658E-15	1.432E-14	µCi/mL			Futura (General Area)-Perimeter Air
SVP205525	FUTURA	12/10/18	Gross Alpha/Beta	Gross Beta	4.83E-14	2.186E-14	2.756E-14	µCi/mL			Futura (General Area)-Perimeter Air
SVP205525-1	FUTURA	12/10/18	Gross Alpha/Beta	Gross Alpha	1.124E-14	1.104E-14	1.432E-14	µCi/mL	UJ	T04, T05	Futura (General Area)-Perimeter Air
SVP205525-1	FUTURA	12/10/18	Gross Alpha/Beta	Gross Beta	7.238E-14	2.404E-14	2.756E-14	µCi/mL	=		Futura (General Area)-Perimeter Air
SVP205526	FUTURA	12/10/18	Gross Alpha/Beta	Gross Alpha	-1.27E-15	7.193E-15	1.432E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205526	FUTURA	12/10/18	Gross Alpha/Beta	Gross Beta	4.919E-14	2.194E-14	2.756E-14	µCi/mL	=		Futura (General Area)-Perimeter Air
SVP205527	FUTURA	12/11/18	Gross Alpha/Beta	Gross Alpha	-1.3E-15	7.343E-15	1.461E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205527	FUTURA	12/11/18	Gross Alpha/Beta	Gross Beta	-1.08E-14	1.637E-14	2.814E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205528	FUTURA	12/11/18	Gross Alpha/Beta	Gross Alpha	-5.59E-15	5.496E-15	1.469E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205528	FUTURA	12/11/18	Gross Alpha/Beta	Gross Beta	6.558E-15	1.827E-14	2.828E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205529	FUTURA	12/05/18	Gross Alpha/Beta	Gross Alpha	2.987E-15	8.931E-15	1.477E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205529	FUTURA	12/05/18	Gross Alpha/Beta	Gross Beta	4.247E-14	2.186E-14	2.843E-14	µCi/mL	J	T04, T20	Futura (General Area)-Perimeter Air
SVP205530	FUTURA	12/05/18	Gross Alpha/Beta	Gross Alpha	-4.18E-15	6.22E-15	1.477E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205530	FUTURA	12/05/18	Gross Alpha/Beta	Gross Beta	4.707E-14	2.229E-14	2.843E-14	µCi/mL	=		Futura (General Area)-Perimeter Air
SVP205531	FUTURA	12/11/18	Gross Alpha/Beta	Gross Alpha	-7.57E-15	1.705E-14	3.921E-14	µCi/mL			Futura (General Area)-Perimeter Air
SVP205531	FUTURA	12/11/18	Gross Alpha/Beta	Gross Beta	4.612E-14	4.862E-14	7.661E-14	µCi/mL			Futura (General Area)-Perimeter Air
SVP205531-1	FUTURA	12/11/18	Gross Alpha/Beta	Gross Alpha	-7.57E-15	1.705E-14	3.921E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205531-1	FUTURA	12/11/18	Gross Alpha/Beta	Gross Beta	7.525E-14	5.161E-14	7.661E-14	µCi/mL	UJ	T04, T05	Futura (General Area)-Perimeter Air
SVP205532	FUTURA	12/11/18	Gross Alpha/Beta	Gross Alpha	1.514E-14	2.52E-14	3.921E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205532	FUTURA	12/11/18	Gross Alpha/Beta	Gross Beta	5.34E-14	4.938E-14	7.661E-14	µCi/mL	UJ	T04, T05	Futura (General Area)-Perimeter Air
SVP205533	FUTURA	12/12/18	Gross Alpha/Beta	Gross Alpha	8.513E-15	1.418E-14	2.206E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205533	FUTURA	12/12/18	Gross Alpha/Beta	Gross Beta	8.466E-14	3.317E-14	4.309E-14	µCi/mL	=		Futura (General Area)-Perimeter Air
SVP205534	FUTURA	12/12/18	Gross Alpha/Beta	Gross Alpha	4.257E-15	1.283E-14	2.206E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205534	FUTURA	12/12/18	Gross Alpha/Beta	Gross Beta	6.964E-14	3.173E-14	4.309E-14	µCi/mL	=		Futura (General Area)-Perimeter Air
SVP205535	FUTURA	12/19/18	Gross Alpha/Beta	Gross Alpha	0	8.328E-15	1.623E-14	µCi/mL	UJ	T06	Futura (General Area)-Perimeter Air
SVP205535	FUTURA	12/19/18	Gross Alpha/Beta	Gross Beta	3.716E-14	2.196E-14	3.17E-14	µCi/mL	J	T04, T20	Futura (General Area)-Perimeter Air
SVP205467	ROAD ROW	10/30/18	Gross Alpha/Beta	Gross Alpha	1.551E-14	1.103E-14	1.26E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205467	ROAD ROW	10/30/18	Gross Alpha/Beta	Gross Beta	4.933E-14	1.88E-14	2.201E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205468	ROAD ROW	10/30/18	Gross Alpha/Beta	Gross Alpha	1.408E-14	1.065E-14	1.26E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205468	ROAD ROW	10/30/18	Gross Alpha/Beta	Gross Beta	4.122E-14	1.791E-14	2.201E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205469	ROAD ROW	10/31/18	Gross Alpha/Beta	Gross Alpha	1.262E-14	1.106E-14	1.418E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205469	ROAD ROW	10/31/18	Gross Alpha/Beta	Gross Beta	5.347E-14	2.093E-14	2.476E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205470	ROAD ROW	10/31/18	Gross Alpha/Beta	Gross Alpha	2.954E-15	7.698E-15	1.418E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205470	ROAD ROW	10/31/18	Gross Alpha/Beta	Gross Beta	6.259E-14	2.192E-14	2.476E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205473	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Alpha	6.68E-16	1.438E-14	2.716E-14	µCi/mL			Eva Road (General Area)-Perimeter Air
SVP205473	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Beta	5.811E-14	3.615E-14	5.305E-14	µCi/mL			Eva Road (General Area)-Perimeter Air
SVP205473-1	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Alpha	1.402E-14	1.872E-14	2.716E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205473-1	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Beta	4.612E-14	3.491E-14	5.305E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205474	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Alpha	-7.35E-15	1.102E-14	2.716E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205474	ROAD ROW	11/05/18	Gross Alpha/Beta	Gross Beta	5.126E-14	3.544E-14	5.305E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205475	ROAD ROW	11/06/18	Gross Alpha/Beta	Gross Alpha	1.831E-15	8.415E-15	1.489E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205475	ROAD ROW	11/06/18	Gross Alpha/Beta	Gross Beta	4.033E-14	2.068E-14	2.909E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205476	ROAD ROW	11/06/18	Gross Alpha/Beta	Gross Alpha	-2.56E-15	6.714E-15	1.489E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205476	ROAD ROW	11/06/18	Gross Alpha/Beta	Gross Beta	9.318E-15	1.743E-14	2.909E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205477	ROAD ROW	11/07/18	Gross Alpha/Beta	Gross Alpha	4.05E-16	8.733E-15	1.649E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205477	ROAD ROW	11/07/18	Gross Alpha/Beta	Gross Beta	5.817E-14	2.424E-14	3.221E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205478	ROAD ROW	11/07/18	Gross Alpha/Beta	Gross Alpha	5.27E-15	1.039E-14	1.649E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205478	ROAD ROW	11/07/18	Gross Alpha/Beta	Gross Beta	3.008E-14	2.141E-14	3.221E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205479	ROAD ROW	11/08/18	Gross Alpha/Beta	Gross Alpha	1.774E-15	8.152E-15	1.443E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205479	ROAD ROW	11/08/18	Gross Alpha/Beta	Gross Beta	3.451E-14	1.958E-14	2.818E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205480	ROAD ROW	11/08/18	Gross Alpha/Beta	Gross Alpha	-5.32E-15	5.129E-15	1.443E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205480	ROAD ROW	11/08/18	Gross Alpha/Beta	Gross Beta	2.814E-14	1.892E-14	2.818E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205481	ROAD ROW	11/13/18	Gross Alpha/Beta	Gross Alpha	2.976E-15	8.047E-15	1.345E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205481	ROAD ROW	11/13/18	Gross Alpha/Beta	Gross Beta	4.659E-14	1.968E-14	2.627E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205482	ROAD ROW	11/13/18	Gross Alpha/Beta	Gross Alpha	2.976E-15	8.047E-15	1.345E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205482	ROAD ROW	11/13/18	Gross Alpha/Beta	Gross Beta	3.302E-14	1.833E-14	2.627E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205483	ROAD ROW	11/14/18	Gross Alpha/Beta	Gross Alpha	-2.34E-15	6.122E-15	1.358E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205483	ROAD ROW	11/14/18	Gross Alpha/Beta	Gross Beta	2.306E-14	1.745E-14	2.653E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205484	ROAD ROW	11/14/18	Gross Alpha/Beta	Gross Alpha	3.005E-15	8.126E-15	1.358E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205484	ROAD ROW	11/14/18	Gross Alpha/Beta	Gross Beta	2.477E-14	1.763E-14	2.653E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205485	ROAD ROW	11/19/18	Gross Alpha/Beta	Gross Alpha	8.108E-15	9.461E-15	1.319E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205485	ROAD ROW	11/19/18	Gross Alpha/Beta	Gross Beta	2.573E-14	1.73E-14	2.577E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205486	ROAD ROW	11/19/18	Gross Alpha/Beta	Gross Alpha	3.24E-16	6.986E-15	1.319E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205486	ROAD ROW	11/19/18	Gross Alpha/Beta	Gross Beta	3.988E-14	1.873E-14	2.577E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205487	ROAD ROW	11/20/18	Gross Alpha/Beta	Gross Alpha	1.637E-15	7.525E-15	1.332E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205487	ROAD ROW	11/20/18	Gross Alpha/Beta	Gross Beta	5.959E-14	2.079E-14	2.602E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205488	ROAD ROW	11/20/18	Gross Alpha/Beta	Gross Alpha	6.876E-15	9.18E-15	1.332E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205488	ROAD ROW	11/20/18	Gross Alpha/Beta	Gross Beta	5.287E-14	2.015E-14	2.602E-14	µCi/mL	=		Eva Road (General Area)-Perimeter Air
SVP205498	ROAD ROW	11/21/18	Gross Alpha/Beta	Gross Alpha	-9.77E-15	1.021E-14	3.049E-14	µCi/mL			Eva Road (General Area)-Perimeter Air
SVP205498	ROAD ROW	11/21/18	Gross Alpha/Beta	Gross Beta	4.81E-14	4.473E-14	6.469E-14	µCi/mL			Eva Road (General Area)-Perimeter Air
SVP205498-1	ROAD ROW	11/21/18	Gross Alpha/Beta	Gross Alpha	-3.43E-15	1.357E-14	3.049E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205498-1	ROAD ROW	11/21/18	Gross Alpha/Beta	Gross Beta	3.59E-14	4.355E-14	6.469E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205499	ROAD ROW	11/26/18	Gross Alpha/Beta	Gross Alpha	6.378E-15	8.452E-15	1.249E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205499	ROAD ROW	11/26/18	Gross Alpha/Beta	Gross Beta	2.469E-14	1.88E-14	2.649E-14	µCi/mL	UJ	T04, T05	Eva Road (General Area)-Perimeter Air
SVP205500	ROAD ROW	11/26/18	Gross Alpha/Beta	Gross Alpha	1.189E-15	6.658E-15	1.249E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205500	ROAD ROW	11/26/18	Gross Alpha/Beta	Gross Beta	2.968E-14	1.927E-14	2.649E-14	µCi/mL	J	T04, T20	Eva Road (General Area)-Perimeter Air
SVP205501	ROAD ROW	11/27/18	Gross Alpha/Beta	Gross Alpha	-1.43E-15	5.663E-15	1.273E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205501	ROAD ROW	11/27/18	Gross Alpha/Beta	Gross Beta	1.499E-14	1.818E-14	2.7E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205502	ROAD ROW	11/27/18	Gross Alpha/Beta	Gross Alpha	-1.1E-16	6.25E-15	1.273E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205502	ROAD ROW	11/27/18	Gross Alpha/Beta	Gross Beta	1.414E-14	1.81E-14	2.7E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205503	ROAD ROW	11/28/18	Gross Alpha/Beta	Gross Alpha	-2.36E-16	1.341E-14	2.732E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP205503	ROAD ROW	11/28/18	Gross Alpha/Beta	Gross Beta	4.855E-15	3.631E-14	5.795E-14	µCi/mL	UJ	T06	Eva Road (General Area)-Perimeter Air
SVP199232	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Alpha	5.424E-15	8.049E-15	1.245E-14	µCi/mL			Ballfields (General Area)-Perimeter Air
SVP199232	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Beta	4.559E-14	1.979E-14	2.247E-14	µCi/mL			Ballfields (General Area)-Perimeter Air
SVP199232-1	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Alpha	9.668E-15	9.44E-15	1.245E-14	µCi/mL	UJ	T04, T05	Ballfields (General Area)-Perimeter Air
SVP199232-1	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Beta	8.363E-14	2.353E-14	2.247E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199233	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Alpha	1.179E-15	6.375E-15	1.245E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199233	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Beta	3.291E-14	1.847E-14	2.247E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199234	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Alpha	2.594E-15	6.976E-15	1.245E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199234	BALL FIELDS	01/02/18	Gross Alpha/Beta	Gross Beta	3.835E-14	1.904E-14	2.247E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199235	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Alpha	1.352E-14	9.738E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199235	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Beta	7.619E-14	2.099E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199236	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Alpha	1.477E-14	1.006E-14	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199236	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Beta	5.541E-14	1.899E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199237	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Alpha	9.779E-15	8.702E-15	1.099E-14	µCi/mL	UJ	T04, T05	Ballfields (General Area)-Perimeter Air
SVP199237	BALL FIELDS	01/03/18	Gross Alpha/Beta	Gross Beta	3.943E-14	1.738E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199238	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Alpha	7.28E-15	7.94E-15	1.1E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199238	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Beta	1.18E-13	2.47E-14	1.98E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199239	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Alpha	1.352E-14	9.738E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199239	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Beta	5.861E-14	1.93E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199240	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Alpha	1.103E-14	9.06E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199240	BALL FIELDS	01/04/18	Gross Alpha/Beta	Gross Beta	5.941E-14	1.938E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199241	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Alpha	1.352E-14	9.738E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199241	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Beta	1.034E-13	2.347E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199242	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Alpha	7.282E-15	7.94E-15	1.099E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199242	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Beta	6.181E-14	1.961E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199243	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Alpha	1.103E-14	9.06E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199243	BALL FIELDS	01/08/18	Gross Alpha/Beta	Gross Beta	5.541E-14	1.899E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199244	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Alpha	4.786E-15	7.102E-15	1.099E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199244	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Beta	5.781E-14	1.923E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199245	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Alpha	1.103E-14	9.06E-15	1.099E-14	µCi/mL	J	T04, T20	Ballfields (General Area)-Perimeter Air
SVP199245	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Beta	3.703E-14	1.714E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199246	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Alpha	2.289E-15	6.155E-15	1.099E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199246	BALL FIELDS	01/09/18	Gross Alpha/Beta	Gross Beta	4.662E-14	1.812E-14	1.983E-14	µCi/mL	=		Ballfields (General Area)-Perimeter Air
SVP199247	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Alpha	-2.71E-15	3.601E-15	1.099E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199247	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Beta	9.058E-15	1.407E-14	1.983E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199248	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Alpha	-1.46E-15	4.379E-15	1.099E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199248	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Beta	1.226E-14	1.444E-14	1.983E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199249	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Alpha	-2.06E-15	6.203E-15	1.556E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199249	BALL FIELDS	01/10/18	Gross Alpha/Beta	Gross Beta	1.849E-14	2.058E-14	2.809E-14	µCi/mL	UJ	T06	Ballfields (General Area)-Perimeter Air
SVP199310	IA-09	04/12/18	Gross Alpha/Beta	Gross Alpha	-5.92E-15	1.02E-14	2.829E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199310	IA-09	04/12/18	Gross Alpha/Beta	Gross Beta	1.043E-14	2.849E-14	4.745E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199310-1	IA-09	04/12/18	Gross Alpha/Beta	Gross Alpha	8.884E-15	1.672E-14	2.829E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199310-1	IA-09	04/12/18	Gross Alpha/Beta	Gross Beta	2.37E-14	3.024E-14	4.745E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199311	IA-09	04/16/18	Gross Alpha/Beta	Gross Alpha	-1.85E-15	7.349E-15	1.763E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199311	IA-09	04/16/18	Gross Alpha/Beta	Gross Beta	2.54E-14	2.019E-14	2.957E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199312	IA-09	04/17/18	Gross Alpha/Beta	Gross Alpha	7.717E-15	2.037E-14	3.687E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199312	IA-09	04/17/18	Gross Alpha/Beta	Gross Beta	2.347E-14	3.844E-14	6.183E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199313	IA-09	04/19/18	Gross Alpha/Beta	Gross Alpha	0	6.375E-15	1.367E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199313	IA-09	04/19/18	Gross Alpha/Beta	Gross Beta	1.511E-14	1.508E-14	2.293E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199314	IA-09	04/19/18	Gross Alpha/Beta	Gross Alpha	-1.48E-15	5.896E-15	1.415E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199314	IA-09	04/19/18	Gross Alpha/Beta	Gross Beta	1.09E-14	1.5E-14	2.373E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199315	IA-09	04/19/18	Gross Alpha/Beta	Gross Alpha	0	6.597E-15	1.415E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199315	IA-09	04/19/18	Gross Alpha/Beta	Gross Beta	9.005E-15	1.475E-14	2.373E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199316	IA-09	04/24/18	Gross Alpha/Beta	Gross Alpha	6.431E-15	8.132E-15	1.229E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199316	IA-09	04/24/18	Gross Alpha/Beta	Gross Beta	1.112E-14	1.324E-14	2.061E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199317	IA-09	04/24/18	Gross Alpha/Beta	Gross Alpha	2.572E-15	6.79E-15	1.229E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199317	IA-09	04/24/18	Gross Alpha/Beta	Gross Beta	1.359E-14	1.355E-14	2.061E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199318	IA-09	04/24/18	Gross Alpha/Beta	Gross Alpha	2.625E-15	6.93E-15	1.254E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199318	IA-09	04/24/18	Gross Alpha/Beta	Gross Beta	1.261E-15	1.217E-14	2.104E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199319	IA-09	04/26/18	Gross Alpha/Beta	Gross Alpha	-1.2E-15	4.784E-15	1.148E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199319	IA-09	04/26/18	Gross Alpha/Beta	Gross Beta	3.422E-14	1.521E-14	1.925E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199320	IA-09	04/26/18	Gross Alpha/Beta	Gross Alpha	0	5.352E-15	1.148E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199320	IA-09	04/26/18	Gross Alpha/Beta	Gross Beta	1.269E-14	1.266E-14	1.925E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199321	IA-09	04/26/18	Gross Alpha/Beta	Gross Alpha	-3.6E-15	3.375E-15	1.148E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199321	IA-09	04/26/18	Gross Alpha/Beta	Gross Beta	1.884E-14	1.342E-14	1.925E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199322	IA-09	04/27/18	Gross Alpha/Beta	Gross Alpha	0	5.455E-15	1.17E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199322	IA-09	04/27/18	Gross Alpha/Beta	Gross Beta	1.607E-14	1.33E-14	1.962E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199323	IA-09	04/27/18	Gross Alpha/Beta	Gross Alpha	2.449E-15	6.464E-15	1.17E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199323	IA-09	04/27/18	Gross Alpha/Beta	Gross Beta	2.704E-14	1.461E-14	1.962E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199324	IA-09	04/27/18	Gross Alpha/Beta	Gross Alpha	2.449E-15	6.464E-15	1.17E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199324	IA-09	04/27/18	Gross Alpha/Beta	Gross Beta	2.704E-14	1.461E-14	1.962E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199325	IA-09	04/30/18	Gross Alpha/Beta	Gross Alpha	1.092E-14	9.094E-15	1.159E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199325	IA-09	04/30/18	Gross Alpha/Beta	Gross Beta	3.377E-14	1.527E-14	1.943E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199326	IA-09	04/30/18	Gross Alpha/Beta	Gross Alpha	2.425E-15	6.402E-15	1.159E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199326	IA-09	04/30/18	Gross Alpha/Beta	Gross Beta	2.213E-14	1.392E-14	1.943E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199327	IA-09	04/30/18	Gross Alpha/Beta	Gross Alpha	0	5.403E-15	1.159E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199327	IA-09	04/30/18	Gross Alpha/Beta	Gross Beta	2.989E-14	1.483E-14	1.943E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199328	IA-09	05/01/18	Gross Alpha/Beta	Gross Alpha	2.894E-15	7.636E-15	1.078E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199328	IA-09	05/01/18	Gross Alpha/Beta	Gross Beta	4.357E-14	1.769E-14	2.008E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199328-1	IA-09	05/01/18	Gross Alpha/Beta	Gross Alpha	9.325E-15	9.58E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199328-1	IA-09	05/01/18	Gross Alpha/Beta	Gross Beta	3.369E-14	1.663E-14	2.008E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199329	IA-09	05/01/18	Gross Alpha/Beta	Gross Alpha	1.608E-15	7.188E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199329	IA-09	05/01/18	Gross Alpha/Beta	Gross Beta	2.052E-14	1.515E-14	2.008E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199330	IA-09	05/01/18	Gross Alpha/Beta	Gross Alpha	3.22E-16	6.711E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199330	IA-09	05/01/18	Gross Alpha/Beta	Gross Beta	2.299E-14	1.544E-14	2.008E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199331	IA-09	05/02/18	Gross Alpha/Beta	Gross Alpha	4.736E-15	1.25E-14	1.765E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199331	IA-09	05/02/18	Gross Alpha/Beta	Gross Beta	1.875E-14	2.305E-14	3.286E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199332	IA-09	05/02/18	Gross Alpha/Beta	Gross Alpha	5.31E-16	1.107E-14	1.779E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199332	IA-09	05/02/18	Gross Alpha/Beta	Gross Beta	2.027E-14	2.341E-14	3.313E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199333	IA-09	05/02/18	Gross Alpha/Beta	Gross Alpha	9.02E-15	1.397E-14	1.779E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199333	IA-09	05/02/18	Gross Alpha/Beta	Gross Beta	3.657E-14	2.532E-14	3.313E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199334	IA-09	05/03/18	Gross Alpha/Beta	Gross Alpha	8.953E-15	2.362E-14	3.336E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199334	IA-09	05/03/18	Gross Alpha/Beta	Gross Beta	2.335E-15	3.944E-14	6.212E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199335	IA-09	05/03/18	Gross Alpha/Beta	Gross Alpha	8.953E-15	2.362E-14	3.336E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199335	IA-09	05/03/18	Gross Alpha/Beta	Gross Beta	1.253E-14	4.074E-14	6.212E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199336	IA-09	05/03/18	Gross Alpha/Beta	Gross Alpha	8.953E-15	2.362E-14	3.336E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199336	IA-09	05/03/18	Gross Alpha/Beta	Gross Beta	2.526E-14	4.233E-14	6.212E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199337	IA-09	05/08/18	Gross Alpha/Beta	Gross Alpha	8.548E-15	8.781E-15	9.886E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199337	IA-09	05/08/18	Gross Alpha/Beta	Gross Beta	1.126E-14	1.3E-14	1.841E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199338	IA-09	05/08/18	Gross Alpha/Beta	Gross Alpha	7.403E-15	8.493E-15	9.932E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199338	IA-09	05/08/18	Gross Alpha/Beta	Gross Beta	1.359E-14	1.334E-14	1.849E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199339	IA-09	05/08/18	Gross Alpha/Beta	Gross Alpha	5.011E-15	7.759E-15	9.886E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199339	IA-09	05/08/18	Gross Alpha/Beta	Gross Beta	2.107E-14	1.415E-14	1.841E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199340	IA-09	05/10/18	Gross Alpha/Beta	Gross Alpha	7.58E-15	8.695E-15	1.017E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199340	IA-09	05/10/18	Gross Alpha/Beta	Gross Beta	3.876E-14	1.643E-14	1.893E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199341	IA-09	05/10/18	Gross Alpha/Beta	Gross Alpha	1.106E-14	9.537E-15	1.003E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199341	IA-09	05/10/18	Gross Alpha/Beta	Gross Beta	3.897E-14	1.628E-14	1.867E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199342	IA-09	05/10/18	Gross Alpha/Beta	Gross Alpha	3.96E-15	7.636E-15	1.022E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199342	IA-09	05/10/18	Gross Alpha/Beta	Gross Beta	4.128E-14	1.676E-14	1.902E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199342-1	IA-09	05/10/18	Gross Alpha/Beta	Gross Alpha	1.249E-14	1.003E-14	1.022E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199342-1	IA-09	05/10/18	Gross Alpha/Beta	Gross Beta	3.114E-14	1.567E-14	1.902E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199343	IA-09	05/15/18	Gross Alpha/Beta	Gross Alpha	8.877E-15	9.119E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199343	IA-09	05/15/18	Gross Alpha/Beta	Gross Beta	2.11E-14	1.461E-14	1.912E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199344	IA-09	05/15/18	Gross Alpha/Beta	Gross Alpha	6.428E-15	8.425E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199344	IA-09	05/15/18	Gross Alpha/Beta	Gross Beta	3.051E-14	1.566E-14	1.912E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199345	IA-09	05/15/18	Gross Alpha/Beta	Gross Alpha	-2.14E-15	5.37E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199345	IA-09	05/15/18	Gross Alpha/Beta	Gross Beta	1.953E-14	1.443E-14	1.912E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199346	IA-09	05/16/18	Gross Alpha/Beta	Gross Alpha	7.652E-15	8.779E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199346	IA-09	05/16/18	Gross Alpha/Beta	Gross Beta	8.557E-15	1.312E-14	1.912E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199347	IA-09	05/16/18	Gross Alpha/Beta	Gross Alpha	5.204E-15	8.057E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199347	IA-09	05/16/18	Gross Alpha/Beta	Gross Beta	2.502E-14	1.505E-14	1.912E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199348	IA-09	05/16/18	Gross Alpha/Beta	Gross Alpha	6.428E-15	8.425E-15	1.027E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199348	IA-09	05/16/18	Gross Alpha/Beta	Gross Beta	3.442E-14	1.608E-14	1.912E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199349	IA-09	05/17/18	Gross Alpha/Beta	Gross Alpha	5.058E-15	7.832E-15	9.978E-15	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199349	IA-09	05/17/18	Gross Alpha/Beta	Gross Beta	2.813E-14	1.505E-14	1.858E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199349-1	IA-09	05/17/18	Gross Alpha/Beta	Gross Alpha	5.058E-15	7.832E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199349-1	IA-09	05/17/18	Gross Alpha/Beta	Gross Beta	4.489E-14	1.684E-14	1.858E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199350	IA-09	05/17/18	Gross Alpha/Beta	Gross Alpha	5.058E-15	7.832E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199350	IA-09	05/17/18	Gross Alpha/Beta	Gross Beta	2.965E-14	1.522E-14	1.858E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199351	IA-09	05/17/18	Gross Alpha/Beta	Gross Alpha	7.369E-15	8.453E-15	9.886E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199351	IA-09	05/17/18	Gross Alpha/Beta	Gross Beta	3.541E-14	1.573E-14	1.841E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199352	IA-09	05/21/18	Gross Alpha/Beta	Gross Alpha	4.18E-15	8.06E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199352	IA-09	05/21/18	Gross Alpha/Beta	Gross Beta	2.052E-14	1.515E-14	2.008E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199353	IA-09	05/21/18	Gross Alpha/Beta	Gross Alpha	1.608E-15	7.188E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199353	IA-09	05/21/18	Gross Alpha/Beta	Gross Beta	2.875E-14	1.609E-14	2.008E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199354	IA-09	05/21/18	Gross Alpha/Beta	Gross Alpha	5.466E-15	8.464E-15	1.078E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199354	IA-09	05/21/18	Gross Alpha/Beta	Gross Beta	3.863E-14	1.716E-14	2.008E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199355	IA-09	05/22/18	Gross Alpha/Beta	Gross Alpha	3.832E-15	7.389E-15	9.886E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199355	IA-09	05/22/18	Gross Alpha/Beta	Gross Beta	2.862E-14	1.5E-14	1.841E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199356	IA-09	05/22/18	Gross Alpha/Beta	Gross Alpha	3.95E-16	5.525E-15	6.67E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199356	IA-09	05/22/18	Gross Alpha/Beta	Gross Beta	1.157E-15	9.672E-15	1.332E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199357	IA-09	05/22/18	Gross Alpha/Beta	Gross Alpha	2.678E-15	7.065E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199357	IA-09	05/22/18	Gross Alpha/Beta	Gross Beta	2.356E-14	1.454E-14	1.858E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199358	IA-09	05/23/18	Gross Alpha/Beta	Gross Alpha	6.367E-15	1.68E-14	2.373E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199358	IA-09	05/23/18	Gross Alpha/Beta	Gross Beta	2.521E-14	3.099E-14	4.418E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199359	IA-09	05/23/18	Gross Alpha/Beta	Gross Alpha	9.196E-15	1.773E-14	2.373E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199359	IA-09	05/23/18	Gross Alpha/Beta	Gross Beta	6.869E-14	3.599E-14	4.418E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199360	IA-09	05/23/18	Gross Alpha/Beta	Gross Alpha	6.367E-15	1.68E-14	2.373E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199360	IA-09	05/23/18	Gross Alpha/Beta	Gross Beta	6.688E-14	3.579E-14	4.418E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199361	IA-09	05/24/18	Gross Alpha/Beta	Gross Alpha	3.868E-15	7.458E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199361	IA-09	05/24/18	Gross Alpha/Beta	Gross Beta	2.356E-14	1.454E-14	1.858E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199362	IA-09	05/24/18	Gross Alpha/Beta	Gross Alpha	2.678E-15	7.065E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199362	IA-09	05/24/18	Gross Alpha/Beta	Gross Beta	3.727E-14	1.604E-14	1.858E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199363	IA-09	05/24/18	Gross Alpha/Beta	Gross Alpha	3.868E-15	7.458E-15	9.978E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199363	IA-09	05/24/18	Gross Alpha/Beta	Gross Beta	1.06E-14	1.303E-14	1.858E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199364	IA-09	05/30/18	Gross Alpha/Beta	Gross Alpha	4.414E-15	6.502E-15	1.024E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199364	IA-09	05/30/18	Gross Alpha/Beta	Gross Beta	5.192E-15	1.758E-14	2.48E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199364-1	IA-09	05/30/18	Gross Alpha/Beta	Gross Alpha	5.676E-15	6.978E-15	1.024E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199364-1	IA-09	05/30/18	Gross Alpha/Beta	Gross Beta	2.785E-14	1.964E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199365	IA-09	05/30/18	Gross Alpha/Beta	Gross Alpha	3.153E-15	5.989E-15	1.024E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199365	IA-09	05/30/18	Gross Alpha/Beta	Gross Beta	1.571E-14	1.855E-14	2.48E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199366	IA-09	05/30/18	Gross Alpha/Beta	Gross Alpha	6.937E-15	7.425E-15	1.024E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199366	IA-09	05/30/18	Gross Alpha/Beta	Gross Beta	2.623E-14	1.95E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199367	IA-09	05/29/18	Gross Alpha/Beta	Gross Alpha	2.197E-15	6.305E-15	1.189E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199367	IA-09	05/29/18	Gross Alpha/Beta	Gross Beta	2.576E-14	2.222E-14	2.88E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199368	IA-09	05/29/18	Gross Alpha/Beta	Gross Alpha	2.197E-15	6.305E-15	1.189E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199368	IA-09	05/29/18	Gross Alpha/Beta	Gross Beta	3.798E-14	2.331E-14	2.88E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199369	IA-09	05/31/18	Gross Alpha/Beta	Gross Alpha	4.584E-15	6.752E-15	1.064E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199369	IA-09	05/31/18	Gross Alpha/Beta	Gross Beta	2.808E-14	2.033E-14	2.575E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199370	IA-09	05/31/18	Gross Alpha/Beta	Gross Alpha	3.274E-15	6.219E-15	1.064E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199370	IA-09	05/31/18	Gross Alpha/Beta	Gross Beta	3.312E-14	2.077E-14	2.575E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199371	IA-09	05/31/18	Gross Alpha/Beta	Gross Alpha	3.274E-15	6.219E-15	1.064E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199371	IA-09	05/31/18	Gross Alpha/Beta	Gross Beta	2.64E-14	2.017E-14	2.575E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199372	IA-09	06/04/18	Gross Alpha/Beta	Gross Alpha	-6.43E-16	4.168E-15	1.044E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199372	IA-09	06/04/18	Gross Alpha/Beta	Gross Beta	2.837E-14	2.002E-14	2.527E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199373	IA-09	06/04/18	Gross Alpha/Beta	Gross Alpha	6.43E-16	4.897E-15	1.044E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199373	IA-09	06/04/18	Gross Alpha/Beta	Gross Beta	3.44E-16	1.744E-14	2.527E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199374	IA-09	06/04/18	Gross Alpha/Beta	Gross Alpha	-6.43E-16	4.168E-15	1.044E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199374	IA-09	06/04/18	Gross Alpha/Beta	Gross Beta	2.26E-14	1.95E-14	2.527E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199375	IA-09	06/05/18	Gross Alpha/Beta	Gross Alpha	6.25E-16	4.762E-15	1.015E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199375	IA-09	06/05/18	Gross Alpha/Beta	Gross Beta	2.118E-14	1.889E-14	2.457E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199376	IA-09	06/05/18	Gross Alpha/Beta	Gross Alpha	5.729E-15	7.044E-15	1.034E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199376	IA-09	06/05/18	Gross Alpha/Beta	Gross Beta	2.484E-14	1.954E-14	2.503E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199377	IA-09	06/05/18	Gross Alpha/Beta	Gross Alpha	5.729E-15	7.044E-15	1.034E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199377	IA-09	06/05/18	Gross Alpha/Beta	Gross Beta	3.219E-14	2.019E-14	2.503E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199378	IA-09	05/29/18	Gross Alpha/Beta	Gross Alpha	-2.2E-15	3.743E-15	1.189E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199378	IA-09	05/29/18	Gross Alpha/Beta	Gross Beta	3.046E-14	2.265E-14	2.88E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199379	IA-09	06/06/18	Gross Alpha/Beta	Gross Alpha	9.1E-16	6.293E-15	1.184E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP199379	IA-09	06/06/18	Gross Alpha/Beta	Gross Beta	5.254E-14	1.694E-14	1.856E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP199379-1	IA-09	06/06/18	Gross Alpha/Beta	Gross Alpha	-1.52E-15	5.277E-15	1.184E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199379-1	IA-09	06/06/18	Gross Alpha/Beta	Gross Beta	3.002E-14	1.443E-14	1.856E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199380	IA-09	06/06/18	Gross Alpha/Beta	Gross Alpha	3.335E-15	7.171E-15	1.184E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199380	IA-09	06/06/18	Gross Alpha/Beta	Gross Beta	5.642E-14	1.735E-14	1.856E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199381	IA-09	06/06/18	Gross Alpha/Beta	Gross Alpha	9.1E-16	6.293E-15	1.184E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199381	IA-09	06/06/18	Gross Alpha/Beta	Gross Beta	3.08E-14	1.452E-14	1.856E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199382	IA-09	06/07/18	Gross Alpha/Beta	Gross Alpha	-1.5E-15	5.227E-15	1.173E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199382	IA-09	06/07/18	Gross Alpha/Beta	Gross Beta	4.435E-14	1.595E-14	1.839E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199383	IA-09	06/07/18	Gross Alpha/Beta	Gross Alpha	2.122E-15	6.746E-15	1.184E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199383	IA-09	06/07/18	Gross Alpha/Beta	Gross Beta	1.837E-14	1.301E-14	1.856E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP199384	IA-09	06/07/18	Gross Alpha/Beta	Gross Alpha	4.505E-15	7.501E-15	1.173E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199384	IA-09	06/07/18	Gross Alpha/Beta	Gross Beta	4.281E-14	1.578E-14	1.839E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199385	IA-09	06/11/18	Gross Alpha/Beta	Gross Alpha	9.18E-16	6.354E-15	1.196E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199385	IA-09	06/11/18	Gross Alpha/Beta	Gross Beta	2.717E-14	1.419E-14	1.874E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP199386	IA-09	06/11/18	Gross Alpha/Beta	Gross Alpha	-3.15E-16	6.037E-15	1.231E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199386	IA-09	06/11/18	Gross Alpha/Beta	Gross Beta	3.525E-14	1.547E-14	1.93E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199387	IA-09	06/11/18	Gross Alpha/Beta	Gross Alpha	3.502E-15	7.529E-15	1.244E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199387	IA-09	06/11/18	Gross Alpha/Beta	Gross Beta	3.641E-14	1.572E-14	1.949E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199388	IA-09	06/19/18	Gross Alpha/Beta	Gross Alpha	6.985E-15	5.855E-15	7.146E-15	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199388	IA-09	06/19/18	Gross Alpha/Beta	Gross Beta	2.969E-14	1.44E-14	1.907E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199388-1	IA-09	06/19/18	Gross Alpha/Beta	Gross Alpha	7.64E-15	6.004E-15	7.146E-15	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199388-1	IA-09	06/19/18	Gross Alpha/Beta	Gross Beta	4.355E-14	1.535E-14	1.907E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199389	IA-09	06/19/18	Gross Alpha/Beta	Gross Alpha	4.366E-15	7.415E-15	1.087E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199389	IA-09	06/19/18	Gross Alpha/Beta	Gross Beta	2.997E-14	1.908E-14	2.571E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199390	IA-09	06/19/18	Gross Alpha/Beta	Gross Alpha	8.376E-15	8.791E-15	1.097E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199390	IA-09	06/19/18	Gross Alpha/Beta	Gross Beta	1.414E-14	1.77E-14	2.596E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199391	IA-09	06/20/18	Gross Alpha/Beta	Gross Alpha	1.651E-14	1.961E-14	2.569E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199391	IA-09	06/20/18	Gross Alpha/Beta	Gross Beta	4.105E-14	4.221E-14	6.076E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199392	IA-09	06/20/18	Gross Alpha/Beta	Gross Alpha	1.032E-15	1.385E-14	2.569E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199392	IA-09	06/20/18	Gross Alpha/Beta	Gross Beta	5.892E-14	4.396E-14	6.076E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199393	IA-09	06/20/18	Gross Alpha/Beta	Gross Alpha	1.032E-14	1.753E-14	2.569E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199393	IA-09	06/20/18	Gross Alpha/Beta	Gross Beta	4.105E-14	4.221E-14	6.076E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199394	IA-09	06/21/18	Gross Alpha/Beta	Gross Alpha	4.324E-15	7.344E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199394	IA-09	06/21/18	Gross Alpha/Beta	Gross Beta	2.136E-14	1.81E-14	2.546E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199395	IA-09	06/21/18	Gross Alpha/Beta	Gross Alpha	8.216E-15	8.624E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199395	IA-09	06/21/18	Gross Alpha/Beta	Gross Beta	3.135E-14	1.906E-14	2.546E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199396	IA-09	06/21/18	Gross Alpha/Beta	Gross Alpha	8.216E-15	8.624E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199396	IA-09	06/21/18	Gross Alpha/Beta	Gross Beta	4.05E-14	1.993E-14	2.546E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199397	IA-09	06/25/18	Gross Alpha/Beta	Gross Alpha	5.568E-15	7.72E-15	1.066E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199397	IA-09	06/25/18	Gross Alpha/Beta	Gross Beta	1.539E-14	1.736E-14	2.522E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199398	IA-09	06/25/18	Gross Alpha/Beta	Gross Alpha	5.568E-15	7.72E-15	1.066E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199398	IA-09	06/25/18	Gross Alpha/Beta	Gross Beta	3.435E-14	1.919E-14	2.522E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199399	IA-09	06/25/18	Gross Alpha/Beta	Gross Alpha	6.853E-15	8.141E-15	1.066E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199399	IA-09	06/25/18	Gross Alpha/Beta	Gross Beta	3.765E-14	1.951E-14	2.522E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199400	IA-09	06/27/18	Gross Alpha/Beta	Gross Alpha	9.335E-15	8.843E-15	1.056E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199400	IA-09	06/27/18	Gross Alpha/Beta	Gross Beta	1.933E-14	1.76E-14	2.499E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199401	IA-09	06/27/18	Gross Alpha/Beta	Gross Alpha	2.97E-15	6.739E-15	1.056E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199401	IA-09	06/27/18	Gross Alpha/Beta	Gross Beta	1.933E-14	1.76E-14	2.499E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199402	IA-09	06/27/18	Gross Alpha/Beta	Gross Alpha	2.984E-15	6.771E-15	1.061E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199402	IA-09	06/27/18	Gross Alpha/Beta	Gross Beta	2.927E-14	1.864E-14	2.51E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199403	IA-09	06/28/18	Gross Alpha/Beta	Gross Alpha	3.027E-15	6.868E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199403	IA-09	06/28/18	Gross Alpha/Beta	Gross Beta	1.47E-14	1.744E-14	2.546E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199404	IA-09	06/28/18	Gross Alpha/Beta	Gross Alpha	4.324E-15	7.344E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199404	IA-09	06/28/18	Gross Alpha/Beta	Gross Beta	3.551E-14	1.946E-14	2.546E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199405	IA-09	06/28/18	Gross Alpha/Beta	Gross Alpha	1.73E-15	6.356E-15	1.077E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199405	IA-09	06/28/18	Gross Alpha/Beta	Gross Beta	3.801E-14	1.969E-14	2.546E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199406	IA-09	07/02/18	Gross Alpha/Beta	Gross Alpha	6.425E-15	7.416E-15	1.11E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199406	IA-09	07/02/18	Gross Alpha/Beta	Gross Beta	1.931E-14	1.877E-14	2.612E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP199406-1	IA-09	07/02/18	Gross Alpha/Beta	Gross Alpha	1.414E-14	9.766E-15	1.11E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199406-1	IA-09	07/02/18	Gross Alpha/Beta	Gross Beta	6.877E-14	2.316E-14	2.612E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199407	IA-09	07/02/18	Gross Alpha/Beta	Gross Alpha	7.784E-15	7.929E-15	1.121E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199407	IA-09	07/02/18	Gross Alpha/Beta	Gross Beta	3.697E-14	2.054E-14	2.636E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199408	IA-09	07/02/18	Gross Alpha/Beta	Gross Alpha	1.31E-14	9.594E-15	1.131E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199408	IA-09	07/02/18	Gross Alpha/Beta	Gross Beta	3.732E-14	2.074E-14	2.662E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199409	IA-09	07/03/18	Gross Alpha/Beta	Gross Alpha	1.285E-14	9.413E-15	1.11E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199409	IA-09	07/03/18	Gross Alpha/Beta	Gross Beta	6.052E-14	2.245E-14	2.612E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199410	IA-09	07/03/18	Gross Alpha/Beta	Gross Alpha	1.825E-14	1.091E-14	1.126E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199410	IA-09	07/03/18	Gross Alpha/Beta	Gross Beta	5.219E-14	2.197E-14	2.649E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199411	IA-09	07/03/18	Gross Alpha/Beta	Gross Alpha	1.095E-14	8.562E-15	1.05E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199411	IA-09	07/03/18	Gross Alpha/Beta	Gross Beta	5.416E-14	2.098E-14	2.472E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199412	IA-09	07/09/18	Gross Alpha/Beta	Gross Alpha	5.092E-15	6.886E-15	1.1E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199412	IA-09	07/09/18	Gross Alpha/Beta	Gross Beta	5.179E-14	2.153E-14	2.587E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199413	IA-09	07/09/18	Gross Alpha/Beta	Gross Alpha	1.782E-14	1.066E-14	1.1E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199413	IA-09	07/09/18	Gross Alpha/Beta	Gross Beta	5.098E-14	2.146E-14	2.587E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199414	IA-09	07/09/18	Gross Alpha/Beta	Gross Alpha	8.911E-15	8.193E-15	1.1E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199414	IA-09	07/09/18	Gross Alpha/Beta	Gross Beta	1.259E-14	1.798E-14	2.587E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199415	IA-09	07/10/18	Gross Alpha/Beta	Gross Alpha	8.911E-15	8.193E-15	1.1E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199415	IA-09	07/10/18	Gross Alpha/Beta	Gross Beta	4.771E-14	2.117E-14	2.587E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199416	IA-09	07/10/18	Gross Alpha/Beta	Gross Alpha	6.395E-15	7.381E-15	1.105E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199416	IA-09	07/10/18	Gross Alpha/Beta	Gross Beta	2.332E-14	1.906E-14	2.599E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199417	IA-09	07/10/18	Gross Alpha/Beta	Gross Alpha	1.009E-14	8.506E-15	1.089E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199417	IA-09	07/10/18	Gross Alpha/Beta	Gross Beta	4.16E-14	2.048E-14	2.563E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP199418	IA-09	07/11/18	Gross Alpha/Beta	Gross Alpha	6.306E-15	7.278E-15	1.089E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199418	IA-09	07/11/18	Gross Alpha/Beta	Gross Beta	1.895E-14	1.842E-14	2.563E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199419	IA-09	07/11/18	Gross Alpha/Beta	Gross Alpha	1.514E-14	9.92E-15	1.089E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199419	IA-09	07/11/18	Gross Alpha/Beta	Gross Beta	2.785E-14	1.924E-14	2.563E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199420	IA-09	07/11/18	Gross Alpha/Beta	Gross Alpha	0	4.58E-15	1.089E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199420	IA-09	07/11/18	Gross Alpha/Beta	Gross Beta	3.028E-14	1.946E-14	2.563E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP199421	IA-09	07/12/18	Gross Alpha/Beta	Gross Alpha	1.273E-15	5.278E-15	1.1E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP199421	IA-09	07/12/18	Gross Alpha/Beta	Gross Beta	1.259E-14	1.798E-14	2.587E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205380	IA-09	07/12/18	Gross Alpha/Beta	Gross Alpha	-2.98E-16	4.755E-15	1.057E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205380	IA-09	07/12/18	Gross Alpha/Beta	Gross Beta	3.892E-14	1.699E-14	1.834E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205380-1	IA-09	07/12/18	Gross Alpha/Beta	Gross Alpha	6.843E-15	7.538E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205380-1	IA-09	07/12/18	Gross Alpha/Beta	Gross Beta	3.968E-14	1.707E-14	1.834E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205381	IA-09	07/12/18	Gross Alpha/Beta	Gross Alpha	3.273E-15	6.297E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205381	IA-09	07/12/18	Gross Alpha/Beta	Gross Beta	1.987E-14	1.501E-14	1.834E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205382	IA-09	07/16/18	Gross Alpha/Beta	Gross Alpha	5.626E-15	7.114E-15	1.052E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205382	IA-09	07/16/18	Gross Alpha/Beta	Gross Beta	3.571E-14	1.66E-14	1.825E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205383	IA-09	07/16/18	Gross Alpha/Beta	Gross Alpha	7.958E-15	7.837E-15	1.047E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205383	IA-09	07/16/18	Gross Alpha/Beta	Gross Beta	6.12E-14	1.904E-14	1.817E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205384	IA-09	07/16/18	Gross Alpha/Beta	Gross Alpha	9.054E-15	8.114E-15	1.037E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205384	IA-09	07/16/18	Gross Alpha/Beta	Gross Beta	4.344E-14	1.72E-14	1.8E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205385	IA-09	07/17/18	Gross Alpha/Beta	Gross Alpha	6.843E-15	7.538E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205385	IA-09	07/17/18	Gross Alpha/Beta	Gross Beta	2.368E-14	1.541E-14	1.834E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205386	IA-09	07/17/18	Gross Alpha/Beta	Gross Alpha	9.223E-15	8.266E-15	1.057E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205386	IA-09	07/17/18	Gross Alpha/Beta	Gross Beta	3.054E-14	1.613E-14	1.834E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205387	IA-09	07/17/18	Gross Alpha/Beta	Gross Alpha	3.273E-15	6.297E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205387	IA-09	07/17/18	Gross Alpha/Beta	Gross Beta	1.759E-14	1.476E-14	1.834E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205388	IA-09	07/18/18	Gross Alpha/Beta	Gross Alpha	8.93E-16	5.318E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205388	IA-09	07/18/18	Gross Alpha/Beta	Gross Beta	1.53E-14	1.451E-14	1.834E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205389	IA-09	07/18/18	Gross Alpha/Beta	Gross Alpha	5.653E-15	7.147E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205389	IA-09	07/18/18	Gross Alpha/Beta	Gross Beta	3.206E-14	1.629E-14	1.834E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205390	IA-09	07/18/18	Gross Alpha/Beta	Gross Alpha	5.653E-15	7.147E-15	1.057E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205390	IA-09	07/18/18	Gross Alpha/Beta	Gross Beta	5.035E-14	1.812E-14	1.834E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205391	IA-09	07/19/18	Gross Alpha/Beta	Gross Alpha	-6.92E-16	1.106E-14	2.458E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205391	IA-09	07/19/18	Gross Alpha/Beta	Gross Beta	3.382E-14	3.355E-14	4.265E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205392	IA-09	07/19/18	Gross Alpha/Beta	Gross Alpha	1.869E-14	1.84E-14	2.458E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205392	IA-09	07/19/18	Gross Alpha/Beta	Gross Beta	1.255E-14	3.114E-14	4.265E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205393	IA-09	07/19/18	Gross Alpha/Beta	Gross Alpha	2.145E-14	1.923E-14	2.458E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205393	IA-09	07/19/18	Gross Alpha/Beta	Gross Beta	7.99E-14	3.844E-14	4.265E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205394	IA-09	07/24/18	Gross Alpha/Beta	Gross Alpha	7.958E-15	7.837E-15	1.047E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205394	IA-09	07/24/18	Gross Alpha/Beta	Gross Beta	3.931E-14	1.691E-14	1.817E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205395	IA-09	07/24/18	Gross Alpha/Beta	Gross Alpha	1.182E-14	9.108E-15	1.077E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205395	IA-09	07/24/18	Gross Alpha/Beta	Gross Beta	3.733E-14	1.708E-14	1.869E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205396	IA-09	07/24/18	Gross Alpha/Beta	Gross Alpha	6.907E-15	7.609E-15	1.067E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205396	IA-09	07/24/18	Gross Alpha/Beta	Gross Beta	3.237E-14	1.644E-14	1.851E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205397	IA-09	07/25/18	Gross Alpha/Beta	Gross Alpha	6.907E-15	7.609E-15	1.067E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205397	IA-09	07/25/18	Gross Alpha/Beta	Gross Beta	3.313E-14	1.652E-14	1.851E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205398	IA-09	07/25/18	Gross Alpha/Beta	Gross Alpha	1.114E-14	8.577E-15	1.014E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205398	IA-09	07/25/18	Gross Alpha/Beta	Gross Beta	2.492E-14	1.502E-14	1.76E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205399	IA-09	07/25/18	Gross Alpha/Beta	Gross Alpha	2.026E-15	5.668E-15	1.028E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205399	IA-09	07/25/18	Gross Alpha/Beta	Gross Beta	2.007E-14	1.468E-14	1.784E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205400	IA-09	07/26/18	Gross Alpha/Beta	Gross Alpha	4.681E-15	7.708E-15	1.301E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205400	IA-09	07/26/18	Gross Alpha/Beta	Gross Beta	5.608E-14	2.116E-14	2.764E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205401	IA-09	07/26/18	Gross Alpha/Beta	Gross Alpha	-2.38E-15	4.53E-15	1.321E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205401	IA-09	07/26/18	Gross Alpha/Beta	Gross Beta	3.958E-14	1.975E-14	2.808E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205402	IA-09	07/26/18	Gross Alpha/Beta	Gross Alpha	3.311E-15	7.249E-15	1.314E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205402	IA-09	07/26/18	Gross Alpha/Beta	Gross Beta	5.302E-14	2.102E-14	2.793E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205403	IA-09	07/30/18	Gross Alpha/Beta	Gross Alpha	4.13E-16	5.265E-15	1.147E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205403	IA-09	07/30/18	Gross Alpha/Beta	Gross Beta	5.184E-14	1.889E-14	2.438E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205404	IA-09	07/30/18	Gross Alpha/Beta	Gross Alpha	1.145E-14	9.058E-15	1.137E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205404	IA-09	07/30/18	Gross Alpha/Beta	Gross Beta	5.688E-14	1.925E-14	2.416E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205405	IA-09	07/30/18	Gross Alpha/Beta	Gross Alpha	6.545E-15	7.585E-15	1.137E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205405	IA-09	07/30/18	Gross Alpha/Beta	Gross Beta	3.09E-14	1.667E-14	2.416E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205406	IA-09	07/31/18	Gross Alpha/Beta	Gross Alpha	-1.09E-15	6.157E-15	1.52E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205406	IA-09	07/31/18	Gross Alpha/Beta	Gross Beta	6.554E-14	2.473E-14	3.23E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205407	IA-09	07/31/18	Gross Alpha/Beta	Gross Alpha	2.188E-15	7.712E-15	1.52E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205407	IA-09	07/31/18	Gross Alpha/Beta	Gross Beta	1.395E-14	1.934E-14	3.23E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205408	IA-09	07/31/18	Gross Alpha/Beta	Gross Alpha	-4.38E-15	4.056E-15	1.52E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205408	IA-09	07/31/18	Gross Alpha/Beta	Gross Beta	4.554E-14	2.272E-14	3.23E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205409	IA-09	08/01/18	Gross Alpha/Beta	Gross Alpha	6.047E-15	1.005E-14	1.243E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205409	IA-09	08/01/18	Gross Alpha/Beta	Gross Beta	2.627E-14	1.789E-14	2.591E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205409-1	IA-09	08/01/18	Gross Alpha/Beta	Gross Alpha	4.774E-15	9.716E-15	1.243E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205409-1	IA-09	08/01/18	Gross Alpha/Beta	Gross Beta	3.607E-14	1.884E-14	2.591E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205410	IA-09	08/01/18	Gross Alpha/Beta	Gross Alpha	7.32E-15	1.037E-14	1.243E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205410	IA-09	08/01/18	Gross Alpha/Beta	Gross Beta	3.689E-14	1.892E-14	2.591E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205411	IA-09	08/01/18	Gross Alpha/Beta	Gross Alpha	8.593E-15	1.068E-14	1.243E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205411	IA-09	08/01/18	Gross Alpha/Beta	Gross Beta	3.852E-14	1.908E-14	2.591E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205412	IA-09	08/02/18	Gross Alpha/Beta	Gross Alpha	3.567E-15	9.552E-15	1.267E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205412	IA-09	08/02/18	Gross Alpha/Beta	Gross Beta	2.095E-14	1.765E-14	2.641E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205413	IA-09	08/02/18	Gross Alpha/Beta	Gross Alpha	8.757E-15	1.089E-14	1.267E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205413	IA-09	08/02/18	Gross Alpha/Beta	Gross Beta	5.84E-14	2.123E-14	2.641E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205414	IA-09	08/02/18	Gross Alpha/Beta	Gross Alpha	1.265E-14	1.179E-14	1.267E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205414	IA-09	08/02/18	Gross Alpha/Beta	Gross Beta	4.092E-14	1.96E-14	2.641E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205415	IA-09	08/06/18	Gross Alpha/Beta	Gross Alpha	1.032E-14	2.1E-14	2.687E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205415	IA-09	08/06/18	Gross Alpha/Beta	Gross Beta	9.121E-15	3.382E-14	5.601E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205416	IA-09	08/06/18	Gross Alpha/Beta	Gross Alpha	-3.44E-15	1.701E-14	2.687E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205416	IA-09	08/06/18	Gross Alpha/Beta	Gross Beta	4.443E-14	3.745E-14	5.601E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205417	IA-09	08/06/18	Gross Alpha/Beta	Gross Alpha	2.064E-15	1.87E-14	2.687E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205417	IA-09	08/06/18	Gross Alpha/Beta	Gross Beta	6.032E-14	3.902E-14	5.601E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205418	IA-09	08/08/18	Gross Alpha/Beta	Gross Alpha	9.55E-16	8.652E-15	1.243E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205418	IA-09	08/08/18	Gross Alpha/Beta	Gross Beta	9.936E-15	1.624E-14	2.591E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205419	IA-09	08/08/18	Gross Alpha/Beta	Gross Alpha	1.253E-14	1.168E-14	1.255E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205419	IA-09	08/08/18	Gross Alpha/Beta	Gross Beta	4.63E-14	1.996E-14	2.616E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205420	IA-09	08/08/18	Gross Alpha/Beta	Gross Alpha	5.008E-15	1.019E-14	1.304E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205420	IA-09	08/08/18	Gross Alpha/Beta	Gross Beta	4.469E-14	2.042E-14	2.718E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205421	IA-09	08/09/18	Gross Alpha/Beta	Gross Alpha	6.883E-15	1.144E-14	1.415E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205421	IA-09	08/09/18	Gross Alpha/Beta	Gross Beta	3.827E-14	2.118E-14	2.95E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205422	IA-09	08/09/18	Gross Alpha/Beta	Gross Alpha	2.536E-15	1.027E-14	1.415E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205422	IA-09	08/09/18	Gross Alpha/Beta	Gross Beta	4.199E-14	2.154E-14	2.95E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205423	IA-09	08/09/18	Gross Alpha/Beta	Gross Alpha	1.131E-14	9.802E-15	1.28E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205423	IA-09	08/09/18	Gross Alpha/Beta	Gross Beta	4.788E-14	1.749E-14	2.042E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205423-1	IA-09	08/09/18	Gross Alpha/Beta	Gross Alpha	1.268E-14	1.019E-14	1.28E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205423-1	IA-09	08/09/18	Gross Alpha/Beta	Gross Beta	5.65E-14	1.844E-14	2.042E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205424	IA-09	08/27/18	Gross Alpha/Beta	Gross Alpha	1.094E-14	8.784E-15	1.104E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205424	IA-09	08/27/18	Gross Alpha/Beta	Gross Beta	3.682E-14	1.457E-14	1.761E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205425	IA-09	08/27/18	Gross Alpha/Beta	Gross Alpha	2.871E-15	6.607E-15	1.192E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205425	IA-09	08/27/18	Gross Alpha/Beta	Gross Beta	4.937E-14	1.681E-14	1.901E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205426	IA-09	08/27/18	Gross Alpha/Beta	Gross Alpha	9.252E-15	8.751E-15	1.192E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205426	IA-09	08/27/18	Gross Alpha/Beta	Gross Beta	5.178E-14	1.707E-14	1.901E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205427	IA-09	08/28/18	Gross Alpha/Beta	Gross Alpha	2.698E-15	6.207E-15	1.12E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205427	IA-09	08/28/18	Gross Alpha/Beta	Gross Beta	1.999E-14	1.27E-14	1.786E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205428	IA-09	08/28/18	Gross Alpha/Beta	Gross Alpha	7.459E-15	7.822E-15	1.114E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205428	IA-09	08/28/18	Gross Alpha/Beta	Gross Beta	1.99E-14	1.264E-14	1.778E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205429	IA-09	08/28/18	Gross Alpha/Beta	Gross Alpha	2.93E-16	5.077E-15	1.094E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205429	IA-09	08/28/18	Gross Alpha/Beta	Gross Beta	1.806E-14	1.222E-14	1.745E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205430	IA-09	09/04/18	Gross Alpha/Beta	Gross Alpha	8.532E-15	8.128E-15	1.142E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205430	IA-09	09/04/18	Gross Alpha/Beta	Gross Beta	2.899E-14	1.392E-14	1.882E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205430-1	IA-09	09/04/18	Gross Alpha/Beta	Gross Alpha	1.335E-14	9.475E-15	1.142E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205430-1	IA-09	09/04/18	Gross Alpha/Beta	Gross Beta	3.202E-14	1.428E-14	1.882E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205431	IA-09	09/04/18	Gross Alpha/Beta	Gross Alpha	6.123E-15	7.368E-15	1.142E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205431	IA-09	09/04/18	Gross Alpha/Beta	Gross Beta	3.884E-14	1.507E-14	1.882E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205432	IA-09	09/04/18	Gross Alpha/Beta	Gross Alpha	2.51E-15	6.061E-15	1.142E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205432	IA-09	09/04/18	Gross Alpha/Beta	Gross Beta	2.217E-14	1.31E-14	1.882E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205433	IA-09	09/05/18	Gross Alpha/Beta	Gross Alpha	1.03E-16	5.154E-15	1.175E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205433	IA-09	09/05/18	Gross Alpha/Beta	Gross Beta	3.84E-14	1.532E-14	1.936E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205434	IA-09	09/05/18	Gross Alpha/Beta	Gross Alpha	8.778E-15	8.363E-15	1.175E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205434	IA-09	09/05/18	Gross Alpha/Beta	Gross Beta	4.152E-14	1.568E-14	1.936E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205435	IA-09	09/05/18	Gross Alpha/Beta	Gross Alpha	1.305E-15	5.56E-15	1.142E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205435	IA-09	09/05/18	Gross Alpha/Beta	Gross Beta	2.671E-14	1.365E-14	1.882E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205444	IA-09	10/15/18	Gross Alpha/Beta	Gross Alpha	2.893E-15	9.067E-15	1.257E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205444	IA-09	10/15/18	Gross Alpha/Beta	Gross Beta	4.091E-14	2.35E-14	2.602E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205444-1	IA-09	10/15/18	Gross Alpha/Beta	Gross Alpha	5.564E-15	9.827E-15	1.257E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205444-1	IA-09	10/15/18	Gross Alpha/Beta	Gross Beta	3.406E-14	2.294E-14	2.602E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205445	IA-09	10/16/18	Gross Alpha/Beta	Gross Alpha	2.811E-15	8.808E-15	1.221E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205445	IA-09	10/16/18	Gross Alpha/Beta	Gross Beta	3.225E-14	2.222E-14	2.527E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205446	IA-09	10/16/18	Gross Alpha/Beta	Gross Alpha	6.639E-15	9.803E-15	1.209E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205446	IA-09	10/16/18	Gross Alpha/Beta	Gross Beta	2.782E-14	2.167E-14	2.503E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205447	IA-09	10/16/18	Gross Alpha/Beta	Gross Alpha	8E-15	1.024E-14	1.221E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205447	IA-09	10/16/18	Gross Alpha/Beta	Gross Beta	3.391E-14	2.235E-14	2.527E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205448	IA-09	10/17/18	Gross Alpha/Beta	Gross Alpha	1.485E-15	8.258E-15	1.198E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205448	IA-09	10/17/18	Gross Alpha/Beta	Gross Beta	3.491E-14	2.207E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205449	IA-09	10/17/18	Gross Alpha/Beta	Gross Alpha	2.758E-15	8.643E-15	1.198E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205449	IA-09	10/17/18	Gross Alpha/Beta	Gross Beta	2.675E-14	2.14E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205450	IA-09	10/17/18	Gross Alpha/Beta	Gross Alpha	2.14E-16	7.929E-15	1.209E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205450	IA-09	10/17/18	Gross Alpha/Beta	Gross Beta	3.277E-14	2.207E-14	2.503E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205451	IA-09	10/18/18	Gross Alpha/Beta	Gross Alpha	7.85E-15	1.004E-14	1.198E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205451	IA-09	10/18/18	Gross Alpha/Beta	Gross Beta	2.838E-14	2.153E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205452	IA-09	10/18/18	Gross Alpha/Beta	Gross Alpha	6.577E-15	9.712E-15	1.198E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205452	IA-09	10/18/18	Gross Alpha/Beta	Gross Beta	2.266E-14	2.106E-14	2.48E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205453	IA-09	10/18/18	Gross Alpha/Beta	Gross Alpha	1.294E-14	1.128E-14	1.198E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205453	IA-09	10/18/18	Gross Alpha/Beta	Gross Beta	3.818E-14	2.234E-14	2.48E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205454	IA-09	10/23/18	Gross Alpha/Beta	Gross Alpha	7.706E-15	9.86E-15	1.176E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205454	IA-09	10/23/18	Gross Alpha/Beta	Gross Beta	2.545E-14	2.094E-14	2.435E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205455	IA-09	10/23/18	Gross Alpha/Beta	Gross Alpha	2.1E-16	7.782E-15	1.187E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205455	IA-09	10/23/18	Gross Alpha/Beta	Gross Beta	2.731E-14	2.127E-14	2.457E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205456	IA-09	10/23/18	Gross Alpha/Beta	Gross Alpha	6.516E-15	9.622E-15	1.187E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205456	IA-09	10/23/18	Gross Alpha/Beta	Gross Beta	2.731E-14	2.127E-14	2.457E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205457	IA-09	10/24/18	Gross Alpha/Beta	Gross Alpha	2.188E-15	5.702E-15	1.05E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205457	IA-09	10/24/18	Gross Alpha/Beta	Gross Beta	1.258E-14	1.235E-14	1.834E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205457-1	IA-09	10/24/18	Gross Alpha/Beta	Gross Alpha	-1.99E-16	4.593E-15	1.05E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205457-1	IA-09	10/24/18	Gross Alpha/Beta	Gross Beta	1.107E-14	1.215E-14	1.834E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205458	IA-09	10/24/18	Gross Alpha/Beta	Gross Alpha	9.95E-16	5.177E-15	1.05E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205458	IA-09	10/24/18	Gross Alpha/Beta	Gross Beta	2.309E-14	1.363E-14	1.834E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205459	IA-09	10/24/18	Gross Alpha/Beta	Gross Alpha	-1.41E-15	3.963E-15	1.06E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205459	IA-09	10/24/18	Gross Alpha/Beta	Gross Beta	2.027E-14	1.34E-14	1.851E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205460	IA-09	10/25/18	Gross Alpha/Beta	Gross Alpha	3.381E-15	6.184E-15	1.05E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205460	IA-09	10/25/18	Gross Alpha/Beta	Gross Beta	2.234E-14	1.354E-14	1.834E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205461	IA-09	10/25/18	Gross Alpha/Beta	Gross Alpha	3.397E-15	6.213E-15	1.055E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205461	IA-09	10/25/18	Gross Alpha/Beta	Gross Beta	2.244E-14	1.36E-14	1.843E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205462	IA-09	10/25/18	Gross Alpha/Beta	Gross Alpha	1.004E-15	5.225E-15	1.06E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205462	IA-09	10/25/18	Gross Alpha/Beta	Gross Beta	3.164E-14	1.472E-14	1.851E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205463	IA-09	10/30/18	Gross Alpha/Beta	Gross Alpha	7.195E-15	7.7E-15	1.085E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205463	IA-09	10/30/18	Gross Alpha/Beta	Gross Beta	5.567E-14	1.759E-14	1.896E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205464	IA-09	10/30/18	Gross Alpha/Beta	Gross Alpha	9.615E-15	8.425E-15	1.08E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205464	IA-09	10/30/18	Gross Alpha/Beta	Gross Beta	4.846E-14	1.678E-14	1.887E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205465	IA-09	10/30/18	Gross Alpha/Beta	Gross Alpha	9.662E-15	8.465E-15	1.085E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205465	IA-09	10/30/18	Gross Alpha/Beta	Gross Beta	5.567E-14	1.759E-14	1.896E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205466	IA-09	10/31/18	Gross Alpha/Beta	Gross Alpha	1.038E-15	5.402E-15	1.096E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205466	IA-09	10/31/18	Gross Alpha/Beta	Gross Beta	5.288E-15	1.186E-14	1.914E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205471	IA-09	10/31/18	Gross Alpha/Beta	Gross Alpha	7.371E-15	7.889E-15	1.112E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205471	IA-09	10/31/18	Gross Alpha/Beta	Gross Beta	4.909E-14	1.719E-14	1.942E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205472	IA-09	10/31/18	Gross Alpha/Beta	Gross Alpha	1.116E-14	9.04E-15	1.112E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205472	IA-09	10/31/18	Gross Alpha/Beta	Gross Beta	6.499E-14	1.884E-14	1.942E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205489	IA-09	11/06/18	Gross Alpha/Beta	Gross Alpha	-1E-14	4.051E-14	8.331E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205489	IA-09	11/06/18	Gross Alpha/Beta	Gross Beta	-1.35E-15	7.751E-14	1.364E-13	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205489-1	IA-09	11/06/18	Gross Alpha/Beta	Gross Alpha	2.435E-14	5.315E-14	8.331E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205489-1	IA-09	11/06/18	Gross Alpha/Beta	Gross Beta	3.649E-14	8.266E-14	1.364E-13	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205490	IA-09	11/06/18	Gross Alpha/Beta	Gross Alpha	-1E-14	4.051E-14	8.331E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205490	IA-09	11/06/18	Gross Alpha/Beta	Gross Beta	9.46E-15	7.901E-14	1.364E-13	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205491	IA-09	11/06/18	Gross Alpha/Beta	Gross Alpha	7.16E-15	4.724E-14	8.331E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205491	IA-09	11/06/18	Gross Alpha/Beta	Gross Beta	9.46E-15	7.901E-14	1.364E-13	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205492	IA-09	11/07/18	Gross Alpha/Beta	Gross Alpha	3.413E-15	7.451E-15	1.168E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205492	IA-09	11/07/18	Gross Alpha/Beta	Gross Beta	3.467E-14	1.515E-14	1.912E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205493	IA-09	11/07/18	Gross Alpha/Beta	Gross Alpha	-2E-16	6.14E-15	1.163E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205493	IA-09	11/07/18	Gross Alpha/Beta	Gross Beta	3.753E-14	1.542E-14	1.903E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205494	IA-09	11/07/18	Gross Alpha/Beta	Gross Alpha	-2.03E-16	6.227E-15	1.179E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205494	IA-09	11/07/18	Gross Alpha/Beta	Gross Beta	4.341E-14	1.621E-14	1.93E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205495	IA-09	11/08/18	Gross Alpha/Beta	Gross Alpha	3.511E-15	7.666E-15	1.202E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205495	IA-09	11/08/18	Gross Alpha/Beta	Gross Beta	7.602E-15	1.223E-14	1.967E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205496	IA-09	11/08/18	Gross Alpha/Beta	Gross Alpha	1.023E-15	6.749E-15	1.19E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205496	IA-09	11/08/18	Gross Alpha/Beta	Gross Beta	3.224E-14	1.51E-14	1.948E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205497	IA-09	11/08/18	Gross Alpha/Beta	Gross Alpha	2.272E-15	7.252E-15	1.202E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205497	IA-09	11/08/18	Gross Alpha/Beta	Gross Beta	2.008E-14	1.379E-14	1.967E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205504	IA-09	11/28/18	Gross Alpha/Beta	Gross Alpha	1.079E-14	8.816E-15	1.075E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205504	IA-09	11/28/18	Gross Alpha/Beta	Gross Beta	2.088E-14	1.304E-14	1.848E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP205504-1	IA-09	11/28/18	Gross Alpha/Beta	Gross Alpha	7.127E-15	7.714E-15	1.075E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205504-1	IA-09	11/28/18	Gross Alpha/Beta	Gross Beta	2.933E-14	1.408E-14	1.848E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205505	IA-09	11/28/18	Gross Alpha/Beta	Gross Alpha	9.615E-15	8.504E-15	1.08E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP205505	IA-09	11/28/18	Gross Alpha/Beta	Gross Beta	3.72E-14	1.505E-14	1.857E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205506	IA-09	11/28/18	Gross Alpha/Beta	Gross Alpha	2.25E-15	5.978E-15	1.08E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205506	IA-09	11/28/18	Gross Alpha/Beta	Gross Beta	2.561E-14	1.368E-14	1.857E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP205507	IA-09	11/29/18	Gross Alpha/Beta	Gross Alpha	2.261E-15	6.007E-15	1.085E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205507	IA-09	11/29/18	Gross Alpha/Beta	Gross Beta	5.212E-14	1.676E-14	1.866E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205508	IA-09	11/29/18	Gross Alpha/Beta	Gross Alpha	1.033E-15	5.502E-15	1.091E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205508	IA-09	11/29/18	Gross Alpha/Beta	Gross Beta	3.6E-14	1.501E-14	1.875E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205509	IA-09	11/29/18	Gross Alpha/Beta	Gross Alpha	4.751E-15	6.986E-15	1.091E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP205509	IA-09	11/29/18	Gross Alpha/Beta	Gross Beta	5.939E-14	1.758E-14	1.875E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP205510	IA-09	12/03/18	Gross Alpha/Beta	Gross Alpha	-4.19E-16	5.624E-15	1.126E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205510	IA-09	12/03/18	Gross Alpha/Beta	Gross Beta	1.226E-14	1.317E-14	1.917E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205510-1	IA-09	12/03/18	Gross Alpha/Beta	Gross Alpha	2.096E-15	6.655E-15	1.126E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205510-1	IA-09	12/03/18	Gross Alpha/Beta	Gross Beta	7.515E-15	1.257E-14	1.917E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205511	IA-09	12/03/18	Gross Alpha/Beta	Gross Alpha	4.588E-15	7.515E-15	1.121E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205511	IA-09	12/03/18	Gross Alpha/Beta	Gross Beta	5.117E-15	1.22E-14	1.907E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205512	IA-09	12/03/18	Gross Alpha/Beta	Gross Alpha	-4.13E-16	5.542E-15	1.11E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205512	IA-09	12/03/18	Gross Alpha/Beta	Gross Beta	2.729E-15	1.177E-14	1.889E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205513	IA-09	12/04/18	Gross Alpha/Beta	Gross Alpha	-1.79E-15	5.372E-15	1.203E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205513	IA-09	12/04/18	Gross Alpha/Beta	Gross Beta	1.394E-14	1.416E-14	2.046E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205514	IA-09	12/04/18	Gross Alpha/Beta	Gross Alpha	2.238E-15	7.106E-15	1.203E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205514	IA-09	12/04/18	Gross Alpha/Beta	Gross Beta	8.869E-15	1.353E-14	2.046E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205515	IA-09	12/04/18	Gross Alpha/Beta	Gross Alpha	-4.48E-16	6.004E-15	1.203E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205515	IA-09	12/04/18	Gross Alpha/Beta	Gross Beta	1.056E-14	1.374E-14	2.046E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205516	IA-09	12/05/18	Gross Alpha/Beta	Gross Alpha	7.877E-15	1.29E-14	1.924E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205516	IA-09	12/05/18	Gross Alpha/Beta	Gross Beta	2.635E-14	2.316E-14	3.274E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205517	IA-09	12/05/18	Gross Alpha/Beta	Gross Alpha	1.432E-15	1.052E-14	1.924E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205517	IA-09	12/05/18	Gross Alpha/Beta	Gross Beta	3.987E-14	2.478E-14	3.274E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205518	IA-09	12/05/18	Gross Alpha/Beta	Gross Alpha	1.432E-15	1.052E-14	1.924E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205518	IA-09	12/05/18	Gross Alpha/Beta	Gross Beta	1.149E-14	2.129E-14	3.274E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205519	IA-09	12/06/18	Gross Alpha/Beta	Gross Alpha	3.58E-15	7.599E-15	1.203E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205519	IA-09	12/06/18	Gross Alpha/Beta	Gross Beta	2.154E-14	1.509E-14	2.046E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205520	IA-09	12/06/18	Gross Alpha/Beta	Gross Alpha	8.951E-15	9.322E-15	1.203E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205520	IA-09	12/06/18	Gross Alpha/Beta	Gross Beta	4.519E-14	1.775E-14	2.046E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205521	IA-09	12/06/18	Gross Alpha/Beta	Gross Alpha	1.029E-14	9.707E-15	1.203E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205521	IA-09	12/06/18	Gross Alpha/Beta	Gross Beta	3.505E-14	1.664E-14	2.046E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205522	IA-09	12/10/18	Gross Alpha/Beta	Gross Alpha	-4.17E-16	5.596E-15	1.121E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205522	IA-09	12/10/18	Gross Alpha/Beta	Gross Beta	6.416E-14	1.883E-14	1.907E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205523	IA-09	12/10/18	Gross Alpha/Beta	Gross Alpha	8.342E-15	8.688E-15	1.121E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205523	IA-09	12/10/18	Gross Alpha/Beta	Gross Beta	6.101E-14	1.851E-14	1.907E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP205524	IA-09	12/10/18	Gross Alpha/Beta	Gross Alpha	8.34E-16	6.131E-15	1.121E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205524	IA-09	12/10/18	Gross Alpha/Beta	Gross Beta	7.282E-14	1.969E-14	1.907E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205536	IA-09	12/17/18	Gross Alpha/Beta	Gross Alpha	8.694E-15	1.05E-14	1.502E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205536	IA-09	12/17/18	Gross Alpha/Beta	Gross Beta	3.068E-14	1.995E-14	2.934E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205537	IA-09	12/17/18	Gross Alpha/Beta	Gross Alpha	-1.45E-15	7.143E-15	1.502E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205537	IA-09	12/17/18	Gross Alpha/Beta	Gross Beta	2.882E-14	1.977E-14	2.934E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205538	IA-09	12/17/18	Gross Alpha/Beta	Gross Alpha	1.449E-15	8.236E-15	1.502E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205538	IA-09	12/17/18	Gross Alpha/Beta	Gross Beta	2.045E-14	1.891E-14	2.934E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205539	IA-09	12/18/18	Gross Alpha/Beta	Gross Alpha	1.285E-15	7.303E-15	1.332E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205539	IA-09	12/18/18	Gross Alpha/Beta	Gross Beta	3.463E-14	1.843E-14	2.602E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205540	IA-09	12/18/18	Gross Alpha/Beta	Gross Alpha	5.395E-15	8.984E-15	1.398E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205540	IA-09	12/18/18	Gross Alpha/Beta	Gross Beta	9.517E-15	1.66E-14	2.731E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205541	IA-09	12/18/18	Gross Alpha/Beta	Gross Alpha	-1.34E-15	6.583E-15	1.384E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205541	IA-09	12/18/18	Gross Alpha/Beta	Gross Beta	2.827E-14	1.839E-14	2.704E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205542	IA-09	12/20/18	Gross Alpha/Beta	Gross Alpha	1.335E-15	7.59E-15	1.384E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205542	IA-09	12/20/18	Gross Alpha/Beta	Gross Beta	6.854E-15	1.616E-14	2.704E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205543	IA-09	12/20/18	Gross Alpha/Beta	Gross Alpha	0	7.104E-15	1.384E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205543	IA-09	12/20/18	Gross Alpha/Beta	Gross Beta	2.228E-14	1.778E-14	2.704E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP205544	IA-09	12/20/18	Gross Alpha/Beta	Gross Alpha	2.671E-15	8.048E-15	1.384E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205544	IA-09	12/20/18	Gross Alpha/Beta	Gross Beta	3.084E-14	1.865E-14	2.704E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205545	IA-09	12/24/18	Gross Alpha/Beta	Gross Alpha	-3.08E-15	6.937E-15	1.595E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205545	IA-09	12/24/18	Gross Alpha/Beta	Gross Beta	1.086E-14	1.894E-14	3.116E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205546	IA-09	12/24/18	Gross Alpha/Beta	Gross Alpha	0	8.234E-15	1.604E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205546	IA-09	12/24/18	Gross Alpha/Beta	Gross Beta	9.93E-16	1.797E-14	3.134E-14	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205547	IA-09	12/24/18	Gross Alpha/Beta	Gross Alpha	-6.88E-15	4.533E-15	5.823E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205547	IA-09	12/24/18	Gross Alpha/Beta	Gross Beta	-5.93E-14	7.825E-15	1.309E-14	µCi/mL	UJ	T06, T07	IA-09 (General Area)-Perimeter Air
SVP205548	IA-09	12/26/18	Gross Alpha/Beta	Gross Alpha	2.619E-15	5.838E-15	9.887E-15	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205548	IA-09	12/26/18	Gross Alpha/Beta	Gross Beta	2.829E-14	1.872E-14	2.535E-14	µCi/mL			IA-09 (General Area)-Perimeter Air
SVP205548-1	IA-09	12/26/18	Gross Alpha/Beta	Gross Alpha	2.619E-15	5.838E-15	9.887E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205548-1	IA-09	12/26/18	Gross Alpha/Beta	Gross Beta	4.593E-14	2.04E-14	2.535E-14	µCi/mL	=		IA-09 (General Area)-Perimeter Air
SVP205549	IA-09	12/26/18	Gross Alpha/Beta	Gross Alpha	1.048E-14	8.703E-15	9.887E-15	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205549	IA-09	12/26/18	Gross Alpha/Beta	Gross Beta	3.501E-14	1.936E-14	2.535E-14	µCi/mL	J	T04, T20	IA-09 (General Area)-Perimeter Air
SVP205550	IA-09	12/26/18	Gross Alpha/Beta	Gross Alpha	1.31E-15	5.215E-15	9.887E-15	µCi/mL	UJ	T06	IA-09 (General Area)-Perimeter Air
SVP205550	IA-09	12/26/18	Gross Alpha/Beta	Gross Beta	2.325E-14	1.822E-14	2.535E-14	µCi/mL	UJ	T04, T05	IA-09 (General Area)-Perimeter Air
SVP199250	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Alpha	2.542E-15	6.751E-15	1.277E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199250	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Beta	2.13E-14	1.614E-14	2.067E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199250-1	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Alpha	-1.11E-16	5.61E-15	1.277E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199250-1	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Beta	2.3E-14	1.633E-14	2.067E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199251	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Alpha	1.216E-15	6.206E-15	1.277E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199251	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Beta	4.678E-14	1.885E-14	2.067E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199252	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Alpha	-2.76E-15	4.175E-15	1.277E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199252	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Beta	2.809E-14	1.689E-14	2.067E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199253	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Alpha	5.195E-15	7.73E-15	1.277E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199253	CHEZ PAREE	01/24/18	Gross Alpha/Beta	Gross Beta	5.017E-14	1.92E-14	2.067E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199254	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Alpha	-5.1E-15	1.751E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199254	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Beta	2.804E-14	1.607E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199255	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Alpha	-1.04E-16	5.28E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199255	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Beta	2.964E-14	1.624E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199256	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Alpha	-1.35E-15	4.653E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199256	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Beta	2.724E-14	1.598E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199257	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Alpha	3.641E-15	6.83E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199257	CHEZ PAREE	01/25/18	Gross Alpha/Beta	Gross Beta	3.603E-14	1.692E-14	1.945E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199258	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Alpha	4.89E-15	7.275E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199258	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Beta	5.202E-14	1.855E-14	1.945E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199259	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Alpha	7.386E-15	8.096E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199259	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Beta	2.884E-14	1.615E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199260	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Alpha	-3.85E-15	3.041E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199260	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Beta	2.324E-14	1.555E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199261	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Alpha	-1.35E-15	4.653E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199261	CHEZ PAREE	01/29/18	Gross Alpha/Beta	Gross Beta	1.925E-14	1.51E-14	1.945E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199262	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Alpha	6.138E-15	7.696E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199262	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Beta	2.324E-14	1.555E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199263	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Alpha	2.393E-15	6.354E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199263	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Beta	2.245E-14	1.546E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199264	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Alpha	-2.6E-15	3.93E-15	1.202E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199264	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Beta	2.484E-14	1.572E-14	1.945E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199264-1	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Alpha	1.144E-15	5.841E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199264-1	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Beta	2.644E-14	1.59E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199265	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Alpha	2.393E-15	6.354E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199265	CHEZ PAREE	01/30/18	Gross Alpha/Beta	Gross Beta	2.085E-14	1.528E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199266	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Alpha	6.138E-15	7.696E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199266	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Beta	3.523E-14	1.683E-14	1.945E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199267	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Alpha	1.144E-15	5.841E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199267	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Beta	4.882E-14	1.823E-14	1.945E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199268	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Alpha	-1.35E-15	4.653E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199268	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Beta	3.044E-14	1.633E-14	1.945E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199269	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Alpha	-1.04E-16	5.28E-15	1.202E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199269	CHEZ PAREE	01/31/18	Gross Alpha/Beta	Gross Beta	3.263E-15	1.324E-14	1.945E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199270	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Alpha	7.49E-15	7.868E-15	1.078E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199270	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Beta	2.651E-14	1.449E-14	2.007E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199270-1	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Alpha	9.987E-15	8.636E-15	1.078E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199270-1	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Beta	4.809E-14	1.694E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199271	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	5.521E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199271	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Beta	1.772E-14	1.342E-14	2.007E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199272	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Alpha	7.49E-15	7.868E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199272	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Beta	1.052E-14	1.249E-14	2.007E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199273	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Alpha	3.745E-15	6.558E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199273	CHEZ PAREE	02/01/18	Gross Alpha/Beta	Gross Beta	2.251E-14	1.401E-14	2.007E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199274	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Alpha	4.994E-15	7.021E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199274	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Beta	5.048E-14	1.719E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199275	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Alpha	9.987E-15	8.636E-15	1.078E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199275	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Beta	3.93E-14	1.597E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199276	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Alpha	0	4.924E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199276	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Beta	4.169E-14	1.624E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199277	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Alpha	1.124E-14	8.997E-15	1.078E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199277	CHEZ PAREE	02/08/18	Gross Alpha/Beta	Gross Beta	2.97E-14	1.487E-14	2.007E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199278	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Alpha	1.929E-15	8.533E-15	1.666E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199278	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Beta	2.367E-14	2.027E-14	3.102E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199279	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Alpha	3.859E-15	9.368E-15	1.666E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199279	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Beta	2.738E-14	2.073E-14	3.102E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199280	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Alpha	1.158E-14	1.216E-14	1.666E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199280	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Beta	2.738E-14	2.073E-14	3.102E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199281	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Alpha	0	7.609E-15	1.666E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199281	CHEZ PAREE	02/12/18	Gross Alpha/Beta	Gross Beta	4.467E-14	2.284E-14	3.102E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199282	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	5.521E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199282	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Beta	3.37E-14	1.533E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199283	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Alpha	6.242E-15	7.456E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199283	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Beta	3.53E-14	1.552E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199284	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	5.521E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199284	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Beta	4.409E-14	1.65E-14	2.007E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199285	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	5.521E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199285	CHEZ PAREE	02/13/18	Gross Alpha/Beta	Gross Beta	2.251E-14	1.401E-14	2.007E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199286	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Alpha	6.242E-15	7.456E-15	1.078E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199286	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Beta	2.651E-14	1.449E-14	2.007E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199287	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Alpha	2.705E-15	5.927E-15	1.057E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199287	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Beta	2.231E-14	1.557E-14	1.86E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199287-1	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Alpha	1.456E-15	5.373E-15	1.057E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199287-1	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Beta	1.112E-14	1.431E-14	1.86E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199288	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Alpha	5.202E-15	6.906E-15	1.057E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199288	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Beta	3.59E-14	1.702E-14	1.86E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199289	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Alpha	1.456E-15	5.373E-15	1.057E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199289	CHEZ PAREE	02/14/18	Gross Alpha/Beta	Gross Beta	3.43E-14	1.685E-14	1.86E-14	µCi/mL	=		Chez Paree (General Area)-Perimeter Air
SVP199290	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Alpha	3.93E-16	8.985E-15	1.997E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199290	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Beta	2.101E-14	2.703E-14	3.514E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199291	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Alpha	3.93E-16	8.985E-15	1.997E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199291	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Beta	1.95E-14	2.685E-14	3.514E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199292	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Alpha	-1.965E-15	7.649E-15	1.997E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199292	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Beta	3.007E-14	2.806E-14	3.514E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199293	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Alpha	-1.965E-15	7.649E-15	1.997E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199293	CHEZ PAREE	02/15/18	Gross Alpha/Beta	Gross Beta	1.346E-14	2.614E-14	3.514E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199294	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Alpha	1.72E-14	2.391E-14	3.496E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199294	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Beta	5.782E-14	5.384E-14	8.42E-14	µCi/mL			Chez Paree (General Area)-Perimeter Air
SVP199294-1	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Alpha	1.72E-14	2.391E-14	3.496E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199294-1	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Beta	6.046E-14	5.412E-14	8.42E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199295	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Alpha	1.72E-14	2.391E-14	3.496E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199295	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Beta	1.015E-14	4.877E-14	8.42E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SVP199296	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Alpha	8.943E-15	2.085E-14	3.496E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199296	CHEZ PAREE	03/20/18	Gross Alpha/Beta	Gross Beta	-4.811E-14	4.21E-14	8.42E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199297	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Alpha	1.892E-15	7.517E-15	1.374E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199297	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Beta	2.479E-14	2.137E-14	3.308E-14	µCi/mL	UJ	T04, T05	Chez Paree (General Area)-Perimeter Air
SVP199298	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Alpha	5.135E-15	8.812E-15	1.374E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199298	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Beta	7.109E-15	1.95E-14	3.308E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199299	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Alpha	8.378E-15	9.944E-15	1.374E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199299	CHEZ PAREE	03/21/18	Gross Alpha/Beta	Gross Beta	3.624E-14	2.253E-14	3.308E-14	µCi/mL	J	T04, T20	Chez Paree (General Area)-Perimeter Air
SVP199300	CHEZ PAREE	03/22/18	Gross Alpha/Beta	Gross Alpha	-2.83E-15	1.228E-14	2.704E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199300	CHEZ PAREE	03/22/18	Gross Alpha/Beta	Gross Beta	-3.623E-15	2.555E-14	4.462E-14	µCi/mL	UJ	T06	Chez Paree (General Area)-Perimeter Air
SVP199301	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Alpha	2.893E-15	6.34E-15	1.131E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP199301	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Beta	6.925E-15	1.528E-14	2.632E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP199301-1	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Alpha	2.23E-16	5.088E-15	1.131E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199301-1	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Beta	1.378E-14	1.605E-14	2.632E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199302	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Alpha	5.564E-15	7.387E-15	1.131E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199302	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Beta	3.605E-14	1.843E-14	2.632E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP199303	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Alpha	1.224E-14	9.529E-15	1.131E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP199303	CHEZ PAREE	04/09/18	Gross Alpha/Beta	Gross Beta	3.862E-14	1.869E-14	2.632E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP199304	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Alpha	2.29E-16	5.243E-15	1.165E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199304	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Beta	3.097E-14	1.834E-14	2.711E-14	µCi/mL	J	T04, T20	North County Air (General Area Air)-Perimeter Air
SVP199305	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Alpha	2.29E-16	5.243E-15	1.165E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199305	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Beta	1.243E-14	1.634E-14	2.711E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199306	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Alpha	3.6E-16	8.238E-15	1.831E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199306	CHEZ PAREE	04/10/18	Gross Alpha/Beta	Gross Beta	2.647E-14	2.645E-14	4.261E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP199307	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Alpha	6.14E-16	1.403E-14	3.118E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199307	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Beta	4.979E-14	4.556E-14	7.255E-14	µCi/mL	UJ	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP199308	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Alpha	7.976E-15	1.748E-14	3.118E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199308	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Beta	7.282E-15	4.077E-14	7.255E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199309	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Alpha	7.976E-15	1.748E-14	3.118E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP199309	CHEZ PAREE	04/11/18	Gross Alpha/Beta	Gross Beta	2.618E-14	4.294E-14	7.255E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SLA199698	SLAPS LOADOUT	01/02/18	Gross Alpha/Beta	Gross Alpha	5.093E-15	8.747E-15	1.217E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199698	SLAPS LOADOUT	01/02/18	Gross Alpha/Beta	Gross Beta	5.122E-14	1.797E-14	1.99E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199699	SLAPS LOADOUT	01/02/18	Gross Alpha/Beta	Gross Alpha	5.145E-15	8.835E-15	1.229E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199699	SLAPS LOADOUT	01/02/18	Gross Alpha/Beta	Gross Beta	3.198E-14	1.601E-14	2.01E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199700	SLAPS LOADOUT	01/03/18	Gross Alpha/Beta	Gross Alpha	1.655E-14	1.166E-14	1.217E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199700	SLAPS LOADOUT	01/03/18	Gross Alpha/Beta	Gross Beta	4.307E-14	1.711E-14	1.99E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199701	SLAPS LOADOUT	01/03/18	Gross Alpha/Beta	Gross Alpha	0	7.102E-15	1.217E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199701	SLAPS LOADOUT	01/03/18	Gross Alpha/Beta	Gross Beta	6.508E-14	1.939E-14	1.99E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199702	SLAPS LOADOUT	01/04/18	Gross Alpha/Beta	Gross Alpha	5.895E-15	8.439E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199702	SLAPS LOADOUT	01/04/18	Gross Alpha/Beta	Gross Beta	5.347E-14	1.726E-14	1.842E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199703	SLAPS LOADOUT	01/04/18	Gross Alpha/Beta	Gross Alpha	7.009E-15	8.686E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199703	SLAPS LOADOUT	01/04/18	Gross Alpha/Beta	Gross Beta	5.597E-14	1.741E-14	1.826E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199704	SLAPS LOADOUT	01/08/18	Gross Alpha/Beta	Gross Alpha	4.716E-15	8.099E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199704	SLAPS LOADOUT	01/08/18	Gross Alpha/Beta	Gross Beta	5.875E-14	1.78E-14	1.842E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA199705	SLAPS LOADOUT	01/08/18	Gross Alpha/Beta	Gross Alpha	1.606E-14	1.076E-14	1.096E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199705	SLAPS LOADOUT	01/08/18	Gross Alpha/Beta	Gross Beta	6.083E-14	1.769E-14	1.793E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199706	SLAPS LOADOUT	01/09/18	Gross Alpha/Beta	Gross Alpha	1.147E-15	6.798E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199706	SLAPS LOADOUT	01/09/18	Gross Alpha/Beta	Gross Beta	5.129E-14	1.672E-14	1.793E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199707	SLAPS LOADOUT	01/09/18	Gross Alpha/Beta	Gross Alpha	5.736E-15	8.211E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199707	SLAPS LOADOUT	01/09/18	Gross Alpha/Beta	Gross Beta	3.293E-14	1.477E-14	1.793E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199708	SLAPS LOADOUT	01/10/18	Gross Alpha/Beta	Gross Alpha	2.358E-15	7.375E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199708	SLAPS LOADOUT	01/10/18	Gross Alpha/Beta	Gross Beta	5.158E-15	1.176E-14	1.842E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199709	SLAPS LOADOUT	01/10/18	Gross Alpha/Beta	Gross Alpha	2.336E-15	7.308E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199709	SLAPS LOADOUT	01/10/18	Gross Alpha/Beta	Gross Beta	1.932E-14	1.342E-14	1.826E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199710	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Alpha	4.548E-15	9.958E-15	1.448E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA199710	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Beta	5.661E-15	1.5E-14	2.369E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA199710-1	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Alpha	6.064E-15	1.041E-14	1.448E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199710-1	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Beta	1.537E-14	1.624E-14	2.369E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199711	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Alpha	0	8.455E-15	1.448E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199711	SLAPS LOADOUT	01/11/18	Gross Alpha/Beta	Gross Beta	1.44E-14	1.612E-14	2.369E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199712	SLAPS LOADOUT	01/16/18	Gross Alpha/Beta	Gross Alpha	2.294E-15	7.176E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199712	SLAPS LOADOUT	01/16/18	Gross Alpha/Beta	Gross Beta	3.219E-14	1.469E-14	1.793E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199713	SLAPS LOADOUT	01/16/18	Gross Alpha/Beta	Gross Alpha	3.537E-15	7.745E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199713	SLAPS LOADOUT	01/16/18	Gross Alpha/Beta	Gross Beta	2.478E-14	1.416E-14	1.842E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199714	SLAPS LOADOUT	01/17/18	Gross Alpha/Beta	Gross Alpha	9.261E-15	9.218E-15	1.106E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA199714	SLAPS LOADOUT	01/17/18	Gross Alpha/Beta	Gross Beta	3.323E-14	1.49E-14	1.809E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199715	SLAPS LOADOUT	01/17/18	Gross Alpha/Beta	Gross Alpha	8.03E-15	8.837E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199715	SLAPS LOADOUT	01/17/18	Gross Alpha/Beta	Gross Beta	1.75E-14	1.3E-14	1.793E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA199716	SLAPS LOADOUT	01/18/18	Gross Alpha/Beta	Gross Alpha	-2.358E-15	5.67E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199716	SLAPS LOADOUT	01/18/18	Gross Alpha/Beta	Gross Beta	5.196E-14	1.711E-14	1.842E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199717	SLAPS LOADOUT	01/18/18	Gross Alpha/Beta	Gross Alpha	6.946E-15	8.607E-15	1.106E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199717	SLAPS LOADOUT	01/18/18	Gross Alpha/Beta	Gross Beta	4.064E-14	1.571E-14	1.809E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199718	SLAPS LOADOUT	01/22/18	Gross Alpha/Beta	Gross Alpha	-1.168E-15	6.083E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199718	SLAPS LOADOUT	01/22/18	Gross Alpha/Beta	Gross Beta	1.783E-14	1.324E-14	1.826E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA199719	SLAPS LOADOUT	01/22/18	Gross Alpha/Beta	Gross Alpha	2.336E-15	7.308E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199719	SLAPS LOADOUT	01/22/18	Gross Alpha/Beta	Gross Beta	2.456E-14	1.403E-14	1.826E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199720	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Alpha	5.59E-15	7.009E-15	1.094E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199720	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Beta	3.136E-14	1.525E-14	1.772E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199720-1	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Alpha	2.179E-15	5.787E-15	1.094E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199720-1	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Beta	2.99E-14	1.51E-14	1.772E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199721	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Alpha	-9.8E-17	4.987E-15	1.135E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199721	SLAPS LOADOUT	01/30/18	Gross Alpha/Beta	Gross Beta	1.516E-14	1.392E-14	1.837E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199722	SLAPS LOADOUT	01/23/18	Gross Alpha/Beta	Gross Alpha	-1.03E-16	5.229E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199722	SLAPS LOADOUT	01/23/18	Gross Alpha/Beta	Gross Beta	2.618E-14	1.574E-14	1.927E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199723	SLAPS LOADOUT	01/23/18	Gross Alpha/Beta	Gross Alpha	2.324E-15	6.173E-15	1.167E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199723	SLAPS LOADOUT	01/23/18	Gross Alpha/Beta	Gross Beta	1.715E-14	1.45E-14	1.89E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199724	SLAPS LOADOUT	01/24/18	Gross Alpha/Beta	Gross Alpha	-1.232E-15	4.238E-15	1.094E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199724	SLAPS LOADOUT	01/24/18	Gross Alpha/Beta	Gross Beta	1.899E-14	1.392E-14	1.772E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA199725	SLAPS LOADOUT	01/24/18	Gross Alpha/Beta	Gross Alpha	4.49E-15	6.69E-15	1.1E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199725	SLAPS LOADOUT	01/24/18	Gross Alpha/Beta	Gross Beta	2.87E-14	1.51E-14	1.79E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199726	SLAPS LOADOUT	01/25/18	Gross Alpha/Beta	Gross Alpha	1.1E-15	5.62E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199726	SLAPS LOADOUT	01/25/18	Gross Alpha/Beta	Gross Beta	2.47E-14	1.52E-14	1.87E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199727	SLAPS LOADOUT	01/25/18	Gross Alpha/Beta	Gross Alpha	3.54E-15	6.63E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199727	SLAPS LOADOUT	01/25/18	Gross Alpha/Beta	Gross Beta	2.41E-14	1.53E-14	1.89E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199728	SLAPS LOADOUT	01/29/18	Gross Alpha/Beta	Gross Alpha	7.86E-15	7.72E-15	1.09E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199728	SLAPS LOADOUT	01/29/18	Gross Alpha/Beta	Gross Beta	4.15E-14	1.63E-14	1.77E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199729	SLAPS LOADOUT	01/29/18	Gross Alpha/Beta	Gross Alpha	5.74E-15	7.2E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199729	SLAPS LOADOUT	01/29/18	Gross Alpha/Beta	Gross Beta	4.49E-14	1.7E-14	1.82E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199730	SLAPS LOADOUT	01/31/18	Gross Alpha/Beta	Gross Alpha	7.93E-15	7.79E-15	1.1E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199730	SLAPS LOADOUT	01/31/18	Gross Alpha/Beta	Gross Beta	4.05E-14	1.63E-14	1.79E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199731	SLAPS LOADOUT	01/31/18	Gross Alpha/Beta	Gross Alpha	-2.43E-15	3.68E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199731	SLAPS LOADOUT	01/31/18	Gross Alpha/Beta	Gross Beta	3.15E-14	1.56E-14	1.82E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199732	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Alpha	3.666E-15	5.967E-15	9.805E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199732	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Beta	4.07E-14	1.654E-14	1.725E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199732-1	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Alpha	2.508E-15	5.496E-15	9.805E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199732-1	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Beta	4.589E-14	1.706E-14	1.725E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199733	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Alpha	4.737E-15	6.289E-15	9.63E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199733	SLAPS LOADOUT	02/01/18	Gross Alpha/Beta	Gross Beta	2.178E-14	1.434E-14	1.694E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199734	SLAPS LOADOUT	02/05/18	Gross Alpha/Beta	Gross Alpha	3.666E-15	5.967E-15	9.805E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199734	SLAPS LOADOUT	02/05/18	Gross Alpha/Beta	Gross Beta	2.217E-14	1.46E-14	1.725E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199735	SLAPS LOADOUT	02/05/18	Gross Alpha/Beta	Gross Alpha	5.981E-15	6.814E-15	9.805E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199735	SLAPS LOADOUT	02/05/18	Gross Alpha/Beta	Gross Beta	2.958E-14	1.539E-14	1.725E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199736	SLAPS LOADOUT	02/06/18	Gross Alpha/Beta	Gross Alpha	4.913E-15	6.522E-15	9.986E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199736	SLAPS LOADOUT	02/06/18	Gross Alpha/Beta	Gross Beta	4.523E-14	1.723E-14	1.757E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199737	SLAPS LOADOUT	02/06/18	Gross Alpha/Beta	Gross Alpha	7.339E-15	7.403E-15	1.008E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199737	SLAPS LOADOUT	02/06/18	Gross Alpha/Beta	Gross Beta	2.279E-14	1.501E-14	1.773E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199738	SLAPS LOADOUT	02/07/18	Gross Alpha/Beta	Gross Alpha	7.271E-15	7.335E-15	9.986E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199738	SLAPS LOADOUT	02/07/18	Gross Alpha/Beta	Gross Beta	4.825E-14	1.753E-14	1.757E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199739	SLAPS LOADOUT	02/07/18	Gross Alpha/Beta	Gross Alpha	4.78E-15	6.346E-15	9.717E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199739	SLAPS LOADOUT	02/07/18	Gross Alpha/Beta	Gross Beta	6.016E-14	1.835E-14	1.709E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199740	SLAPS LOADOUT	02/08/18	Gross Alpha/Beta	Gross Alpha	7.074E-15	7.136E-15	9.717E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199740	SLAPS LOADOUT	02/08/18	Gross Alpha/Beta	Gross Beta	4.327E-14	1.669E-14	1.709E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199741	SLAPS LOADOUT	02/08/18	Gross Alpha/Beta	Gross Alpha	1.21E-14	8.826E-15	1.008E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199741	SLAPS LOADOUT	02/08/18	Gross Alpha/Beta	Gross Beta	5.555E-14	1.837E-14	1.773E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199742	SLAPS LOADOUT	02/12/18	Gross Alpha/Beta	Gross Alpha	8.372E-15	7.639E-15	9.895E-15	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199742	SLAPS LOADOUT	02/12/18	Gross Alpha/Beta	Gross Beta	4.855E-14	1.744E-14	1.741E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199743	SLAPS LOADOUT	02/12/18	Gross Alpha/Beta	Gross Alpha	2.531E-15	5.546E-15	9.895E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199743	SLAPS LOADOUT	02/12/18	Gross Alpha/Beta	Gross Beta	2.911E-14	1.545E-14	1.741E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199744	SLAPS LOADOUT	02/13/18	Gross Alpha/Beta	Gross Alpha	3.633E-15	5.913E-15	9.717E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199744	SLAPS LOADOUT	02/13/18	Gross Alpha/Beta	Gross Beta	4.621E-14	1.698E-14	1.709E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199745	SLAPS LOADOUT	02/13/18	Gross Alpha/Beta	Gross Alpha	1.338E-15	4.937E-15	9.717E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199745	SLAPS LOADOUT	02/13/18	Gross Alpha/Beta	Gross Beta	6.53E-14	1.884E-14	1.709E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA199746	SLAPS LOADOUT	02/14/18	Gross Alpha/Beta	Gross Alpha	4.868E-15	6.462E-15	9.895E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199746	SLAPS LOADOUT	02/14/18	Gross Alpha/Beta	Gross Beta	4.107E-14	1.669E-14	1.741E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199747	SLAPS LOADOUT	02/14/18	Gross Alpha/Beta	Gross Alpha	2.555E-15	5.598E-15	9.986E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199747	SLAPS LOADOUT	02/14/18	Gross Alpha/Beta	Gross Beta	3.994E-14	1.669E-14	1.757E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199748	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Alpha	-9.47E-16	3.688E-15	9.63E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199748	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Beta	1.668E-14	1.377E-14	1.694E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199749	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Alpha	3.633E-15	5.913E-15	9.717E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199749	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Beta	1.977E-14	1.422E-14	1.709E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199749-1	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Alpha	9.369E-15	7.851E-15	9.717E-15	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199749-1	SLAPS LOADOUT	02/15/18	Gross Alpha/Beta	Gross Beta	1.83E-14	1.406E-14	1.709E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199750	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Alpha	-5.005E-15	4.795E-15	1.347E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199750	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Beta	1.256E-14	1.362E-14	1.928E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199750-1	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Alpha	4.605E-15	8.316E-15	1.347E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199750-1	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Beta	2.41E-14	1.493E-14	1.928E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199751	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Alpha	2.289E-15	7.882E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199751	SLAPS LOADOUT	02/19/18	Gross Alpha/Beta	Gross Beta	1.465E-14	1.434E-14	2.004E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199752	SLAPS LOADOUT	02/20/18	Gross Alpha/Beta	Gross Alpha	-2.578E-15	5.815E-15	1.334E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199752	SLAPS LOADOUT	02/20/18	Gross Alpha/Beta	Gross Beta	5.587E-15	1.267E-14	1.91E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199753	SLAPS LOADOUT	02/20/18	Gross Alpha/Beta	Gross Alpha	-1.456E-15	6.589E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199753	SLAPS LOADOUT	02/20/18	Gross Alpha/Beta	Gross Beta	1.226E-14	1.406E-14	2.004E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199754	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Alpha	2.779E-15	9.572E-15	1.699E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199754	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Beta	1.779E-14	1.741E-14	2.433E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199755	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Alpha	4.245E-15	9.925E-15	1.679E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199755	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Beta	6.074E-15	1.583E-14	2.405E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199756	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Alpha	-4.8E-15	6.762E-15	1.699E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199756	SLAPS LOADOUT	02/21/18	Gross Alpha/Beta	Gross Beta	1.197E-14	1.672E-14	2.433E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199757	SLAPS LOADOUT	02/22/18	Gross Alpha/Beta	Gross Alpha	-1.93E-16	6.533E-15	1.298E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199757	SLAPS LOADOUT	02/22/18	Gross Alpha/Beta	Gross Beta	1.581E-14	1.355E-14	1.858E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199758	SLAPS LOADOUT	02/22/18	Gross Alpha/Beta	Gross Alpha	-1.351E-15	6.11E-15	1.298E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199758	SLAPS LOADOUT	02/22/18	Gross Alpha/Beta	Gross Beta	4.694E-15	1.223E-14	1.858E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199759	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Alpha	-3.804E-15	5.359E-15	1.347E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199759	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Beta	5.64E-14	1.83E-14	1.928E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199760	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Alpha	2.223E-15	7.657E-15	1.359E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199760	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Beta	4.684E-14	1.746E-14	1.947E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199761	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Alpha	-1.633E-15	7.386E-15	1.569E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199761	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Beta	3.076E-14	1.769E-14	2.246E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199762	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Alpha	-4.383E-15	6.174E-15	1.552E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199762	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Beta	5.612E-14	2.02E-14	2.222E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199763	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Alpha	-3.032E-15	6.837E-15	1.569E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199763	SLAPS LOADOUT	02/26/18	Gross Alpha/Beta	Gross Beta	8.361E-14	2.306E-14	2.246E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199764	SLAPS LOADOUT	02/27/18	Gross Alpha/Beta	Gross Alpha	-2.705E-15	6.1E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199764	SLAPS LOADOUT	02/27/18	Gross Alpha/Beta	Gross Beta	2.744E-14	1.578E-14	2.004E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199765	SLAPS LOADOUT	02/27/18	Gross Alpha/Beta	Gross Alpha	-1.456E-15	6.589E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199765	SLAPS LOADOUT	02/27/18	Gross Alpha/Beta	Gross Beta	4.183E-14	1.732E-14	2.004E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA199766	SLAPS LOADOUT	02/28/18	Gross Alpha/Beta	Gross Alpha	-1.456E-15	6.589E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199766	SLAPS LOADOUT	02/28/18	Gross Alpha/Beta	Gross Beta	3.064E-14	1.613E-14	2.004E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199767	SLAPS LOADOUT	02/28/18	Gross Alpha/Beta	Gross Alpha	-2.08E-16	7.046E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199767	SLAPS LOADOUT	02/28/18	Gross Alpha/Beta	Gross Beta	-1.332E-15	1.239E-14	2.004E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199768	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	-1.977E-15	3.986E-15	1.147E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199768	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	1.292E-14	1.207E-14	1.944E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199768-1	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	-3.225E-15	3.113E-15	1.147E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199768-1	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	8.925E-15	1.151E-14	1.944E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199769	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	5.514E-15	7.309E-15	1.147E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199769	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	3.85E-14	1.529E-14	1.944E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199770	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	4.195E-15	1.395E-14	2.721E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199770	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	2.117E-14	2.73E-14	4.61E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199771	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	-1.727E-15	1.115E-14	2.721E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199771	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	3.065E-14	2.863E-14	4.61E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199772	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Alpha	7.156E-15	1.516E-14	2.721E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199772	SLAPS LOADOUT	03/01/18	Gross Alpha/Beta	Gross Beta	4.392E-14	3.042E-14	4.61E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199773	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Alpha	5.256E-15	6.967E-15	1.093E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199773	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Beta	3.517E-14	1.44E-14	1.853E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199774	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Alpha	2.876E-15	6.093E-15	1.093E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199774	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Beta	2.298E-14	1.291E-14	1.853E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199775	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Alpha	-2.8E-15	5.647E-15	1.625E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199775	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Beta	1.604E-14	1.679E-14	2.753E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199776	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Alpha	4.274E-15	9.055E-15	1.625E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199776	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Beta	3.529E-14	1.933E-14	2.753E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199777	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Alpha	-1.032E-15	6.661E-15	1.625E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199777	SLAPS LOADOUT	03/05/18	Gross Alpha/Beta	Gross Beta	2.963E-14	1.861E-14	2.753E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199778	SLAPS LOADOUT	03/06/18	Gross Alpha/Beta	Gross Alpha	3.077E-15	6.519E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199778	SLAPS LOADOUT	03/06/18	Gross Alpha/Beta	Gross Beta	2.704E-14	1.412E-14	1.982E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199779	SLAPS LOADOUT	03/06/18	Gross Alpha/Beta	Gross Alpha	-2.016E-15	4.066E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199779	SLAPS LOADOUT	03/06/18	Gross Alpha/Beta	Gross Beta	7.473E-15	1.151E-14	1.982E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199780	SLAPS LOADOUT	03/07/18	Gross Alpha/Beta	Gross Alpha	4.834E-15	7.78E-15	1.3E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199780	SLAPS LOADOUT	03/07/18	Gross Alpha/Beta	Gross Beta	3.185E-14	1.592E-14	2.203E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199781	SLAPS LOADOUT	03/07/18	Gross Alpha/Beta	Gross Alpha	2.004E-15	6.665E-15	1.3E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199781	SLAPS LOADOUT	03/07/18	Gross Alpha/Beta	Gross Beta	1.102E-14	1.317E-14	2.203E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199782	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Alpha	6.603E-15	8.016E-15	1.267E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199782	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Beta	3.94E-14	1.844E-14	2.219E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA199782-1	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Alpha	9.432E-15	8.972E-15	1.267E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199782-1	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Beta	4.303E-14	1.883E-14	2.219E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199783	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Alpha	3.773E-15	6.936E-15	1.267E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199783	SLAPS LOADOUT	03/08/18	Gross Alpha/Beta	Gross Beta	3.94E-14	1.844E-14	2.219E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA199784	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Alpha	7.648E-15	7.274E-15	1.028E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA199784	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Beta	2.607E-14	1.43E-14	1.799E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199785	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Alpha	7.65E-16	4.589E-15	1.028E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199785	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Beta	3.048E-14	1.479E-14	1.799E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA199786	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Alpha	-4.88E-16	5.07E-15	1.311E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199786	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Beta	2.671E-14	1.751E-14	2.296E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199787	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Alpha	6.83E-15	8.293E-15	1.311E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199787	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Beta	1.452E-14	1.608E-14	2.296E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199788	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Alpha	9.76E-16	5.855E-15	1.311E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA199788	SLAPS LOADOUT	03/12/18	Gross Alpha/Beta	Gross Beta	3.045E-14	1.793E-14	2.296E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA199789	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Alpha	8.017E-15	8.507E-15	1.267E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA199789	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Beta	5.571E-14	2.017E-14	2.219E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA199789-1	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Alpha	9.43E-16	5.66E-15	1.267E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199789-1	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Beta	4.574E-14	1.912E-14	2.219E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA199790	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Alpha	5.188E-15	7.495E-15	1.267E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199790	SLAPS LOADOUT	03/15/18	Gross Alpha/Beta	Gross Beta	3.578E-14	1.804E-14	2.219E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA199791	SLAPS LOADOUT	03/13/18	Gross Alpha/Beta	Gross Alpha	7.074E-15	7.506E-15	1.118E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA199791	SLAPS LOADOUT	03/13/18	Gross Alpha/Beta	Gross Beta	4.436E-14	1.729E-14	1.958E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200731	SLAPS LOADOUT	03/14/18	Gross Alpha/Beta	Gross Alpha	5.826E-15	7.073E-15	1.118E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200731	SLAPS LOADOUT	03/14/18	Gross Alpha/Beta	Gross Beta	3.637E-14	1.644E-14	1.958E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200732	SLAPS LOADOUT	03/13/18	Gross Alpha/Beta	Gross Alpha	3.329E-15	6.12E-15	1.118E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200732	SLAPS LOADOUT	03/13/18	Gross Alpha/Beta	Gross Beta	2.837E-14	1.557E-14	1.958E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200733	SLAPS LOADOUT	03/14/18	Gross Alpha/Beta	Gross Alpha	3.329E-15	6.12E-15	1.118E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200733	SLAPS LOADOUT	03/14/18	Gross Alpha/Beta	Gross Beta	3.557E-14	1.636E-14	1.958E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200734	SLAPS LOADOUT	03/20/18	Gross Alpha/Beta	Gross Alpha	7.72E-16	4.631E-15	1.037E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200734	SLAPS LOADOUT	03/20/18	Gross Alpha/Beta	Gross Beta	1.964E-14	1.368E-14	1.816E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200735	SLAPS LOADOUT	03/20/18	Gross Alpha/Beta	Gross Alpha	-1.543E-15	3.276E-15	1.037E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200735	SLAPS LOADOUT	03/20/18	Gross Alpha/Beta	Gross Beta	1.816E-14	1.351E-14	1.816E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200736	SLAPS LOADOUT	03/21/18	Gross Alpha/Beta	Gross Alpha	6.56E-15	6.96E-15	1.037E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200736	SLAPS LOADOUT	03/21/18	Gross Alpha/Beta	Gross Beta	2.038E-14	1.376E-14	1.816E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200737	SLAPS LOADOUT	03/21/18	Gross Alpha/Beta	Gross Alpha	-3.86E-16	4.01E-15	1.037E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200737	SLAPS LOADOUT	03/21/18	Gross Alpha/Beta	Gross Beta	1.223E-14	1.28E-14	1.816E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200738	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Alpha	-3.745E-15	4.114E-15	1.193E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200738	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Beta	2.717E-14	1.492E-14	1.969E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200738-1	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	6.465E-15	1.193E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200738-1	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Beta	3.277E-14	1.556E-14	1.969E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200739	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Alpha	1.248E-15	6.465E-15	1.193E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200739	SLAPS LOADOUT	03/22/18	Gross Alpha/Beta	Gross Beta	2.318E-14	1.445E-14	1.969E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200740	SLAPS LOADOUT	03/26/18	Gross Alpha/Beta	Gross Alpha	4.716E-15	1.309E-14	2.253E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200740	SLAPS LOADOUT	03/26/18	Gross Alpha/Beta	Gross Beta	5.133E-14	2.819E-14	3.719E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200741	SLAPS LOADOUT	03/26/18	Gross Alpha/Beta	Gross Alpha	4.716E-15	1.309E-14	2.253E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200741	SLAPS LOADOUT	03/26/18	Gross Alpha/Beta	Gross Beta	1.812E-14	2.414E-14	3.719E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200742	SLAPS LOADOUT	03/28/18	Gross Alpha/Beta	Gross Alpha	-2.497E-15	4.808E-15	1.193E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200742	SLAPS LOADOUT	03/28/18	Gross Alpha/Beta	Gross Beta	2.637E-14	1.483E-14	1.969E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200743	SLAPS LOADOUT	03/28/18	Gross Alpha/Beta	Gross Alpha	2.497E-15	6.932E-15	1.193E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200743	SLAPS LOADOUT	03/28/18	Gross Alpha/Beta	Gross Beta	3.676E-14	1.601E-14	1.969E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200744	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Alpha	2.893E-15	6.34E-15	1.131E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200744	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Beta	2.92E-14	1.772E-14	2.632E-14	µCi/mL			SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200744-1	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Alpha	5.564E-15	7.387E-15	1.131E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200744-1	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Beta	3.862E-14	1.869E-14	2.632E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200745	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Alpha	1.558E-15	5.748E-15	1.131E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200745	SLAPS LOADOUT	04/02/18	Gross Alpha/Beta	Gross Beta	3.177E-14	1.798E-14	2.632E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200746	SLAPS LOADOUT	04/03/18	Gross Alpha/Beta	Gross Alpha	2.922E-15	6.403E-15	1.142E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200746	SLAPS LOADOUT	04/03/18	Gross Alpha/Beta	Gross Beta	3.382E-14	1.834E-14	2.658E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200747	SLAPS LOADOUT	04/03/18	Gross Alpha/Beta	Gross Alpha	-2.473E-15	3.447E-15	1.142E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200747	SLAPS LOADOUT	04/03/18	Gross Alpha/Beta	Gross Beta	3.295E-14	1.825E-14	2.658E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200748	SLAPS LOADOUT	04/04/18	Gross Alpha/Beta	Gross Alpha	-1.051E-15	4.091E-15	1.068E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200748	SLAPS LOADOUT	04/04/18	Gross Alpha/Beta	Gross Beta	2.677E-14	1.665E-14	2.486E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200749	SLAPS LOADOUT	04/04/18	Gross Alpha/Beta	Gross Alpha	2.12E-16	4.851E-15	1.078E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200749	SLAPS LOADOUT	04/04/18	Gross Alpha/Beta	Gross Beta	7.418E-15	1.466E-14	2.509E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200750	SLAPS LOADOUT	04/05/18	Gross Alpha/Beta	Gross Alpha	9.209E-15	8.403E-15	1.088E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200750	SLAPS LOADOUT	04/05/18	Gross Alpha/Beta	Gross Beta	5.613E-14	1.986E-14	2.532E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200751	SLAPS LOADOUT	04/05/18	Gross Alpha/Beta	Gross Alpha	5.304E-15	7.042E-15	1.078E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200751	SLAPS LOADOUT	04/05/18	Gross Alpha/Beta	Gross Beta	3.192E-14	1.731E-14	2.509E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200752	SLAPS LOADOUT	04/09/18	Gross Alpha/Beta	Gross Alpha	3.994E-15	6.501E-15	1.068E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200752	SLAPS LOADOUT	04/09/18	Gross Alpha/Beta	Gross Beta	2.353E-14	1.63E-14	2.486E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200753	SLAPS LOADOUT	04/09/18	Gross Alpha/Beta	Gross Alpha	2.733E-15	5.988E-15	1.068E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200753	SLAPS LOADOUT	04/09/18	Gross Alpha/Beta	Gross Beta	3.567E-14	1.757E-14	2.486E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200754	SLAPS LOADOUT	04/10/18	Gross Alpha/Beta	Gross Alpha	9.123E-15	8.325E-15	1.078E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200754	SLAPS LOADOUT	04/10/18	Gross Alpha/Beta	Gross Beta	2.13E-14	1.619E-14	2.509E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200755	SLAPS LOADOUT	04/10/18	Gross Alpha/Beta	Gross Alpha	5.354E-15	7.108E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200755	SLAPS LOADOUT	04/10/18	Gross Alpha/Beta	Gross Beta	5.015E-15	1.452E-14	2.532E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200756	SLAPS LOADOUT	04/11/18	Gross Alpha/Beta	Gross Alpha	2.784E-15	6.101E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200756	SLAPS LOADOUT	04/11/18	Gross Alpha/Beta	Gross Beta	2.645E-14	1.687E-14	2.532E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200757	SLAPS LOADOUT	04/11/18	Gross Alpha/Beta	Gross Alpha	4.031E-15	6.561E-15	1.078E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200757	SLAPS LOADOUT	04/11/18	Gross Alpha/Beta	Gross Beta	2.457E-14	1.654E-14	2.509E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200758	SLAPS LOADOUT	04/12/18	Gross Alpha/Beta	Gross Alpha	4.069E-15	6.623E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200758	SLAPS LOADOUT	04/12/18	Gross Alpha/Beta	Gross Beta	2.975E-14	1.722E-14	2.532E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200759	SLAPS LOADOUT	04/12/18	Gross Alpha/Beta	Gross Alpha	4.069E-15	6.623E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200759	SLAPS LOADOUT	04/12/18	Gross Alpha/Beta	Gross Beta	5.201E-14	1.946E-14	2.532E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200760	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Alpha	2.425E-15	6.402E-15	1.159E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200760	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Beta	7.376E-15	1.208E-14	1.943E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200760-1	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Alpha	3.638E-15	6.849E-15	1.159E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200760-1	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Beta	5.823E-15	1.187E-14	1.943E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200761	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Alpha	-3.638E-15	3.407E-15	1.159E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200761	SLAPS LOADOUT	04/16/18	Gross Alpha/Beta	Gross Beta	2.717E-15	1.146E-14	1.943E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200762	SLAPS LOADOUT	04/19/18	Gross Alpha/Beta	Gross Alpha	1.147E-15	5.603E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200762	SLAPS LOADOUT	04/19/18	Gross Alpha/Beta	Gross Beta	7.711E-15	1.152E-14	1.838E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200763	SLAPS LOADOUT	04/19/18	Gross Alpha/Beta	Gross Alpha	0	5.158E-15	1.106E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200763	SLAPS LOADOUT	04/19/18	Gross Alpha/Beta	Gross Beta	1.371E-14	1.239E-14	1.855E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200764	SLAPS LOADOUT	04/18/18	Gross Alpha/Beta	Gross Alpha	1.19E-15	5.813E-15	1.137E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200764	SLAPS LOADOUT	04/18/18	Gross Alpha/Beta	Gross Beta	1.905E-15	1.114E-14	1.907E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200765	SLAPS LOADOUT	04/18/18	Gross Alpha/Beta	Gross Alpha	1.201E-15	5.867E-15	1.148E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200765	SLAPS LOADOUT	04/18/18	Gross Alpha/Beta	Gross Beta	2.269E-14	1.388E-14	1.925E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200766	SLAPS LOADOUT	04/17/18	Gross Alpha/Beta	Gross Alpha	4.851E-15	7.269E-15	1.159E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200766	SLAPS LOADOUT	04/17/18	Gross Alpha/Beta	Gross Beta	2.601E-14	1.438E-14	1.943E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200767	SLAPS LOADOUT	04/17/18	Gross Alpha/Beta	Gross Alpha	1.213E-15	5.923E-15	1.159E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200767	SLAPS LOADOUT	04/17/18	Gross Alpha/Beta	Gross Beta	2.911E-14	1.474E-14	1.943E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200768	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Alpha	-2.294E-15	3.952E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200768	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Beta	2.02E-14	1.308E-14	1.838E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200769	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Alpha	4.589E-15	6.876E-15	1.096E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200769	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Beta	1.579E-14	1.255E-14	1.838E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200770	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Alpha	0	5.674E-15	1.217E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200770	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Beta	2.853E-15	1.203E-14	2.04E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200771	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Alpha	0	5.91E-15	1.267E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200771	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Beta	2.335E-14	1.513E-14	2.126E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200772	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Alpha	2.653E-15	7.003E-15	1.267E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200772	SLAPS LOADOUT	04/23/18	Gross Alpha/Beta	Gross Beta	1.231E-14	1.376E-14	2.126E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200773	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Alpha	2.336E-15	6.167E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200773	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Beta	1.384E-14	1.25E-14	1.872E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200774	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Alpha	8.408E-15	8.662E-15	1.001E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200774	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Beta	1.045E-14	1.611E-14	2.555E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200774-1	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Alpha	2.102E-15	6.551E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200774-1	SLAPS LOADOUT	04/24/18	Gross Alpha/Beta	Gross Beta	7.215E-15	1.577E-14	2.555E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200775	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Alpha	4.582E-15	7.396E-15	9.918E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200775	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Beta	4.483E-14	1.935E-14	2.532E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200776	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Alpha	7.017E-15	8.131E-15	9.828E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200776	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Beta	4.363E-14	1.91E-14	2.509E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200777	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Alpha	-5.54E-16	7.234E-15	1.318E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200777	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Beta	3.828E-14	2.368E-14	3.365E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200778	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Alpha	7.752E-15	1.038E-14	1.318E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200778	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Beta	2.975E-14	2.284E-14	3.365E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200779	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Alpha	9.413E-15	1.091E-14	1.318E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200779	SLAPS LOADOUT	04/25/18	Gross Alpha/Beta	Gross Beta	3.828E-14	2.368E-14	3.365E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200780	SLAPS LOADOUT	04/26/18	Gross Alpha/Beta	Gross Alpha	2.045E-15	6.374E-15	9.74E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200780	SLAPS LOADOUT	04/26/18	Gross Alpha/Beta	Gross Beta	2.828E-14	1.749E-14	2.486E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200781	SLAPS LOADOUT	04/26/18	Gross Alpha/Beta	Gross Alpha	2.045E-15	6.374E-15	9.74E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200781	SLAPS LOADOUT	04/26/18	Gross Alpha/Beta	Gross Beta	6.232E-15	1.526E-14	2.486E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200782	SLAPS LOADOUT	04/27/18	Gross Alpha/Beta	Gross Alpha	2.226E-15	6.936E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200782	SLAPS LOADOUT	04/27/18	Gross Alpha/Beta	Gross Beta	2.392E-14	1.836E-14	2.705E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200783	SLAPS LOADOUT	04/27/18	Gross Alpha/Beta	Gross Alpha	4.897E-15	7.903E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200783	SLAPS LOADOUT	04/27/18	Gross Alpha/Beta	Gross Beta	2.22E-14	1.819E-14	2.705E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200784	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Alpha	5.676E-15	7.601E-15	9.653E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200784	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Beta	4.675E-14	1.913E-14	2.464E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200785	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Alpha	2.064E-15	6.432E-15	9.828E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200785	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Beta	2.615E-14	1.742E-14	2.509E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200786	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Alpha	2.102E-15	6.551E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200786	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Beta	1.45E-14	1.652E-14	2.555E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200787	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Alpha	-2.943E-15	4.181E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200787	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Beta	1.612E-14	1.669E-14	2.555E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200788	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Alpha	-1.682E-15	4.88E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200788	SLAPS LOADOUT	04/30/18	Gross Alpha/Beta	Gross Beta	1.126E-14	1.619E-14	2.555E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200789	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Alpha	1.239E-14	9.702E-15	1.09E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200789	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Beta	5.599E-14	1.991E-14	2.484E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200789-1	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Alpha	7.394E-15	8.287E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200789-1	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Beta	3.675E-14	1.806E-14	2.484E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200790	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Alpha	7.394E-15	8.287E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200790	SLAPS LOADOUT	05/01/18	Gross Alpha/Beta	Gross Beta	2.953E-14	1.734E-14	2.484E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200791	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Alpha	7.394E-15	8.287E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200791	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Beta	4.556E-14	1.892E-14	2.484E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200792	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Alpha	2.395E-15	6.593E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200792	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Beta	5.198E-14	1.953E-14	2.484E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200793	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Alpha	1.77E-14	1.301E-14	1.414E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200793	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Beta	4.352E-14	2.302E-14	3.223E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200794	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Alpha	-3.153E-15	5.207E-15	1.32E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200794	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Beta	3.722E-15	1.761E-14	3.008E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200795	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Alpha	1.486E-15	7.914E-15	1.414E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200795	SLAPS LOADOUT	05/02/18	Gross Alpha/Beta	Gross Beta	2.063E-14	2.067E-14	3.223E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200796	SLAPS LOADOUT	05/03/18	Gross Alpha/Beta	Gross Alpha	4.787E-15	9.263E-15	1.431E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200796	SLAPS LOADOUT	05/03/18	Gross Alpha/Beta	Gross Beta	1.562E-14	2.036E-14	3.262E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200797	SLAPS LOADOUT	05/03/18	Gross Alpha/Beta	Gross Alpha	1.523E-15	8.107E-15	1.448E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200797	SLAPS LOADOUT	05/03/18	Gross Alpha/Beta	Gross Beta	5.151E-15	1.945E-14	3.301E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200798	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Alpha	3.784E-15	7.322E-15	1.131E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200798	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Beta	3.315E-14	1.825E-14	2.578E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200799	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Alpha	-1.405E-15	5.16E-15	1.131E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200799	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Beta	-9.71E-16	1.463E-14	2.578E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200800	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Alpha	7.441E-15	9.564E-15	1.32E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200800	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Beta	1.246E-14	1.857E-14	3.008E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200801	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Alpha	2.901E-15	7.985E-15	1.32E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200801	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Beta	2.12E-14	1.95E-14	3.008E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200802	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Alpha	2.901E-15	7.985E-15	1.32E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200802	SLAPS LOADOUT	05/07/18	Gross Alpha/Beta	Gross Beta	8.09E-16	1.729E-14	3.008E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200803	SLAPS LOADOUT	05/08/18	Gross Alpha/Beta	Gross Alpha	5.081E-15	7.771E-15	1.131E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200803	SLAPS LOADOUT	05/08/18	Gross Alpha/Beta	Gross Beta	3.398E-14	1.833E-14	2.578E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200804	SLAPS LOADOUT	05/08/18	Gross Alpha/Beta	Gross Alpha	5.033E-15	7.698E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200804	SLAPS LOADOUT	05/08/18	Gross Alpha/Beta	Gross Beta	2.459E-14	1.724E-14	2.554E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200805	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Alpha	6.586E-15	1.007E-14	1.466E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200805	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Beta	3.219E-14	2.256E-14	3.342E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200806	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Alpha	6.586E-15	1.007E-14	1.466E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200806	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Beta	2.032E-14	2.133E-14	3.342E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200807	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Alpha	6.586E-15	1.007E-14	1.466E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200807	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Beta	5.16E-14	2.451E-14	3.342E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200808	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Alpha	-1.318E-15	4.837E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200808	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Beta	3.264E-14	1.726E-14	2.417E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200809	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Alpha	4.763E-15	7.286E-15	1.06E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200809	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Beta	4.356E-14	1.834E-14	2.417E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200809-1	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Alpha	1.328E-14	9.758E-15	1.06E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200809-1	SLAPS LOADOUT	05/10/18	Gross Alpha/Beta	Gross Beta	3.342E-14	1.734E-14	2.417E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200810	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Alpha	-1.02E-16	5.438E-15	1.065E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200810	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Beta	2.808E-14	1.687E-14	2.428E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200811	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Alpha	7.196E-15	8.065E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200811	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Beta	4.434E-14	1.841E-14	2.417E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200812	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Alpha	-1.32E-16	7.05E-15	1.381E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200812	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Beta	4.251E-14	2.248E-14	3.148E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200813	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Alpha	1.396E-14	1.174E-14	1.365E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200813	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Beta	2.796E-14	2.08E-14	3.112E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200814	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Alpha	1.083E-14	1.085E-14	1.365E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200814	SLAPS LOADOUT	05/14/18	Gross Alpha/Beta	Gross Beta	2.595E-14	2.059E-14	3.112E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200815	SLAPS LOADOUT	05/15/18	Gross Alpha/Beta	Gross Alpha	1.146E-15	6.099E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200815	SLAPS LOADOUT	05/15/18	Gross Alpha/Beta	Gross Beta	8.685E-15	1.516E-14	2.484E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200816	SLAPS LOADOUT	05/15/18	Gross Alpha/Beta	Gross Alpha	-1.318E-15	4.837E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200816	SLAPS LOADOUT	05/15/18	Gross Alpha/Beta	Gross Beta	3.654E-14	1.765E-14	2.417E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200817	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Alpha	3.516E-15	6.803E-15	1.051E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200817	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Beta	3.312E-14	1.719E-14	2.396E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200818	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Alpha	7.132E-15	7.994E-15	1.051E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200818	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Beta	3.854E-14	1.772E-14	2.396E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200819	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Alpha	3.071E-15	8.454E-15	1.397E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200819	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Beta	3.684E-14	2.213E-14	3.185E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200820	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Alpha	1.469E-15	7.821E-15	1.397E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200820	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Beta	3.581E-14	2.202E-14	3.185E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200821	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Alpha	-3.378E-15	5.579E-15	1.414E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200821	SLAPS LOADOUT	05/16/18	Gross Alpha/Beta	Gross Beta	1.907E-15	1.864E-14	3.223E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200822	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Alpha	2.777E-15	7.645E-15	1.263E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200822	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Beta	6.399E-14	2.3E-14	2.88E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200823	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Alpha	7.125E-15	9.157E-15	1.263E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200823	SLAPS LOADOUT	05/09/18	Gross Alpha/Beta	Gross Beta	4.54E-14	2.121E-14	2.88E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200824	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Alpha	1.534E-15	6.592E-15	1.029E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200824	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Beta	5.845E-14	1.984E-14	2.448E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200824-1	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Alpha	2.761E-15	7.036E-15	1.029E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200824-1	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Beta	3.484E-14	1.757E-14	2.448E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200825	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Alpha	8.897E-15	8.942E-15	1.029E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200825	SLAPS LOADOUT	05/17/18	Gross Alpha/Beta	Gross Beta	3.011E-14	1.71E-14	2.448E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200826	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Alpha	1.548E-15	6.652E-15	1.038E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200826	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Beta	2.8E-14	1.701E-14	2.471E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200827	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Alpha	4.024E-15	7.522E-15	1.038E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200827	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Beta	4.31E-14	1.851E-14	2.471E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200828	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Alpha	3.85E-15	7.195E-15	9.931E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200828	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Beta	1.311E-14	1.485E-14	2.363E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200829	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Alpha	4.919E-15	9.194E-15	1.269E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200829	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Beta	6.068E-15	1.782E-14	3.02E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200830	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Alpha	1.097E-14	1.103E-14	1.269E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200830	SLAPS LOADOUT	05/21/18	Gross Alpha/Beta	Gross Beta	2.646E-14	2E-14	3.02E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200831	SLAPS LOADOUT	05/22/18	Gross Alpha/Beta	Gross Alpha	1.534E-15	6.592E-15	1.029E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200831	SLAPS LOADOUT	05/22/18	Gross Alpha/Beta	Gross Beta	5.373E-14	1.94E-14	2.448E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200832	SLAPS LOADOUT	05/22/18	Gross Alpha/Beta	Gross Alpha	1.258E-14	9.92E-15	1.029E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200832	SLAPS LOADOUT	05/22/18	Gross Alpha/Beta	Gross Beta	5.058E-14	1.91E-14	2.448E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200833	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Alpha	1.562E-15	6.713E-15	1.048E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200833	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Beta	4.109E-14	1.845E-14	2.493E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200834	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Alpha	7.81E-15	8.751E-15	1.048E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200834	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Beta	4.75E-14	1.907E-14	2.493E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200835	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Alpha	4.26E-16	8.488E-15	1.428E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200835	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Beta	1.01E-14	2.041E-14	3.397E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200836	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Alpha	7.236E-15	1.089E-14	1.428E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200836	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Beta	3.96E-14	2.35E-14	3.397E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200837	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Alpha	8.939E-15	1.142E-14	1.428E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200837	SLAPS LOADOUT	05/23/18	Gross Alpha/Beta	Gross Beta	4.287E-14	2.383E-14	3.397E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200838	SLAPS LOADOUT	05/24/18	Gross Alpha/Beta	Gross Alpha	2.838E-15	7.232E-15	1.058E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200838	SLAPS LOADOUT	05/24/18	Gross Alpha/Beta	Gross Beta	3.58E-14	1.806E-14	2.516E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200839	SLAPS LOADOUT	05/24/18	Gross Alpha/Beta	Gross Alpha	1.577E-15	6.775E-15	1.058E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200839	SLAPS LOADOUT	05/24/18	Gross Alpha/Beta	Gross Beta	3.014E-14	1.749E-14	2.516E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200840	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	4.146E-15	6.106E-15	9.618E-15	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200840	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	7.155E-15	1.672E-14	2.329E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200840-1	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	1.777E-15	5.099E-15	9.618E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200840-1	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	2.843E-14	1.865E-14	2.329E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200841	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	8.732E-15	7.615E-15	9.454E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200841	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	3.093E-14	1.86E-14	2.289E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200842	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	4.767E-15	7.022E-15	1.106E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200842	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	3.619E-14	2.176E-14	2.678E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200843	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	1.984E-15	5.693E-15	1.074E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200843	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	5.444E-15	1.843E-14	2.6E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200844	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Alpha	2.043E-15	5.863E-15	1.106E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200844	SLAPS LOADOUT	05/29/18	Gross Alpha/Beta	Gross Beta	1.784E-14	2.011E-14	2.678E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200845	SLAPS LOADOUT	05/31/18	Gross Alpha/Beta	Gross Alpha	6.49E-16	4.943E-15	1.053E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200845	SLAPS LOADOUT	05/31/18	Gross Alpha/Beta	Gross Beta	2.531E-14	1.991E-14	2.551E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200846	SLAPS LOADOUT	05/31/18	Gross Alpha/Beta	Gross Alpha	8.275E-15	7.921E-15	1.034E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200846	SLAPS LOADOUT	05/31/18	Gross Alpha/Beta	Gross Beta	3.954E-14	2.084E-14	2.503E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200847	SLAPS LOADOUT	06/05/18	Gross Alpha/Beta	Gross Alpha	1.824E-15	5.235E-15	9.876E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200847	SLAPS LOADOUT	06/05/18	Gross Alpha/Beta	Gross Beta	3.934E-14	2.005E-14	2.391E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200848	SLAPS LOADOUT	06/05/18	Gross Alpha/Beta	Gross Alpha	4.257E-15	6.27E-15	9.876E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200848	SLAPS LOADOUT	06/05/18	Gross Alpha/Beta	Gross Beta	1.827E-14	1.817E-14	2.391E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200849	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Alpha	-6.14E-16	3.98E-15	9.965E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200849	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Beta	2.946E-14	1.932E-14	2.413E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200850	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Alpha	3.068E-15	5.827E-15	9.965E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200850	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Beta	2.158E-14	1.862E-14	2.413E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200851	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Alpha	1.057E-14	1.299E-14	1.907E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200851	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Beta	2.323E-14	3.399E-14	4.618E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200852	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Alpha	8.51E-16	6.488E-15	1.383E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200852	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Beta	3.759E-14	2.652E-14	3.348E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200853	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Alpha	1.362E-14	1.458E-14	2.011E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200853	SLAPS LOADOUT	06/04/18	Gross Alpha/Beta	Gross Beta	4.038E-14	3.729E-14	4.869E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200854	SLAPS LOADOUT	05/30/18	Gross Alpha/Beta	Gross Alpha	7.976E-15	7.636E-15	9.965E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200854	SLAPS LOADOUT	05/30/18	Gross Alpha/Beta	Gross Beta	2.631E-14	1.904E-14	2.413E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200855	SLAPS LOADOUT	05/30/18	Gross Alpha/Beta	Gross Alpha	4.334E-15	6.384E-15	1.006E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200855	SLAPS LOADOUT	05/30/18	Gross Alpha/Beta	Gross Beta	1.384E-14	1.807E-14	2.435E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200856	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	-9.55E-16	4.004E-15	1.067E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200856	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	3.886E-14	1.821E-14	2.483E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200856-1	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	2.864E-15	5.959E-15	1.067E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200856-1	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	4.621E-14	1.894E-14	2.483E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200857	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	6.746E-15	7.495E-15	1.077E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200857	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	4.253E-14	1.871E-14	2.506E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200858	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	2.398E-15	8.116E-15	1.609E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200858	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	1.918E-14	2.333E-14	3.742E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200859	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	1.391E-14	1.245E-14	1.609E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200859	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	2.78E-14	2.426E-14	3.742E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200860	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Alpha	8.04E-15	1.036E-14	1.586E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200860	SLAPS LOADOUT	06/06/18	Gross Alpha/Beta	Gross Beta	5.654E-14	2.694E-14	3.69E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200861	SLAPS LOADOUT	06/07/18	Gross Alpha/Beta	Gross Alpha	5.123E-15	6.6E-15	1.011E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200861	SLAPS LOADOUT	06/07/18	Gross Alpha/Beta	Gross Beta	4.917E-14	1.846E-14	2.351E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200862	SLAPS LOADOUT	06/07/18	Gross Alpha/Beta	Gross Alpha	4.024E-15	6.307E-15	1.038E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200862	SLAPS LOADOUT	06/07/18	Gross Alpha/Beta	Gross Beta	4.972E-14	1.889E-14	2.415E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200863	SLAPS LOADOUT	06/11/18	Gross Alpha/Beta	Gross Alpha	9.405E-15	8.421E-15	1.088E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200863	SLAPS LOADOUT	06/11/18	Gross Alpha/Beta	Gross Beta	5.375E-14	1.995E-14	2.53E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200864	SLAPS LOADOUT	06/11/18	Gross Alpha/Beta	Gross Alpha	4.216E-15	6.607E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200864	SLAPS LOADOUT	06/11/18	Gross Alpha/Beta	Gross Beta	4.127E-14	1.872E-14	2.53E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200865	SLAPS LOADOUT	06/12/18	Gross Alpha/Beta	Gross Alpha	2.891E-15	6.015E-15	1.077E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200865	SLAPS LOADOUT	06/12/18	Gross Alpha/Beta	Gross Beta	2.109E-14	1.652E-14	2.506E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200866	SLAPS LOADOUT	06/12/18	Gross Alpha/Beta	Gross Alpha	2.838E-15	5.904E-15	1.058E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200866	SLAPS LOADOUT	06/12/18	Gross Alpha/Beta	Gross Beta	3.365E-14	1.755E-14	2.46E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200867	SLAPS LOADOUT	06/13/18	Gross Alpha/Beta	Gross Alpha	7.689E-15	8.543E-15	1.228E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200867	SLAPS LOADOUT	06/13/18	Gross Alpha/Beta	Gross Beta	3.813E-14	2.029E-14	2.857E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200868	SLAPS LOADOUT	06/13/18	Gross Alpha/Beta	Gross Alpha	1.062E-14	9.508E-15	1.228E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200868	SLAPS LOADOUT	06/13/18	Gross Alpha/Beta	Gross Beta	5.599E-14	2.207E-14	2.857E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200869	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Alpha	9.273E-15	8.302E-15	1.072E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200869	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Beta	3.986E-14	1.838E-14	2.495E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200870	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Alpha	5.41E-15	6.97E-15	1.067E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200870	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Beta	4.376E-14	1.87E-14	2.483E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200871	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Alpha	8.04E-15	1.036E-14	1.586E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200871	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Beta	9.204E-15	2.193E-14	3.69E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200872	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Alpha	6.149E-15	9.635E-15	1.586E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200872	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Beta	5.168E-14	2.645E-14	3.69E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200873	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Alpha	1.182E-14	1.167E-14	1.586E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200873	SLAPS LOADOUT	06/14/18	Gross Alpha/Beta	Gross Beta	1.649E-14	2.274E-14	3.69E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200874	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	1.121E-15	4.786E-15	8.461E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200874	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	2.129E-14	1.277E-14	1.735E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200875	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	9.205E-15	9.506E-15	1.158E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200875	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	1.932E-14	1.626E-14	2.375E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200876	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	-1.534E-15	4.906E-15	1.158E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200876	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	1.637E-14	1.588E-14	2.375E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200877	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	4.659E-15	7.958E-15	1.172E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200877	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	3.446E-14	1.828E-14	2.404E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200878	SLAPS LOADOUT	06/19/18	Gross Alpha/Beta	Gross Alpha	7.074E-15	7.305E-15	8.9E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200878	SLAPS LOADOUT	06/19/18	Gross Alpha/Beta	Gross Beta	3.523E-14	1.492E-14	1.825E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200879	SLAPS LOADOUT	06/19/18	Gross Alpha/Beta	Gross Alpha	3.537E-15	6.042E-15	8.9E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200879	SLAPS LOADOUT	06/19/18	Gross Alpha/Beta	Gross Beta	2.768E-14	1.406E-14	1.825E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200880	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Alpha	6.822E-15	7.045E-15	8.582E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200880	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Beta	2.378E-14	1.321E-14	1.76E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200881	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Alpha	5.841E-15	6.846E-15	8.819E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200881	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Beta	1.396E-14	1.229E-14	1.809E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200882	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Alpha	0	5.002E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200882	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Beta	9.907E-15	1.318E-14	2.054E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200883	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Alpha	1.326E-15	5.663E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200883	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Beta	1.585E-14	1.395E-14	2.054E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200884	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Alpha	5.306E-15	7.301E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200884	SLAPS LOADOUT	06/20/18	Gross Alpha/Beta	Gross Beta	1.84E-14	1.427E-14	2.054E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200885	SLAPS LOADOUT	06/21/18	Gross Alpha/Beta	Gross Alpha	3.442E-15	5.879E-15	8.66E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200885	SLAPS LOADOUT	06/21/18	Gross Alpha/Beta	Gross Beta	1.518E-14	1.225E-14	1.776E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200886	SLAPS LOADOUT	06/21/18	Gross Alpha/Beta	Gross Alpha	3.411E-15	5.827E-15	8.582E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200886	SLAPS LOADOUT	06/21/18	Gross Alpha/Beta	Gross Beta	2.378E-14	1.321E-14	1.76E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200887	SLAPS LOADOUT	06/25/18	Gross Alpha/Beta	Gross Alpha	7.819E-15	7.278E-15	8.432E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200887	SLAPS LOADOUT	06/25/18	Gross Alpha/Beta	Gross Beta	1.764E-14	1.228E-14	1.729E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200888	SLAPS LOADOUT	06/25/18	Gross Alpha/Beta	Gross Alpha	5.634E-15	6.603E-15	8.506E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200888	SLAPS LOADOUT	06/25/18	Gross Alpha/Beta	Gross Beta	1.419E-14	1.194E-14	1.745E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200889	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	5.736E-15	6.722E-15	8.66E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200889	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	1.518E-14	1.225E-14	1.776E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200890	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	4.548E-15	6.258E-15	8.582E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200890	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	1.286E-14	1.186E-14	1.76E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200891	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	0	5.786E-15	1.158E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200891	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	2.914E-14	1.747E-14	2.375E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200892	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	6.288E-15	8.653E-15	1.187E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200892	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	1.778E-14	1.64E-14	2.434E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200893	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	3.106E-15	7.396E-15	1.341E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200893	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	-4.474E-15	1.451E-14	2.409E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200893-1	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Alpha	0	5.947E-15	1.341E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200893-1	SLAPS LOADOUT	06/27/18	Gross Alpha/Beta	Gross Beta	1.541E-14	1.705E-14	2.409E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200894	SLAPS LOADOUT	06/28/18	Gross Alpha/Beta	Gross Alpha	3.381E-15	5.824E-15	9.733E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200894	SLAPS LOADOUT	06/28/18	Gross Alpha/Beta	Gross Beta	2.778E-14	1.429E-14	1.748E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200895	SLAPS LOADOUT	06/28/18	Gross Alpha/Beta	Gross Alpha	-2.234E-15	2.888E-15	9.647E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200895	SLAPS LOADOUT	06/28/18	Gross Alpha/Beta	Gross Beta	8.939E-15	1.2E-14	1.733E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200896	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	2.254E-15	5.314E-15	8.506E-15	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200896	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	2.645E-14	1.343E-14	1.745E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200896-1	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Alpha	1.014E-14	8.016E-15	8.506E-15	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200896-1	SLAPS LOADOUT	06/18/18	Gross Alpha/Beta	Gross Beta	2.068E-14	1.275E-14	1.745E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200897	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Alpha	8.34E-15	8.495E-15	1.201E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200897	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Beta	3.069E-14	2.12E-14	2.825E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200897-1	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Alpha	-1.39E-15	4.214E-15	1.201E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200897-1	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Beta	4.763E-14	2.272E-14	2.825E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200898	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Alpha	1.376E-15	5.705E-15	1.188E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200898	SLAPS LOADOUT	07/02/18	Gross Alpha/Beta	Gross Beta	2.597E-14	2.058E-14	2.796E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200899	SLAPS LOADOUT	07/03/18	Gross Alpha/Beta	Gross Alpha	9.73E-15	8.202E-15	1.05E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200899	SLAPS LOADOUT	07/03/18	Gross Alpha/Beta	Gross Beta	3.231E-14	1.905E-14	2.472E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200900	SLAPS LOADOUT	07/03/18	Gross Alpha/Beta	Gross Alpha	1.095E-14	8.562E-15	1.05E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200900	SLAPS LOADOUT	07/03/18	Gross Alpha/Beta	Gross Beta	4.324E-14	2.002E-14	2.472E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200901	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Alpha	6.22E-15	7.179E-15	1.074E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200901	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Beta	1.789E-14	1.809E-14	2.528E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200902	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Alpha	6.192E-15	7.146E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200902	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Beta	3.052E-14	1.918E-14	2.517E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200903	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Alpha	1.004E-14	9.227E-15	1.238E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200903	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Beta	2.89E-14	2.162E-14	2.914E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200904	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Alpha	8.648E-15	8.81E-15	1.245E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200904	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Beta	9.632E-15	1.992E-14	2.929E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200905	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Alpha	8.603E-15	8.763E-15	1.238E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200905	SLAPS LOADOUT	07/05/18	Gross Alpha/Beta	Gross Beta	5.902E-15	1.946E-14	2.914E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200906	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Alpha	2.454E-15	5.651E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200906	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Beta	2.631E-14	1.865E-14	2.494E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200907	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Alpha	4.909E-15	6.638E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200907	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Beta	1.056E-14	1.718E-14	2.494E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200908	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Alpha	6.192E-15	8.373E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200908	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Beta	2.027E-14	2.233E-14	3.146E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200909	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Alpha	9.287E-15	9.46E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200909	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Beta	3.12E-14	2.334E-14	3.146E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA200910	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Alpha	9.287E-15	9.46E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200910	SLAPS LOADOUT	07/09/18	Gross Alpha/Beta	Gross Beta	1.432E-14	2.177E-14	3.146E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200911	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Alpha	8.906E-15	7.778E-15	1.001E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200911	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Beta	4.743E-14	1.667E-14	1.79E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA200911-1	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Alpha	5.495E-15	6.69E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200911-1	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Beta	4.161E-14	1.607E-14	1.79E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200912	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Alpha	3.221E-15	5.859E-15	1.001E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200912	SLAPS LOADOUT	07/10/18	Gross Alpha/Beta	Gross Beta	3.069E-14	1.492E-14	1.79E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200913	SLAPS LOADOUT	07/11/18	Gross Alpha/Beta	Gross Alpha	2.142E-15	5.546E-15	1.028E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200913	SLAPS LOADOUT	07/11/18	Gross Alpha/Beta	Gross Beta	2.705E-14	1.484E-14	1.839E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200914	SLAPS LOADOUT	07/11/18	Gross Alpha/Beta	Gross Alpha	3.31E-15	6.02E-15	1.028E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200914	SLAPS LOADOUT	07/11/18	Gross Alpha/Beta	Gross Beta	2.63E-14	1.476E-14	1.839E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200915	SLAPS LOADOUT	07/12/18	Gross Alpha/Beta	Gross Alpha	1.499E-14	9.583E-15	1.028E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200915	SLAPS LOADOUT	07/12/18	Gross Alpha/Beta	Gross Beta	2.705E-14	1.484E-14	1.839E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA200916	SLAPS LOADOUT	07/12/18	Gross Alpha/Beta	Gross Alpha	2.142E-15	5.546E-15	1.028E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA200916	SLAPS LOADOUT	07/12/18	Gross Alpha/Beta	Gross Beta	3.378E-14	1.557E-14	1.839E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA200917	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Alpha	7.703E-15	7.906E-15	1.127E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200917	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Beta	2.984E-14	1.644E-14	2.394E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA200917-1	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Alpha	2.838E-15	6.213E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200917-1	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Beta	4.935E-14	1.84E-14	2.394E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200918	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Alpha	4.018E-15	6.616E-15	1.117E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200918	SLAPS LOADOUT	07/16/18	Gross Alpha/Beta	Gross Beta	3.886E-14	1.724E-14	2.373E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200919	SLAPS LOADOUT	07/17/18	Gross Alpha/Beta	Gross Alpha	4.05E-16	5.171E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200919	SLAPS LOADOUT	07/17/18	Gross Alpha/Beta	Gross Beta	3.453E-14	1.692E-14	2.394E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200920	SLAPS LOADOUT	07/17/18	Gross Alpha/Beta	Gross Alpha	-8.11E-16	4.563E-15	1.127E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200920	SLAPS LOADOUT	07/17/18	Gross Alpha/Beta	Gross Beta	7.997E-15	1.407E-14	2.394E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200921	SLAPS LOADOUT	07/18/18	Gross Alpha/Beta	Gross Alpha	7.988E-15	8.199E-15	1.168E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200921	SLAPS LOADOUT	07/18/18	Gross Alpha/Beta	Gross Beta	3.985E-14	1.796E-14	2.483E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200922	SLAPS LOADOUT	07/18/18	Gross Alpha/Beta	Gross Alpha	7.988E-15	8.199E-15	1.168E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200922	SLAPS LOADOUT	07/18/18	Gross Alpha/Beta	Gross Beta	4.066E-14	1.804E-14	2.483E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200923	SLAPS LOADOUT	07/19/18	Gross Alpha/Beta	Gross Alpha	-1.279E-15	7.198E-15	1.777E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200923	SLAPS LOADOUT	07/19/18	Gross Alpha/Beta	Gross Beta	4.954E-14	2.618E-14	3.776E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200924	SLAPS LOADOUT	07/19/18	Gross Alpha/Beta	Gross Alpha	2.54E-15	8.952E-15	1.765E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200924	SLAPS LOADOUT	07/19/18	Gross Alpha/Beta	Gross Beta	2.475E-14	2.34E-14	3.75E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200925	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Alpha	5.11E-15	6.893E-15	1.092E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200925	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Beta	2.591E-14	1.562E-14	2.321E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200926	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Alpha	2.74E-15	5.999E-15	1.088E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200926	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Beta	3.032E-14	1.603E-14	2.311E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200927	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Alpha	1.579E-15	5.566E-15	1.097E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200927	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Beta	3.438E-14	1.656E-14	2.332E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA200928	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Alpha	-1.974E-15	3.762E-15	1.097E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200928	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Beta	9.5E-16	1.291E-14	2.332E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA200929	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Alpha	2.764E-15	6.051E-15	1.097E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA200929	SLAPS LOADOUT	07/23/18	Gross Alpha/Beta	Gross Beta	1.615E-14	1.463E-14	2.332E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA200930	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Alpha	1.229E-14	9.105E-15	1.102E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA200930	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Beta	4.751E-14	1.792E-14	2.342E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205580	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Alpha	8.611E-15	7.992E-15	1.088E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205580	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Beta	3.71E-14	1.672E-14	2.311E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205581	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Alpha	-2.162E-15	1.217E-14	3.004E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205581	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Beta	5.462E-14	4.12E-14	6.384E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205582	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Alpha	1.73E-14	2.005E-14	3.004E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205582	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Beta	8.375E-14	4.426E-14	6.384E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205583	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Alpha	-2.162E-15	1.217E-14	3.004E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205583	SLAPS LOADOUT	07/24/18	Gross Alpha/Beta	Gross Beta	2.341E-14	3.776E-14	6.384E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205584	SLAPS LOADOUT	07/25/18	Gross Alpha/Beta	Gross Alpha	2.788E-15	6.104E-15	1.107E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205584	SLAPS LOADOUT	07/25/18	Gross Alpha/Beta	Gross Beta	1.936E-14	1.51E-14	2.352E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205585	SLAPS LOADOUT	07/25/18	Gross Alpha/Beta	Gross Alpha	2.788E-15	6.104E-15	1.107E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205585	SLAPS LOADOUT	07/25/18	Gross Alpha/Beta	Gross Beta	2.166E-14	1.534E-14	2.352E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205586	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Alpha	5.787E-15	7.805E-15	1.237E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205586	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Beta	7.561E-14	2.225E-14	2.629E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205586-1	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Alpha	-8.9E-16	5.01E-15	1.237E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205586-1	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Beta	3.191E-14	1.796E-14	2.629E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205587	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Alpha	4.451E-15	7.33E-15	1.237E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205587	SLAPS LOADOUT	07/26/18	Gross Alpha/Beta	Gross Beta	4.391E-14	1.919E-14	2.629E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205588	SLAPS LOADOUT	07/30/18	Gross Alpha/Beta	Gross Alpha	-2.162E-15	4.12E-15	1.202E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205588	SLAPS LOADOUT	07/30/18	Gross Alpha/Beta	Gross Beta	3.1E-14	1.745E-14	2.554E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205589	SLAPS LOADOUT	07/30/18	Gross Alpha/Beta	Gross Alpha	-4.625E-15	1.844E-15	1.168E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205589	SLAPS LOADOUT	07/30/18	Gross Alpha/Beta	Gross Beta	2.933E-14	1.688E-14	2.483E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205590	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Alpha	-3.363E-15	3.117E-15	1.168E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205590	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Beta	3.419E-14	1.738E-14	2.483E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205591	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Alpha	-2.102E-15	4.006E-15	1.168E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205591	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Beta	2.852E-14	1.679E-14	2.483E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205592	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Alpha	3.91E-16	4.73E-15	1.085E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205592	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Beta	2.347E-14	1.335E-14	1.819E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205592-1	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Alpha	3.91E-16	4.73E-15	1.085E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205592-1	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Beta	3.01E-14	1.412E-14	1.819E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205593	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Alpha	9.764E-15	8.17E-15	1.085E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205593	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Beta	2.052E-14	1.299E-14	1.819E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205594	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Alpha	1.407E-14	9.197E-15	1.057E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205594	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Beta	3.002E-14	1.383E-14	1.771E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205595	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Alpha	1.407E-14	9.197E-15	1.057E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205595	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Beta	3.217E-14	1.408E-14	1.771E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205596	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Alpha	6.03E-15	6.824E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205596	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Beta	2.051E-14	1.262E-14	1.755E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205597	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Alpha	7.16E-15	7.194E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205597	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Beta	2.691E-14	1.338E-14	1.755E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205598	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Alpha	7.16E-15	8.104E-15	1.244E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205598	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Beta	2.182E-14	1.468E-14	2.084E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205599	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Alpha	7.16E-15	8.104E-15	1.244E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205599	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Beta	2.689E-14	1.53E-14	2.084E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205600	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Alpha	3.133E-15	6.621E-15	1.244E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205600	SLAPS LOADOUT	08/06/18	Gross Alpha/Beta	Gross Beta	8.306E-15	1.296E-14	2.084E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205601	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Alpha	3.978E-15	6.354E-15	1.106E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205601	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Beta	1.639E-14	1.268E-14	1.853E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205602	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Alpha	1.813E-14	1.04E-14	1.095E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205602	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Beta	4.749E-14	1.614E-14	1.836E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205603	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Alpha	6.051E-15	9.665E-15	1.682E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205603	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Beta	4.321E-14	2.149E-14	2.818E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205604	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Alpha	1.513E-14	1.266E-14	1.682E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205604	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Beta	3.065E-14	1.999E-14	2.818E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205605	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Alpha	5.967E-15	9.531E-15	1.658E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205605	SLAPS LOADOUT	08/08/18	Gross Alpha/Beta	Gross Beta	2.459E-14	1.902E-14	2.779E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205606	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Alpha	1.05E-14	9.559E-15	1.327E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205606	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Beta	7.012E-14	2.087E-14	2.223E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205607	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Alpha	1.05E-14	9.559E-15	1.327E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205607	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Beta	3.859E-14	1.747E-14	2.223E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205608	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Alpha	-8.11E-16	4.264E-15	1.126E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205608	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Beta	3.736E-14	1.535E-14	1.888E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205609	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Alpha	2.811E-15	5.941E-15	1.116E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205609	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Beta	2.564E-14	1.39E-14	1.87E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205610	SLAPS LOADOUT	08/15/18	Gross Alpha/Beta	Gross Alpha	-2.335E-15	4.038E-15	1.298E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205610	SLAPS LOADOUT	08/15/18	Gross Alpha/Beta	Gross Beta	1.748E-14	1.467E-14	2.175E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205611	SLAPS LOADOUT	08/15/18	Gross Alpha/Beta	Gross Alpha	4.62E-16	5.595E-15	1.284E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205611	SLAPS LOADOUT	08/15/18	Gross Alpha/Beta	Gross Beta	1.032E-14	1.361E-14	2.152E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205612	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Alpha	-3.04E-16	7.899E-15	1.188E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205612	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Beta	3.68E-14	1.823E-14	2.476E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205612-1	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Alpha	9.12E-16	8.265E-15	1.188E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205612-1	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Beta	2.744E-14	1.732E-14	2.476E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205613	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Alpha	-3.07E-16	7.97E-15	1.198E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205613	SLAPS LOADOUT	08/14/18	Gross Alpha/Beta	Gross Beta	2.532E-14	1.725E-14	2.498E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205614	SLAPS LOADOUT	08/16/18	Gross Alpha/Beta	Gross Alpha	1.207E-14	1.126E-14	1.209E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205614	SLAPS LOADOUT	08/16/18	Gross Alpha/Beta	Gross Beta	3.509E-14	1.833E-14	2.521E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205615	SLAPS LOADOUT	08/16/18	Gross Alpha/Beta	Gross Alpha	-1.52E-15	7.516E-15	1.188E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205615	SLAPS LOADOUT	08/16/18	Gross Alpha/Beta	Gross Beta	2.432E-14	1.701E-14	2.476E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205616	SLAPS LOADOUT	08/20/18	Gross Alpha/Beta	Gross Alpha	9.597E-15	1.069E-14	1.209E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205616	SLAPS LOADOUT	08/20/18	Gross Alpha/Beta	Gross Beta	4.224E-14	1.901E-14	2.521E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205617	SLAPS LOADOUT	08/20/18	Gross Alpha/Beta	Gross Alpha	4.686E-15	9.538E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205617	SLAPS LOADOUT	08/20/18	Gross Alpha/Beta	Gross Beta	1.617E-14	1.66E-14	2.544E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205618	SLAPS LOADOUT	08/21/18	Gross Alpha/Beta	Gross Alpha	-3.01E-16	7.829E-15	1.177E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205618	SLAPS LOADOUT	08/21/18	Gross Alpha/Beta	Gross Beta	3.57E-14	1.799E-14	2.454E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205619	SLAPS LOADOUT	08/21/18	Gross Alpha/Beta	Gross Alpha	9.08E-16	8.229E-15	1.182E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205619	SLAPS LOADOUT	08/21/18	Gross Alpha/Beta	Gross Beta	2.499E-14	1.702E-14	2.465E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205620	SLAPS LOADOUT	08/22/18	Gross Alpha/Beta	Gross Alpha	7.12E-15	1.009E-14	1.209E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205620	SLAPS LOADOUT	08/22/18	Gross Alpha/Beta	Gross Beta	2.397E-14	1.725E-14	2.521E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205621	SLAPS LOADOUT	08/22/18	Gross Alpha/Beta	Gross Alpha	9.29E-16	8.416E-15	1.209E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205621	SLAPS LOADOUT	08/22/18	Gross Alpha/Beta	Gross Beta	2.953E-14	1.779E-14	2.521E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205622	SLAPS LOADOUT	08/23/18	Gross Alpha/Beta	Gross Alpha	1.036E-14	1.05E-14	1.157E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205622	SLAPS LOADOUT	08/23/18	Gross Alpha/Beta	Gross Beta	2.216E-14	1.642E-14	2.411E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205623	SLAPS LOADOUT	08/23/18	Gross Alpha/Beta	Gross Alpha	6.811E-15	9.647E-15	1.157E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205623	SLAPS LOADOUT	08/23/18	Gross Alpha/Beta	Gross Beta	3.28E-14	1.746E-14	2.411E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205624	SLAPS LOADOUT	08/27/18	Gross Alpha/Beta	Gross Alpha	1.285E-14	1.113E-14	1.167E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205624	SLAPS LOADOUT	08/27/18	Gross Alpha/Beta	Gross Beta	3.539E-14	1.783E-14	2.432E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205625	SLAPS LOADOUT	08/27/18	Gross Alpha/Beta	Gross Alpha	9.26E-15	1.031E-14	1.167E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205625	SLAPS LOADOUT	08/27/18	Gross Alpha/Beta	Gross Beta	5.685E-14	1.984E-14	2.432E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205626	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Alpha	1.492E-15	5.697E-15	1.114E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205626	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Beta	2.065E-14	1.273E-14	1.778E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205626-1	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Alpha	2.685E-15	6.178E-15	1.114E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205626-1	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Beta	1.764E-14	1.235E-14	1.778E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205627	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Alpha	6.265E-15	7.444E-15	1.114E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205627	SLAPS LOADOUT	08/28/18	Gross Alpha/Beta	Gross Beta	3.716E-14	1.471E-14	1.778E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205628	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Alpha	2.71E-15	6.236E-15	1.125E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205628	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Beta	2.084E-14	1.285E-14	1.794E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205629	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Alpha	1.506E-15	5.75E-15	1.125E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205629	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Beta	3.827E-14	1.493E-14	1.794E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205630	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Alpha	3.222E-15	7.414E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205630	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Beta	2.117E-14	1.482E-14	2.133E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205631	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Alpha	3.222E-15	7.414E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205631	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Beta	1.216E-14	1.363E-14	2.133E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205632	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Alpha	4.654E-15	7.951E-15	1.337E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205632	SLAPS LOADOUT	08/30/18	Gross Alpha/Beta	Gross Beta	1.397E-14	1.387E-14	2.133E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205633	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Alpha	6.17E-15	1.42E-14	2.561E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205633	SLAPS LOADOUT	07/31/18	Gross Alpha/Beta	Gross Beta	3.882E-14	2.815E-14	4.085E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205634	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Alpha	2.083E-14	1.33E-14	1.468E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205634	SLAPS LOADOUT	08/01/18	Gross Alpha/Beta	Gross Beta	3.51E-14	1.774E-14	2.341E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205635	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Alpha	2.62E-14	2.104E-14	2.645E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205635	SLAPS LOADOUT	08/02/18	Gross Alpha/Beta	Gross Beta	6.148E-14	3.176E-14	4.219E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205636	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Alpha	2.874E-14	2.49E-14	3.253E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205636	SLAPS LOADOUT	08/09/18	Gross Alpha/Beta	Gross Beta	9.971E-14	4.192E-14	5.189E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205637	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Alpha	1.074E-14	2.471E-14	4.457E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205637	SLAPS LOADOUT	08/13/18	Gross Alpha/Beta	Gross Beta	8.259E-14	5.092E-14	7.11E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205638	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Alpha	8.41E-16	4.63E-15	1E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205638	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Beta	4.13E-14	1.89E-14	2.49E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205638-1	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Alpha	1.471E-14	9.616E-15	1.001E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205638-1	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Beta	3.081E-14	1.785E-14	2.486E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205639	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Alpha	9.581E-15	8.075E-15	9.918E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205639	SLAPS LOADOUT	09/04/18	Gross Alpha/Beta	Gross Beta	3.053E-14	1.769E-14	2.463E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205640	SLAPS LOADOUT	09/05/18	Gross Alpha/Beta	Gross Alpha	8.331E-15	7.672E-15	9.918E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205640	SLAPS LOADOUT	09/05/18	Gross Alpha/Beta	Gross Beta	2.733E-14	1.737E-14	2.463E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205641	SLAPS LOADOUT	09/05/18	Gross Alpha/Beta	Gross Alpha	5.779E-15	6.735E-15	9.828E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205641	SLAPS LOADOUT	09/05/18	Gross Alpha/Beta	Gross Beta	1.516E-14	1.6E-14	2.44E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205642	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Alpha	8.65E-16	4.764E-15	1.03E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205642	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Beta	2.504E-14	1.77E-14	2.557E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205643	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Alpha	8.648E-15	7.964E-15	1.03E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205643	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Beta	5.084E-14	2.021E-14	2.557E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205644	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Alpha	6.232E-15	7.264E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205644	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Beta	3.948E-14	1.957E-14	2.632E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205645	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Alpha	8.9E-16	4.904E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205645	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Beta	1.121E-14	1.671E-14	2.632E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205646	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Alpha	2.226E-15	5.586E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205646	SLAPS LOADOUT	09/06/18	Gross Alpha/Beta	Gross Beta	1.292E-14	1.689E-14	2.632E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205647	SLAPS LOADOUT	09/10/18	Gross Alpha/Beta	Gross Alpha	6.892E-15	7.053E-15	9.653E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205647	SLAPS LOADOUT	09/10/18	Gross Alpha/Beta	Gross Beta	2.347E-14	1.659E-14	2.397E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205648	SLAPS LOADOUT	09/10/18	Gross Alpha/Beta	Gross Alpha	1.093E-14	8.539E-15	1.001E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205648	SLAPS LOADOUT	09/10/18	Gross Alpha/Beta	Gross Beta	1.868E-14	1.663E-14	2.486E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205649	SLAPS LOADOUT	09/11/18	Gross Alpha/Beta	Gross Alpha	3.272E-15	5.692E-15	9.74E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205649	SLAPS LOADOUT	09/11/18	Gross Alpha/Beta	Gross Beta	1.896E-14	1.626E-14	2.418E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205650	SLAPS LOADOUT	09/11/18	Gross Alpha/Beta	Gross Alpha	2.064E-15	5.179E-15	9.828E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205650	SLAPS LOADOUT	09/11/18	Gross Alpha/Beta	Gross Beta	3.582E-14	1.807E-14	2.44E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205651	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Alpha	9.581E-15	8.075E-15	9.918E-15	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205651	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Beta	9.687E-15	1.555E-14	2.463E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205652	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Alpha	1.281E-15	5.57E-15	1.121E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205652	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Beta	3.031E-14	1.366E-14	1.735E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205652-1	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Alpha	2.463E-15	6.053E-15	1.121E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205652-1	SLAPS LOADOUT	09/12/18	Gross Alpha/Beta	Gross Beta	2.511E-14	1.302E-14	1.735E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205653	SLAPS LOADOUT	09/13/18	Gross Alpha/Beta	Gross Alpha	-1.046E-15	4.296E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205653	SLAPS LOADOUT	09/13/18	Gross Alpha/Beta	Gross Beta	3.211E-14	1.351E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205654	SLAPS LOADOUT	09/13/18	Gross Alpha/Beta	Gross Alpha	4.657E-15	6.677E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205654	SLAPS LOADOUT	09/13/18	Gross Alpha/Beta	Gross Beta	3.283E-14	1.36E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205655	SLAPS LOADOUT	09/17/18	Gross Alpha/Beta	Gross Alpha	1.236E-15	5.373E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205655	SLAPS LOADOUT	09/17/18	Gross Alpha/Beta	Gross Beta	3.498E-14	1.385E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205656	SLAPS LOADOUT	09/17/18	Gross Alpha/Beta	Gross Alpha	1.236E-15	5.373E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205656	SLAPS LOADOUT	09/17/18	Gross Alpha/Beta	Gross Beta	2.924E-14	1.317E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205657	SLAPS LOADOUT	09/18/18	Gross Alpha/Beta	Gross Alpha	1.236E-15	5.373E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205657	SLAPS LOADOUT	09/18/18	Gross Alpha/Beta	Gross Beta	3.857E-14	1.426E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205658	SLAPS LOADOUT	09/18/18	Gross Alpha/Beta	Gross Alpha	1.247E-15	5.421E-15	1.091E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205658	SLAPS LOADOUT	09/18/18	Gross Alpha/Beta	Gross Beta	4.109E-14	1.463E-14	1.689E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205659	SLAPS LOADOUT	09/19/18	Gross Alpha/Beta	Gross Alpha	3.517E-15	6.271E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205659	SLAPS LOADOUT	09/19/18	Gross Alpha/Beta	Gross Beta	4.646E-14	1.514E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205660	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Alpha	1.236E-15	5.373E-15	1.082E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205660	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Beta	6.297E-14	1.69E-14	1.674E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205661	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Alpha	1.342E-14	9.3E-15	9.829E-15	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205661	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Beta	3.192E-14	1.768E-14	2.414E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205661-1	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Alpha	6.317E-15	7.221E-15	9.829E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205661-1	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Beta	4.103E-14	1.853E-14	2.414E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205662	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Alpha	1.682E-15	5.786E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205662	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Beta	3.075E-14	1.852E-14	2.57E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205663	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Alpha	2.943E-15	6.314E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205663	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Beta	1.861E-14	1.734E-14	2.57E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205664	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Alpha	3.027E-15	6.494E-15	1.077E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205664	SLAPS LOADOUT	09/24/18	Gross Alpha/Beta	Gross Beta	1.914E-14	1.784E-14	2.643E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205665	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Alpha	1.177E-14	9.221E-15	1.047E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205665	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Beta	5.664E-15	1.604E-14	2.57E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205666	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Alpha	4.2E-16	5.206E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205666	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Beta	2.751E-14	1.821E-14	2.57E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205667	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Alpha	8.648E-15	9.887E-15	1.346E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205667	SLAPS LOADOUT	09/25/18	Gross Alpha/Beta	Gross Beta	3.121E-15	2.019E-14	3.304E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205668	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Alpha	3.948E-15	6.388E-15	9.829E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205668	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Beta	3.116E-14	1.761E-14	2.414E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205669	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Alpha	9.957E-15	8.395E-15	9.915E-15	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205669	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Beta	2.07E-14	1.673E-14	2.435E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205670	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Alpha	3.531E-15	7.577E-15	1.256E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205670	SLAPS LOADOUT	09/26/18	Gross Alpha/Beta	Gross Beta	1.068E-14	1.964E-14	3.084E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205671	SLAPS LOADOUT	09/27/18	Gross Alpha/Beta	Gross Alpha	5.465E-15	7.259E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205671	SLAPS LOADOUT	09/27/18	Gross Alpha/Beta	Gross Beta	2.832E-14	1.829E-14	2.57E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205672	SLAPS LOADOUT	09/27/18	Gross Alpha/Beta	Gross Alpha	2.943E-15	6.314E-15	1.047E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205672	SLAPS LOADOUT	09/27/18	Gross Alpha/Beta	Gross Beta	2.832E-14	1.829E-14	2.57E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205673	SLAPS LOADOUT	10/01/18	Gross Alpha/Beta	Gross Alpha	-3.784E-15	3.195E-15	1.177E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205673	SLAPS LOADOUT	10/01/18	Gross Alpha/Beta	Gross Beta	3.641E-15	1.776E-14	2.891E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205674	SLAPS LOADOUT	10/01/18	Gross Alpha/Beta	Gross Alpha	1.892E-15	6.509E-15	1.177E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205674	SLAPS LOADOUT	10/01/18	Gross Alpha/Beta	Gross Beta	2.731E-14	2.013E-14	2.891E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205675	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Alpha	1.579E-15	5.434E-15	9.829E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205675	SLAPS LOADOUT	09/20/18	Gross Alpha/Beta	Gross Beta	3.799E-14	1.825E-14	2.414E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205676	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Alpha	4.58E-15	6.798E-15	1.051E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205676	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Beta	3.092E-14	1.802E-14	2.398E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205676-1	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Alpha	1.414E-14	9.63E-15	1.051E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205676-1	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Beta	4.855E-14	1.964E-14	2.398E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205677	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Alpha	5.826E-15	7.273E-15	1.061E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205677	SLAPS LOADOUT	10/02/18	Gross Alpha/Beta	Gross Beta	6.058E-14	2.084E-14	2.42E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205678	SLAPS LOADOUT	10/03/18	Gross Alpha/Beta	Gross Alpha	8.618E-15	8.415E-15	1.11E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205678	SLAPS LOADOUT	10/03/18	Gross Alpha/Beta	Gross Beta	3.992E-14	1.969E-14	2.532E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205679	SLAPS LOADOUT	10/03/18	Gross Alpha/Beta	Gross Alpha	1.24E-14	9.501E-15	1.11E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205679	SLAPS LOADOUT	10/03/18	Gross Alpha/Beta	Gross Beta	5.529E-14	2.109E-14	2.532E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205680	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Alpha	5.615E-15	8.333E-15	1.289E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205680	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Beta	2.286E-14	2.066E-14	2.94E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205681	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Alpha	1.208E-15	6.529E-15	1.275E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205681	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Beta	5.516E-14	2.348E-14	2.909E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205682	SLAPS LOADOUT	10/05/18	Gross Alpha/Beta	Gross Alpha	3.122E-15	8.395E-15	1.498E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205682	SLAPS LOADOUT	10/05/18	Gross Alpha/Beta	Gross Beta	4.733E-14	2.598E-14	3.418E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205683	SLAPS LOADOUT	10/05/18	Gross Alpha/Beta	Gross Alpha	6.527E-15	9.687E-15	1.498E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205683	SLAPS LOADOUT	10/05/18	Gross Alpha/Beta	Gross Beta	5.17E-14	2.639E-14	3.418E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205684	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Alpha	1.779E-14	2.221E-14	3.24E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205684	SLAPS LOADOUT	10/04/18	Gross Alpha/Beta	Gross Beta	7.636E-14	5.374E-14	7.389E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205685	SLAPS LOADOUT	10/08/18	Gross Alpha/Beta	Gross Alpha	1.026E-14	9.129E-15	1.153E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205685	SLAPS LOADOUT	10/08/18	Gross Alpha/Beta	Gross Beta	6.078E-14	2.22E-14	2.629E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205686	SLAPS LOADOUT	10/08/18	Gross Alpha/Beta	Gross Alpha	1.026E-14	9.129E-15	1.153E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205686	SLAPS LOADOUT	10/08/18	Gross Alpha/Beta	Gross Beta	4.397E-14	2.068E-14	2.629E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205687	SLAPS LOADOUT	10/11/18	Gross Alpha/Beta	Gross Alpha	5.274E-15	7.828E-15	1.211E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205687	SLAPS LOADOUT	10/11/18	Gross Alpha/Beta	Gross Beta	2.942E-14	2.017E-14	2.762E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205688	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Alpha	6.04E-15	7.54E-15	1.1E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205688	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Beta	5.879E-14	2.125E-14	2.508E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205689	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Alpha	7.323E-15	7.985E-15	1.105E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205689	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Beta	3.087E-14	1.878E-14	2.52E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205690	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Alpha	4.79E-15	7.109E-15	1.1E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205690	SLAPS LOADOUT	10/09/18	Gross Alpha/Beta	Gross Beta	3.073E-14	1.869E-14	2.508E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205691	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Alpha	5.119E-15	7.597E-15	1.175E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205691	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Beta	2.342E-14	1.909E-14	2.681E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205692	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Alpha	7.79E-15	8.494E-15	1.175E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205692	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Beta	4.141E-14	2.077E-14	2.681E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205693	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Alpha	8.026E-15	8.751E-15	1.211E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205693	SLAPS LOADOUT	10/10/18	Gross Alpha/Beta	Gross Beta	2.678E-14	1.992E-14	2.762E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205694	SLAPS LOADOUT	10/11/18	Gross Alpha/Beta	Gross Alpha	6.096E-15	7.61E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205694	SLAPS LOADOUT	10/11/18	Gross Alpha/Beta	Gross Beta	1.241E-14	1.708E-14	2.532E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205695	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Alpha	2.724E-15	6.788E-15	1.081E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205695	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Beta	2.644E-14	1.325E-14	1.809E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205695-1	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Alpha	3.892E-15	7.181E-15	1.081E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205695-1	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Beta	3.011E-14	1.369E-14	1.809E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205696	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Alpha	7.489E-15	8.359E-15	1.095E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205696	SLAPS LOADOUT	10/15/18	Gross Alpha/Beta	Gross Beta	2.752E-14	1.351E-14	1.832E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205697	SLAPS LOADOUT	10/16/18	Gross Alpha/Beta	Gross Alpha	1.257E-14	9.899E-15	1.126E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205697	SLAPS LOADOUT	10/16/18	Gross Alpha/Beta	Gross Beta	4.513E-14	1.582E-14	1.884E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205698	SLAPS LOADOUT	10/16/18	Gross Alpha/Beta	Gross Alpha	1.621E-15	6.636E-15	1.126E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205698	SLAPS LOADOUT	10/16/18	Gross Alpha/Beta	Gross Beta	3.825E-15	1.068E-14	1.884E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205699	SLAPS LOADOUT	10/17/18	Gross Alpha/Beta	Gross Alpha	8.439E-15	8.459E-15	1.066E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205699	SLAPS LOADOUT	10/17/18	Gross Alpha/Beta	Gross Beta	2.317E-14	1.271E-14	1.783E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205700	SLAPS LOADOUT	10/17/18	Gross Alpha/Beta	Gross Alpha	5.032E-15	7.513E-15	1.076E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205700	SLAPS LOADOUT	10/17/18	Gross Alpha/Beta	Gross Beta	2.338E-14	1.282E-14	1.799E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205701	SLAPS LOADOUT	10/18/18	Gross Alpha/Beta	Gross Alpha	6.249E-15	7.939E-15	1.085E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205701	SLAPS LOADOUT	10/18/18	Gross Alpha/Beta	Gross Beta	1.474E-15	9.971E-15	1.816E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205702	SLAPS LOADOUT	10/18/18	Gross Alpha/Beta	Gross Alpha	9.854E-15	9.014E-15	1.095E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205702	SLAPS LOADOUT	10/18/18	Gross Alpha/Beta	Gross Beta	3.348E-14	1.421E-14	1.832E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205703	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Alpha	5.077E-15	7.581E-15	1.085E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205703	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Beta	2.801E-14	1.347E-14	1.816E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205704	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Alpha	7.421E-15	8.283E-15	1.085E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205704	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Beta	2.654E-14	1.33E-14	1.816E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205705	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Alpha	6.14E-16	9.349E-15	1.706E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205705	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Beta	1.39E-14	1.732E-14	2.853E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205706	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Alpha	-1.228E-15	8.593E-15	1.706E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205706	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Beta	1.853E-14	1.795E-14	2.853E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205707	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Alpha	6.14E-16	9.349E-15	1.706E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205707	SLAPS LOADOUT	10/22/18	Gross Alpha/Beta	Gross Beta	1.738E-14	1.78E-14	2.853E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205708	SLAPS LOADOUT	10/23/18	Gross Alpha/Beta	Gross Alpha	7.224E-15	8.063E-15	1.057E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205708	SLAPS LOADOUT	10/23/18	Gross Alpha/Beta	Gross Beta	2.081E-14	1.233E-14	1.768E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205709	SLAPS LOADOUT	10/23/18	Gross Alpha/Beta	Gross Alpha	6.138E-15	7.798E-15	1.066E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205709	SLAPS LOADOUT	10/23/18	Gross Alpha/Beta	Gross Beta	2.896E-14	1.34E-14	1.783E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205710	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Alpha	-2.01E-16	4.636E-15	1.06E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205710	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Beta	1.118E-14	1.227E-14	1.851E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205710-1	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Alpha	1.185E-14	8.955E-15	1.06E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205710-1	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Beta	1.951E-14	1.33E-14	1.851E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205711	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Alpha	5.877E-15	7.186E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205711	SLAPS LOADOUT	10/24/18	Gross Alpha/Beta	Gross Beta	2.735E-14	1.434E-14	1.869E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205712	SLAPS LOADOUT	10/25/18	Gross Alpha/Beta	Gross Alpha	9.178E-15	8.042E-15	1.031E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205712	SLAPS LOADOUT	10/25/18	Gross Alpha/Beta	Gross Beta	2.635E-14	1.382E-14	1.801E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205713	SLAPS LOADOUT	10/25/18	Gross Alpha/Beta	Gross Alpha	3.32E-15	6.072E-15	1.031E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205713	SLAPS LOADOUT	10/25/18	Gross Alpha/Beta	Gross Beta	2.856E-14	1.407E-14	1.801E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205714	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Alpha	1.18E-15	6.144E-15	1.246E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205714	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Beta	1.582E-14	1.476E-14	2.177E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205715	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Alpha	-1.652E-15	4.659E-15	1.246E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205715	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Beta	1.938E-14	1.521E-14	2.177E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205716	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Alpha	-2.465E-15	6.951E-15	1.859E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205716	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Beta	1.03E-14	2.03E-14	3.248E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205717	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Alpha	6.19E-15	1.132E-14	1.922E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205717	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Beta	2.439E-14	2.277E-14	3.358E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205718	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Alpha	4.005E-15	1.044E-14	1.922E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205718	SLAPS LOADOUT	10/29/18	Gross Alpha/Beta	Gross Beta	1.615E-14	2.172E-14	3.358E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205719	SLAPS LOADOUT	10/30/18	Gross Alpha/Beta	Gross Alpha	3.151E-15	8.211E-15	1.512E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205719	SLAPS LOADOUT	10/30/18	Gross Alpha/Beta	Gross Beta	4.622E-14	2.113E-14	2.641E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205720	SLAPS LOADOUT	10/30/18	Gross Alpha/Beta	Gross Alpha	8.306E-15	1.016E-14	1.512E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205720	SLAPS LOADOUT	10/30/18	Gross Alpha/Beta	Gross Beta	7.325E-14	2.406E-14	2.641E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205721	SLAPS LOADOUT	10/31/18	Gross Alpha/Beta	Gross Alpha	9.95E-16	5.177E-15	1.05E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205721	SLAPS LOADOUT	10/31/18	Gross Alpha/Beta	Gross Beta	4.336E-14	1.591E-14	1.834E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205722	SLAPS LOADOUT	10/31/18	Gross Alpha/Beta	Gross Alpha	3.112E-14	1.33E-14	1.06E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205722	SLAPS LOADOUT	10/31/18	Gross Alpha/Beta	Gross Beta	9.151E-14	2.084E-14	1.851E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205723	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	-2.384E-15	6.244E-15	1.385E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205723	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	4.296E-15	1.572E-14	2.706E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205723-1	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	-2.384E-15	6.244E-15	1.385E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205723-1	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	1.566E-14	1.697E-14	2.706E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205724	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	3.41E-16	7.335E-15	1.385E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205724	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	1.041E-14	1.64E-14	2.706E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205725	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	-1.041E-14	1.562E-14	3.848E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205725	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	3.621E-14	4.635E-14	7.515E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205726	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	-1.171E-14	1.757E-14	4.329E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205726	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	-8.42E-15	4.663E-14	8.455E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205727	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Alpha	9.73E-16	2.096E-14	3.958E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205727	SLAPS LOADOUT	11/01/18	Gross Alpha/Beta	Gross Beta	4.973E-14	4.902E-14	7.73E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205728	SLAPS LOADOUT	11/05/18	Gross Alpha/Beta	Gross Alpha	1.051E-14	1.226E-14	1.71E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205728	SLAPS LOADOUT	11/05/18	Gross Alpha/Beta	Gross Beta	2.796E-14	2.187E-14	3.34E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205729	SLAPS LOADOUT	11/06/18	Gross Alpha/Beta	Gross Alpha	-2.408E-15	6.307E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205729	SLAPS LOADOUT	11/06/18	Gross Alpha/Beta	Gross Beta	1.67E-14	1.724E-14	2.733E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205730	SLAPS LOADOUT	11/06/18	Gross Alpha/Beta	Gross Alpha	-5.16E-15	4.973E-15	1.399E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205730	SLAPS LOADOUT	11/06/18	Gross Alpha/Beta	Gross Beta	3.523E-14	1.916E-14	2.733E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205731	SLAPS LOADOUT	11/07/18	Gross Alpha/Beta	Gross Alpha	1.831E-15	8.415E-15	1.489E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205731	SLAPS LOADOUT	11/07/18	Gross Alpha/Beta	Gross Beta	2.341E-14	1.895E-14	2.909E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205732	SLAPS LOADOUT	11/07/18	Gross Alpha/Beta	Gross Alpha	-3.943E-15	5.918E-15	1.458E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205732	SLAPS LOADOUT	11/07/18	Gross Alpha/Beta	Gross Beta	5.442E-15	1.665E-14	2.848E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205733	SLAPS LOADOUT	11/08/18	Gross Alpha/Beta	Gross Alpha	-3.437E-15	5.158E-15	1.271E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205733	SLAPS LOADOUT	11/08/18	Gross Alpha/Beta	Gross Beta	1.537E-15	1.415E-14	2.482E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205734	SLAPS LOADOUT	11/08/18	Gross Alpha/Beta	Gross Alpha	1.548E-15	7.114E-15	1.259E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205734	SLAPS LOADOUT	11/08/18	Gross Alpha/Beta	Gross Beta	2.138E-14	1.618E-14	2.46E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205735	SLAPS LOADOUT	11/13/18	Gross Alpha/Beta	Gross Alpha	3.15E-16	6.792E-15	1.283E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205735	SLAPS LOADOUT	11/13/18	Gross Alpha/Beta	Gross Beta	2.097E-14	1.64E-14	2.505E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205736	SLAPS LOADOUT	11/13/18	Gross Alpha/Beta	Gross Alpha	-4.686E-15	4.517E-15	1.271E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205736	SLAPS LOADOUT	11/13/18	Gross Alpha/Beta	Gross Beta	1.917E-14	1.608E-14	2.482E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205737	SLAPS LOADOUT	11/14/18	Gross Alpha/Beta	Gross Alpha	1.562E-15	7.18E-15	1.271E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205737	SLAPS LOADOUT	11/14/18	Gross Alpha/Beta	Gross Beta	2.799E-14	1.7E-14	2.482E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205738	SLAPS LOADOUT	11/14/18	Gross Alpha/Beta	Gross Alpha	5.36E-15	8.469E-15	1.283E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205738	SLAPS LOADOUT	11/14/18	Gross Alpha/Beta	Gross Beta	3.149E-14	1.748E-14	2.505E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205739	SLAPS LOADOUT	11/15/18	Gross Alpha/Beta	Gross Alpha	2.102E-15	9.661E-15	1.71E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205739	SLAPS LOADOUT	11/15/18	Gross Alpha/Beta	Gross Beta	3.012E-14	2.209E-14	3.34E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205740	SLAPS LOADOUT	11/19/18	Gross Alpha/Beta	Gross Alpha	-2.187E-15	5.729E-15	1.271E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205740	SLAPS LOADOUT	11/19/18	Gross Alpha/Beta	Gross Beta	1.036E-14	1.513E-14	2.482E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205741	SLAPS LOADOUT	11/19/18	Gross Alpha/Beta	Gross Alpha	3.1E-16	6.668E-15	1.259E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205741	SLAPS LOADOUT	11/19/18	Gross Alpha/Beta	Gross Beta	2.933E-14	1.7E-14	2.46E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205742	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Alpha	-2.207E-15	5.782E-15	1.283E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205742	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Beta	2.421E-14	1.674E-14	2.505E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205743	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Alpha	-9.46E-16	6.306E-15	1.283E-14	µCi/mL			SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205743	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Beta	1.612E-14	1.589E-14	2.505E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205743-1	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Alpha	-9.46E-16	6.306E-15	1.283E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205743-1	SLAPS LOADOUT	11/20/18	Gross Alpha/Beta	Gross Beta	3.473E-14	1.781E-14	2.505E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205744	SLAPS LOADOUT	11/21/18	Gross Alpha/Beta	Gross Alpha	3.005E-15	8.126E-15	1.358E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205744	SLAPS LOADOUT	11/21/18	Gross Alpha/Beta	Gross Beta	4.619E-14	1.979E-14	2.653E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205745	SLAPS LOADOUT	11/21/18	Gross Alpha/Beta	Gross Alpha	3.005E-15	8.126E-15	1.358E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205745	SLAPS LOADOUT	11/21/18	Gross Alpha/Beta	Gross Beta	2.22E-14	1.736E-14	2.653E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205746	SLAPS LOADOUT	11/26/18	Gross Alpha/Beta	Gross Alpha	3.15E-16	6.792E-15	1.283E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205746	SLAPS LOADOUT	11/26/18	Gross Alpha/Beta	Gross Beta	1.369E-14	1.563E-14	2.505E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205747	SLAPS LOADOUT	11/26/18	Gross Alpha/Beta	Gross Alpha	1.562E-15	7.18E-15	1.271E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205747	SLAPS LOADOUT	11/26/18	Gross Alpha/Beta	Gross Beta	1.276E-14	1.54E-14	2.482E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205748	SLAPS LOADOUT	11/27/18	Gross Alpha/Beta	Gross Alpha	7.339E-15	8.564E-15	1.194E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205748	SLAPS LOADOUT	11/27/18	Gross Alpha/Beta	Gross Beta	3.007E-14	1.635E-14	2.332E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205749	SLAPS LOADOUT	11/27/18	Gross Alpha/Beta	Gross Alpha	7.339E-15	8.564E-15	1.194E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205749	SLAPS LOADOUT	11/27/18	Gross Alpha/Beta	Gross Beta	4.74E-14	1.806E-14	2.332E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205750	SLAPS LOADOUT	11/28/18	Gross Alpha/Beta	Gross Alpha	1.439E-14	1.035E-14	1.194E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205750	SLAPS LOADOUT	11/28/18	Gross Alpha/Beta	Gross Beta	2.856E-14	1.62E-14	2.332E-14	µCi/mL	J	T04, T20	SLAPS (General Area)-Perimeter Air
SLA205751	SLAPS LOADOUT	11/28/18	Gross Alpha/Beta	Gross Alpha	-8.81E-16	5.872E-15	1.194E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205751	SLAPS LOADOUT	11/28/18	Gross Alpha/Beta	Gross Beta	3.534E-14	1.688E-14	2.332E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205752	SLAPS LOADOUT	11/29/18	Gross Alpha/Beta	Gross Alpha	1.507E-15	6.925E-15	1.226E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205752	SLAPS LOADOUT	11/29/18	Gross Alpha/Beta	Gross Beta	4.866E-14	1.854E-14	2.394E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205753	SLAPS LOADOUT	11/29/18	Gross Alpha/Beta	Gross Alpha	7.534E-15	8.791E-15	1.226E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205753	SLAPS LOADOUT	11/29/18	Gross Alpha/Beta	Gross Beta	5.175E-14	1.884E-14	2.394E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205754	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Alpha	4.618E-15	6.79E-15	1.06E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205754	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Beta	1.301E-14	1.188E-14	1.822E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA205754-1	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Alpha	2.208E-15	5.867E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205754-1	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Beta	1.528E-14	1.218E-14	1.822E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205755	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Alpha	-1.38E-15	4.046E-15	1.041E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205755	SLAPS LOADOUT	12/03/18	Gross Alpha/Beta	Gross Beta	1.649E-14	1.215E-14	1.789E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205756	SLAPS LOADOUT	12/04/18	Gross Alpha/Beta	Gross Alpha	-1.97E-16	4.686E-15	1.041E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205756	SLAPS LOADOUT	12/04/18	Gross Alpha/Beta	Gross Beta	1.426E-14	1.186E-14	1.789E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205757	SLAPS LOADOUT	12/04/18	Gross Alpha/Beta	Gross Alpha	-3.71E-15	2.269E-15	1.031E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205757	SLAPS LOADOUT	12/04/18	Gross Alpha/Beta	Gross Beta	1.265E-14	1.156E-14	1.773E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205758	SLAPS LOADOUT	12/05/18	Gross Alpha/Beta	Gross Alpha	4.661E-15	6.854E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205758	SLAPS LOADOUT	12/05/18	Gross Alpha/Beta	Gross Beta	4.297E-14	1.56E-14	1.839E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205759	SLAPS LOADOUT	12/05/18	Gross Alpha/Beta	Gross Alpha	9.95E-16	5.298E-15	1.05E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205759	SLAPS LOADOUT	12/05/18	Gross Alpha/Beta	Gross Beta	4.217E-14	1.531E-14	1.805E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205760	SLAPS LOADOUT	12/06/18	Gross Alpha/Beta	Gross Alpha	8.155E-15	7.909E-15	1.05E-14	µCi/mL	UJ	T04, T05	SLAPS (General Area)-Perimeter Air
SLA205760	SLAPS LOADOUT	12/06/18	Gross Alpha/Beta	Gross Beta	4.517E-14	1.564E-14	1.805E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205761	SLAPS LOADOUT	12/06/18	Gross Alpha/Beta	Gross Alpha	9.95E-16	5.298E-15	1.05E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205761	SLAPS LOADOUT	12/06/18	Gross Alpha/Beta	Gross Beta	5.118E-14	1.629E-14	1.805E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205762	SLAPS LOADOUT	12/10/18	Gross Alpha/Beta	Gross Alpha	-1.38E-15	4.046E-15	1.041E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA205762	SLAPS LOADOUT	12/10/18	Gross Alpha/Beta	Gross Beta	5.964E-14	1.709E-14	1.789E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205763	SLAPS LOADOUT	12/10/18	Gross Alpha/Beta	Gross Alpha	2.148E-15	5.707E-15	1.031E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA205763	SLAPS LOADOUT	12/10/18	Gross Alpha/Beta	Gross Beta	4.067E-14	1.495E-14	1.773E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA205764	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Alpha	1.719E-15	5.204E-15	1.07E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205764	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Beta	4.933E-14	1.664E-14	1.935E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205764-1	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Alpha	5.585E-15	6.867E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205764-1	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Beta	5.014E-14	1.673E-14	1.935E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205765	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Alpha	6.806E-15	7.267E-15	1.059E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205765	SLAPS LOADOUT	12/11/18	Gross Alpha/Beta	Gross Beta	4.161E-14	1.566E-14	1.916E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205766	SLAPS LOADOUT	12/12/18	Gross Alpha/Beta	Gross Alpha	2.759E-15	5.331E-15	9.812E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205766	SLAPS LOADOUT	12/12/18	Gross Alpha/Beta	Gross Beta	4.154E-14	1.485E-14	1.775E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205767	SLAPS LOADOUT	12/12/18	Gross Alpha/Beta	Gross Alpha	1.548E-15	4.689E-15	9.635E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205767	SLAPS LOADOUT	12/12/18	Gross Alpha/Beta	Gross Beta	6.562E-14	1.726E-14	1.743E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205768	SLAPS LOADOUT	12/17/18	Gross Alpha/Beta	Gross Alpha	-2.127E-15	2.649E-15	1.059E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205768	SLAPS LOADOUT	12/17/18	Gross Alpha/Beta	Gross Beta	1.432E-14	1.225E-14	1.916E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205769	SLAPS LOADOUT	12/17/18	Gross Alpha/Beta	Gross Alpha	4.212E-15	6.235E-15	1.049E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205769	SLAPS LOADOUT	12/17/18	Gross Alpha/Beta	Gross Beta	1.577E-14	1.235E-14	1.897E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205770	SLAPS LOADOUT	12/18/18	Gross Alpha/Beta	Gross Alpha	4.05E-16	4.264E-15	1.009E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205770	SLAPS LOADOUT	12/18/18	Gross Alpha/Beta	Gross Beta	2.359E-14	1.298E-14	1.825E-14	µCi/mL	J	T04, T20	SLAPS Loadout (General Area)-Perimeter Air
SLA205771	SLAPS LOADOUT	12/18/18	Gross Alpha/Beta	Gross Alpha	-2.027E-15	2.524E-15	1.009E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205771	SLAPS LOADOUT	12/18/18	Gross Alpha/Beta	Gross Beta	-3.187E-15	9.159E-15	1.825E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205772	SLAPS LOADOUT	12/19/18	Gross Alpha/Beta	Gross Alpha	-7.96E-16	3.438E-15	9.903E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205772	SLAPS LOADOUT	12/19/18	Gross Alpha/Beta	Gross Beta	3.216E-14	1.385E-14	1.792E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205773	SLAPS LOADOUT	12/19/18	Gross Alpha/Beta	Gross Alpha	4.02E-16	4.224E-15	9.995E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205773	SLAPS LOADOUT	12/19/18	Gross Alpha/Beta	Gross Beta	1.276E-14	1.146E-14	1.808E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205774	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Alpha	3.906E-15	5.782E-15	9.723E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205774	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Beta	1.315E-14	1.125E-14	1.759E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205775	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Alpha	2.734E-15	5.282E-15	9.723E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205775	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Beta	7.249E-15	1.042E-14	1.759E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205776	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Alpha	5.818E-15	7.153E-15	1.114E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205776	SLAPS LOADOUT	12/20/18	Gross Alpha/Beta	Gross Beta	4.885E-14	1.705E-14	2.015E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205777	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Alpha	2.046E-15	6.196E-15	1.273E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205777	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Beta	2.108E-14	1.525E-14	2.303E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA205778	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Alpha	2.096E-15	6.347E-15	1.304E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205778	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Beta	1.665E-14	1.495E-14	2.36E-14	µCi/mL			SLAPS Loadout (General Area)-Perimeter Air
SLA205778-1	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Alpha	5.239E-15	7.756E-15	1.304E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205778-1	SLAPS LOADOUT	12/24/18	Gross Alpha/Beta	Gross Beta	4.038E-14	1.8E-14	2.36E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA205779	SLAPS LOADOUT	12/26/18	Gross Alpha/Beta	Gross Alpha	5.171E-15	6.358E-15	9.903E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA205779	SLAPS LOADOUT	12/26/18	Gross Alpha/Beta	Gross Beta	3.591E-14	1.429E-14	1.792E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA209223	SLAPS LOADOUT	12/26/18	Gross Alpha/Beta	Gross Alpha	1.591E-15	4.819E-15	9.903E-15	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA209223	SLAPS LOADOUT	12/26/18	Gross Alpha/Beta	Gross Beta	3.291E-14	1.394E-14	1.792E-14	µCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA209224	SLAPS LOADOUT	12/27/18	Gross Alpha/Beta	Gross Alpha	9.547E-15	9.106E-15	1.251E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2018

Sample Name	Station Name	Collect Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event
SLA209224	SLAPS LOADOUT	12/27/18	Gross Alpha/Beta	Gross Beta	1.407E-14	1.408E-14	2.263E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA209225	SLAPS LOADOUT	12/27/18	Gross Alpha/Beta	Gross Alpha	3.517E-15	6.796E-15	1.251E-14	µCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA209225	SLAPS LOADOUT	12/27/18	Gross Alpha/Beta	Gross Beta	1.976E-14	1.486E-14	2.263E-14	µCi/mL	UJ	T04, T05	SLAPS Loadout (General Area)-Perimeter Air

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainty 50 to 100 percent of the result.

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APPENDIX C

STORM-WATER, WASTE-WATER AND EXCAVATION-WATER DATA

(On the CD-ROM on the Back Cover of this Report)

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Table C-1. NPDES Analytical Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175734	NPDES Outfall 002	12/17/18	ML-005	Th-228	0.48	0.36	0.41	pCi/L	J	T04, T20
SVP175734	NPDES Outfall 002	12/17/18	ML-005	Th-230	0.67	0.41	0.36	pCi/L	J	T04, T20
SVP175734	NPDES Outfall 002	12/17/18	ML-005	Th-232	0.15	0.20	0.33	pCi/L	UJ	T06
SVP175734	NPDES Outfall 002	12/17/18	ML-006	Ra-226	-0.11	0.45	1.59	pCi/L	UJ	T06
SVP175734	NPDES Outfall 002	12/17/18	ML-003	Ac-227	-15.40	5.18	7.33	pCi/L	UJ	T04, T06, T07
SVP175734	NPDES Outfall 002	12/17/18	ML-003	Pa-231	-17.60	33.20	54.50	pCi/L	UJ	T04, T06
SVP175734	NPDES Outfall 002	12/17/18	ML-018	Gross Alpha	9.08	9.94	16.20	pCi/L	UJ	T06
SVP175734	NPDES Outfall 002	12/17/18	ML-018	Gross Beta	0.59	10.40	17.50	pCi/L	UJ	T06
SVP175734	NPDES Outfall 002	12/17/18	ML-021	Total U	-0.48	0.04	2.45	pCi/L	UJ	T06
SVP175734	NPDES Outfall 002	12/17/18	ML-024	pH	6.87		0.1	No Units	=	
SVP175734	NPDES Outfall 002	12/17/18	EPA 160.5	SS	0		0.1	mL/L/hour	U	
SVP175735	NPDES Outfall 002	12/31/18	ML-005	Th-228	0.49	0.35	0.40	pCi/L	J	T04, T20
SVP175735	NPDES Outfall 002	12/31/18	ML-005	Th-230	0.84	0.46	0.47	pCi/L	J	T04, T20
SVP175735	NPDES Outfall 002	12/31/18	ML-005	Th-232	0.43	0.33	0.40	pCi/L	J	T04, T20
SVP175735	NPDES Outfall 002	12/31/18	ML-006	Ra-226	0.43	0.72	1.58	pCi/L	UJ	T06
SVP175735	NPDES Outfall 002	12/31/18	ML-003	Ac-227	-14.50	5.65	9.56	pCi/L	UJ	T04, T06
SVP175735	NPDES Outfall 002	12/31/18	ML-003	Pa-231	-21.40	38.80	63.50	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175735	NPDES Outfall 002	12/31/18	ML-018	Gross Alpha	3.49	9.53	16.20	pCi/L	UJ	T06
SVP175735	NPDES Outfall 002	12/31/18	ML-018	Gross Beta	5.46	10.60	17.50	pCi/L	UJ	T06
SVP175735	NPDES Outfall 002	12/31/18	ML-021	Total U	-0.56	0.05	2.45	pCi/L	UJ	T06
SVP175735	NPDES Outfall 002	12/31/18	ML-024	pH	6.56		0.1	No Units	=	
SVP175735	NPDES Outfall 002	12/31/18	EPA 160.5	SS	0		0.1	mL/L/hour	U	

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T07 Radionuclide Quantitation: Negative analytical result where the absolute value exceeds two times (2x) the associated MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainty 50 percent to 100 percent of the result.

Table C-2. North St. Louis County Sites Rainfall Data for CY 2018 – First Quarter

Date	Rainfall (inches)	Outfall	Outfall Chez Paree	Date	Rainfall (inches)	Outfall	Outfall Chez Paree	Date	Rainfall (inches)	Outfall	Outfall Chez Paree
2018	24-Hour Total	002[a]	Un-Named[b,c]	2018	24-Hour Total	002[d]	Un-Named[b]	2018	24-Hour Total	002[d]	Un-Named[b]
1-Jan				1-Feb				1-Mar	0.27		
2-Jan				2-Feb				2-Mar			
3-Jan	trace			3-Feb	trace			3-Mar			
4-Jan	0.20			4-Feb	0.10			4-Mar			
5-Jan	trace			5-Feb	trace			5-Mar	0.62		
6-Jan				6-Feb	trace			6-Mar	0.20		
7-Jan	0.35			7-Feb	trace			7-Mar	trace		
8-Jan	trace			8-Feb				8-Mar	trace		
9-Jan	trace			9-Feb				9-Mar	trace		
10-Jan	trace			10-Feb	trace			10-Mar			
11-Jan	trace			11-Feb	trace			11-Mar	0.80		
12-Jan	trace			12-Feb				12-Mar			
13-Jan				13-Feb				13-Mar			
14-Jan	0.10			14-Feb	0.13			14-Mar			
15-Jan	0.90			15-Feb	0.26			15-Mar			
16-Jan	trace			16-Feb	trace			16-Mar	0.34		
17-Jan	trace			17-Feb	0.70			17-Mar			
18-Jan				18-Feb				18-Mar	trace		
19-Jan				19-Feb	0.89			19-Mar	1.43		
20-Jan				20-Feb	1.04			20-Mar	trace		
21-Jan	trace			21-Feb	trace			21-Mar			
22-Jan	0.76			22-Feb	0.26			22-Mar	trace		
23-Jan	trace			23-Feb	0.31			23-Mar	0.26		
24-Jan				24-Feb	1.73			24-Mar	0.81		
25-Jan				25-Feb				25-Mar	trace		
26-Jan	trace			26-Feb				26-Mar	1.01		
27-Jan	trace			27-Feb	trace			27-Mar	1.12		
28-Jan	trace			28-Feb	0.20			28-Mar	0.02		
29-Jan	trace							29-Mar	0.79		
30-Jan								30-Mar	trace		
31-Jan								31-Mar	0.14		
Total	**2.31**			**Total**	**5.62**			**Total**	**7.81**		

[a] Per USACE email dated December 4, 2017, sampling at Outfall 002 has been increased to once per month.

[b] Un-named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

[c] Remediation work started at the Chez Paree Properties on January 24, 2018.

[a] Per USACE email dated February 8, 2018, sampling at Outfall 002 has been reduced to once per year.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2018).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2018 – Second Quarter

Date	Rainfall (inches)	Outfall	Outfall Chez Paree
2018	**24-Hour Total**	**002[a]**	**Un-Named[b,c]**
1-Apr	0.28		
2-Apr	0.45		
3-Apr	0.19		
4-Apr			
5-Apr			
6-Apr	trace		
7-Apr			
8-Apr	trace		
9-Apr			
10-Apr	trace		
11-Apr			
12-Apr			
13-Apr	0.97		
14-Apr	0.28		
15-Apr	trace		
16-Apr	trace		
17-Apr			
18-Apr			
19-Apr	trace		
20-Apr			
21-Apr			
22-Apr	0.02		
23-Apr	0.07		
24-Apr	trace		
25-Apr	trace		
26-Apr	trace		
27-Apr			
28-Apr			
29-Apr			
30-Apr			
Monthly Total	**2.26**		

Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002[a]**
1-May		
2-May	trace	
3-May	1.02	
4-May		
5-May		
6-May	0.01	
7-May		
8-May		
9-May	0.17	
10-May		
11-May	trace	
12-May		
13-May		
14-May	0.15	
15-May	0.03	
16-May		
17-May	trace	
18-May	1.61	
19-May	0.07	
20-May	0.37	
21-May	0.12	
22-May		
23-May		
24-May		
25-May	0.13	
26-May		
27-May	1.33	
28-May		
29-May	trace	
30-May	0.04	
31-May	trace	
Monthly Total	**5.05**	

Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002[a]**
1-Jun		
2-Jun	0.31	
3-Jun		
4-Jun		
5-Jun		
6-Jun		
7-Jun		
8-Jun		
9-Jun	0.43	
10-Jun		
11-Jun		
12-Jun	trace	
13-Jun		
14-Jun		
15-Jun		
16-Jun		
17-Jun		
18-Jun		
19-Jun		
20-Jun		
21-Jun		
22-Jun		
23-Jun		
24-Jun		
25-Jun		
26-Jun		
27-Jun		
28-Jun		
29-Jun		
30-Jun		
Monthly Total	**0.74**	

[a] Per USACE email dated April 19, 2018, sampling at Outfall 002 has been increased to once per month.

[b] Un-named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

[c] Remediation was completed at the Chez Paree Properties on April 24, 2018.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2018).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2018 – Third Quarter

Date	Rainfall (inches)	Outfall	Date	Rainfall (inches)	Outfall	Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002[a]**	**2018**	**24-Hour Total**	**002[a]**	**2018**	**24-Hour Total**	**002[a]**
1-Jul	0.04		1-Aug			1-Sep		
2-Jul			2-Aug	0.02		2-Sep		
3-Jul	0.01		3-Aug	0.10		3-Sep		
4-Jul			4-Aug			4-Sep		
5-Jul			5-Aug			5-Sep		
6-Jul			6-Aug			6-Sep		
7-Jul			7-Aug	0.15		7-Sep	0.57	
8-Jul			8-Aug			8-Sep	0.68	
9-Jul	0.04		9-Aug			9-Sep		
10-Jul			10-Aug	0.25		10-Sep		
11-Jul			11-Aug			10-Sep		
12-Jul			12-Aug			10-Sep		
13-Jul			13-Aug			10-Sep		
14-Jul	0.11		14-Aug	0.04		10-Sep		
15-Jul			15-Aug	0.28		10-Sep		
16-Jul			16-Aug			16-Sep		
17-Jul			17-Aug	0.02		10-Sep		
18-Jul			18-Aug			10-Sep		
19-Jul	0.04		19-Aug			10-Sep		
20-Jul			20-Aug	0.15		20-Sep		
21-Jul			21-Aug			21-Sep	0.04	
22-Jul			22-Aug			22-Sep		
23-Jul			23-Aug			23-Sep		
24-Jul			24-Aug	0.62		24-Sep		
25-Jul			25-Aug			25-Sep		
26-Jul	0.01		26-Aug			26-Sep	0.25	
27-Jul			27-Aug			27-Sep		
28-Jul			28-Aug			28-Sep		
29-Jul	0.20		29-Aug	0.44		29-Sep		
30-Jul			30-Aug			30-Sep		
31-Jul	0.18		31-Aug	0.01				
Monthly Total	**0.63**		**Monthly Total**	**2.08**		**Monthly Total**	**1.54**	

[a] Per USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2018).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2018 – Fourth Quarter

Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002**
1-Oct		
2-Oct		
3-Oct		
4-Oct	0.18	
5-Oct	0.04	
6-Oct	0.27	
7-Oct	0.13	
8-Oct		
9-Oct		
10-Oct	0.06	
11-Oct		
12-Oct	0.22	
13-Oct	0.02	
14-Oct	0.13	
15-Oct	0.04	
16-Oct		
17-Oct		
18-Oct		
19-Oct	0.01	
20-Oct		
21-Oct		
22-Oct		
23-Oct		
24-Oct		
25-Oct	0.16	
26-Oct	0.32	
27-Oct		
28-Oct		
29-Oct		
30-Oct		
31-Oct	0.56	
Monthly Total	**2.14**	

Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002**
1-Nov	0.89	
2-Nov	0.19	
3-Nov	0.02	
4-Nov	0.29	
5-Nov	0.38	
6-Nov	0.02	
7-Nov		
8-Nov	0.11	
9-Nov	0.03	
10-Nov		
11-Nov	0.03	
12-Nov	0.27	
13-Nov		
14-Nov	0.11	
15-Nov	0.32	
16-Nov		
17-Nov		
18-Nov	0.12	
19-Nov	0.01	
20-Nov		
21-Nov		
22-Nov		
23-Nov	0.41	
24-Nov		
25-Nov	0.11	
26-Nov	0.05	
27-Nov		
28-Nov		
29-Nov		
30-Nov		
Monthly Total	**3.36**	

Date	Rainfall (inches)	Outfall
2018	**24-Hour Total**	**002**
1-Dec	0.50	
2-Dec		
3-Dec	0.01	
4-Dec	0.20	
5-Dec	0.01	
6-Dec	0.19	
7-Dec		
8-Dec		
9-Dec		
10-Dec		
11-Dec		
12-Dec		
13-Dec	0.53	
14-Dec	0.57	
15-Dec	0.30	0.048
16-Dec		
17-Dec		
18-Dec		
19-Dec		
20-Dec	0.51	
21-Dec		
22-Dec		
23-Dec		
24-Dec		
25-Dec		
26-Dec	0.02	
27-Dec	0.48	
28-Dec		
29-Dec		
30-Dec	0.09	
31-Dec	0.79	0.128
Monthly Total	**4.20**	**0.176**

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2018).

Table C-3. First Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2018

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge (Ci)[b]	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-317	02/28/18 (SLAPS VP Ballfields [IA-09])	<13.8	pCi/L	84,038	2.2E-06	3,000	pCi/L	0.00
Gross Beta			<21	pCi/L		3.3E-06	NA		
Th-228			0.4	pCi/L		1.4E-07	2,000	pCi/L	
Th-230			1.3	pCi/L		4.0E-07	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		3.9E-07	3,000	pCi/L	
Ra-226[c]			<1.2	pCi/L		2.0E-07	10	pCi/L	
Ra-228[d,e]			0.4	pCi/L		1.4E-07	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<13.8	pCi/L			-		
TSS			47.6	mg/L			-		
Gross Alpha (raw water)	SLAPS-318	03/01/18 - 03/29/18 (SLAPS VP Ballfields [IA-09])	<13.8	pCi/L	470,661	1.2E-05	3,000	pCi/L	0.00
Gross Beta			<21	pCi/L		1.9E-05	NA		
Th-228			<0.7	pCi/L		6.1E-07	2,000	pCi/L	
Th-230			1.5	pCi/L		2.6E-06	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		2.2E-06	3,000	pCi/L	
Ra-226[c]			<1.8	pCi/L		1.6E-06	10	pCi/L	
Ra-228[d,e]			<0.7	pCi/L		6.1E-07	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<13.8	pCi/L			-		
TSS			55.2	mg/L			-		
Gross Alpha (raw water)	SLAPS-319[i]	03/28/18 (SLAPS VP Chez Paree)	<9.1	pCi/L	15,600	2.7E-07	3,000	pCi/L	0.01
Gross Beta			20	pCi/L		1.2E-06	NA		
Th-228			1.1	pCi/L		6.6E-08	2,000	pCi/L	
Th-230			4.0	pCi/L		2.4E-07	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		7.2E-08	3,000	pCi/L	
Ra-226[c]			<1.8	pCi/L		5.2E-08	10	pCi/L	
Ra-228[d,e]			1.1	pCi/L		6.6E-08	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<9.1	pCi/L			-		
TSS			515	mg/L			-		

Total Activity Discharged in First Quarter of CY 2018 (Ci)

Th-228	8.1E-07
Th-230	3.3E-06
Uranium (KPA)	2.6E-06
Ra-226	1.9E-06
Ra-228[b]	8.1E-07

Total Activity Discharged through 03/31/18 (Ci)

Th-228	8.1E-07
Th-230	3.3E-06
Uranium (KPA)	2.6E-06
Ra-226	1.9E-06
Ra-228[b]	8.1E-07

Total Volume for First Quarter of CY 2018 (gallons)

Gallons 570,299

Total Volume Discharged through 03/31/18 (gallons)

Gallons 570,299

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).
[i] On 03/29/18, the USACE received MSD approval to temporarily discharge excavation water and only analyze radiological parameters from SLAPS VP Chez Paree.

Notes:
- No data/No limit
BOD - biological oxygen demand
COD - chemical oxygen demand
NA - not applicable
SOR - sum of ratios
TSS - total suspended solid(s)

Table C-3. Second Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County CY 2018

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge (Ci)[b]	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-320	04/02/18 - 04/18/18 (SLAPS VP Ballfields [IA-09])	<14	pCi/L	139,374	3.7E-06	3,000	pCi/L	0.00
Gross Beta			<22.3	pCi/L		5.9E-06	NA		
Th-228			<0.6	pCi/L		1.6E-07	2,000	pCi/L	
Th-230			1.1	pCi/L		5.9E-07	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		6.5E-07	3,000	pCi/L	
Ra-226[c]			<1.3	pCi/L		3.5E-07	10	pCi/L	
Ra-228[d,e]			<0.6	pCi/L		1.6E-07	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<14	pCi/L			-		
TSS			26.2	mg/L			-		

Total Activity Discharged in Second Quarter of CY 2018 (Ci)

Th-228	1.6E-07
Th-230	5.9E-07
Uranium (KPA)	6.5E-07
Ra-226	3.5E-07
Ra-228[b]	1.6E-07

Total Activity Discharged through 06/30/18 (Ci)

Th-228	9.7E-07
Th-230	3.9E-06
Uranium (KPA)	3.3E-06
Ra-226	2.2E-06
Ra-228[b]	9.7E-07

Total Volume for Second Quarter of CY 2018 (gallons)

Gallons 139,374

Total Volume Discharged through 06/30/18 (gallons)

Gallons 709,673

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
BOD - biological oxygen demand
COD - chemical oxygen demand
NA - not applicable
SOR - sum of ratios
TSS - total suspended solid(s)

Table C-3. Third Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2018

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge (Ci)[b]	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-321	07/26/18 (SLAPS VP Ballfields [IA-09])	<23.2	pCi/L	56,983	2.5E-06	3,000	pCi/L	0.01
Gross Beta			<26.5	pCi/L		2.9E-06	NA		
Th-228			<0.3	pCi/L		3.7E-08	2,000	pCi/L	
Th-230			3.1	pCi/L		6.7E-07	1,000	pCi/L	
Uranium (KPA)			6.1	pCi/L		1.3E-06	3,000	pCi/L	
Ra-226[c]			<1.5	pCi/L		1.6E-07	10	pCi/L	
Ra-228[d,e]			<0.3	pCi/L		3.7E-08	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<23.2	pCi/L			-		
TSS			30.8	mg/L			-		

Total Activity Discharged in Third Quarter of CY 2018 (Ci)

Th-228	3.7E-08
Th-230	6.7E-07
Uranium (KPA)	1.3E-06
Ra-226	1.6E-07
Ra-228[b]	3.7E-08

Total Activity Discharged through 09/30/18 (Ci)

Th-228	1.0E-06
Th-230	4.5E-06
Uranium (KPA)	4.6E-06
Ra-226	2.4E-06
Ra-228[b]	1.0E-06

Total Volume for Third Quarter of CY 2018 (gallons)

Gallons 56,983

Total Volume Discharged through 09/30/18 (gallons)

Gallons 766,656

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
BOD - biological oxygen demand
COD - chemical oxygen demand
NA - Not applicable
SOR - sum of ratios
TSS - total suspended solid(s)

Table C-3. Fourth Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2018

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge (Ci)[b]	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-322	(11/05/18 - 11/08/18) (SLAPS VP Ballfields [IA-09])	<28.1	pCi/L	323,836	1.7E-05	3,000	pCi/L	0.00
Gross Beta			<24.6	pCi/L		1.5E-05	NA		
Th-228			<0.5	pCi/L		3.3E-07	2,000	pCi/L	
Th-230			1.1	pCi/L		1.4E-06	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		1.5E-06	3,000	pCi/L	
Ra-226[c]			<1.1	pCi/L		6.6E-07	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		3.3E-07	30	pCi/L	
Barium			[h]	mg/L			10	mg/L	
Lead			[h]	mg/L			0.4	mg/L	
Selenium[f]			[h]	mg/L			0.2	mg/L[f]	
BOD[g]				mg/L			-		
COD[g]				mg/L			-		
Gross Alpha (TSS filtrate)			<28.1	pCi/L			-		
TSS			64.5	mg/L			-		

Total Activity Discharged in Fourth Quarter of CY 2018 (Ci)		**Total Activity Discharged through 12/31/18 (Ci)**	
Th-228	3.3E-07	**Th-228**	1.3E-06
Th-230	1.4E-06	**Th-230**	5.9E-06
Uranium (KPA)	1.5E-06	**Uranium (KPA)**	6.1E-06
Ra-226	6.6E-07	**Ra-226**	3.0E-06
Ra-228[b]	3.3E-07	**Ra-228[b]**	1.3E-06

Total Volume for Fourth Quarter of CY 2018 (gallons)		**Total Volume Discharged through 12/31/18 (gallons)**	
Gallons	323,836	**Gallons**	1,090,492

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
BOD - biological oxygen demand
COD - chemical oxygen demand
NA - not applicable
SOR - sum of ratios
TSS - total suspended solid(s)

APPENDIX D

COLDWATER CREEK SURFACE-WATER AND SEDIMENT DATA

(On the CD-ROM on the Back Cover of this Report)

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Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC200932	CWC002	04/10/18	Metals	Barium	130		0.9	µg/L	=
CWC200932	CWC002	04/10/18	Metals	Molybdenum	8.2		2	µg/L	=
CWC200932	CWC002	04/10/18	Metals	Cadmium	0.22		0.2	µg/L	=
CWC200932	CWC002	04/10/18	Metals	Nickel	2.8		2	µg/L	=
CWC200932	CWC002	04/10/18	Metals	Selenium	3.2		2	µg/L	=
CWC200932	CWC002	04/10/18	Metals	Antimony	2		2	µg/L	U
CWC200932	CWC002	04/10/18	Metals	Arsenic	4		4	µg/L	U
CWC200932	CWC002	04/10/18	Metals	Chromium	4		4	µg/L	U
CWC200932	CWC002	04/10/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200932	CWC002	04/10/18	Metals	Vanadium	4		4	µg/L	U
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	U-234	0.974	0.554	0.376	pCi/L	J
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	Th-228	-0.0158	0.144	0.537	pCi/L	UJ
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	Th-230	0.158	0.224	0.403	pCi/L	UJ
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	Th-232	0.0157	0.137	0.454	pCi/L	UJ
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	R-226	0	0	1.12	pCi/L	U
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	U-235	-0.0218	0.18	0.464	pCi/L	UJ
CWC200932	CWC002	04/10/18	Alpha Spectroscopy	U-238	0.176	0.251	0.45	pCi/L	UJ
CWC200934	CWC003	04/10/18	Metals	Barium	130		0.9	µg/L	=
CWC200934	CWC003	04/10/18	Metals	Molybdenum	9.8		2	µg/L	=
CWC200934	CWC003	04/10/18	Metals	Cadmium	0.33		0.2	µg/L	=
CWC200934	CWC003	04/10/18	Metals	Nickel	2.4		2	µg/L	=
CWC200934	CWC003	04/10/18	Metals	Selenium	2.9		2	µg/L	=
CWC200934	CWC003	04/10/18	Metals	Antimony	2		2	µg/L	U
CWC200934	CWC003	04/10/18	Metals	Arsenic	4		4	µg/L	U
CWC200934	CWC003	04/10/18	Metals	Chromium	4		4	µg/L	U
CWC200934	CWC003	04/10/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200934	CWC003	04/10/18	Metals	Vanadium	4		4	µg/L	U
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	U-234	1.12	0.664	0.465	pCi/L	J
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	U-238	0.589	0.475	0.463	pCi/L	J
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	Th-228	0.34	0.363	0.611	pCi/L	UJ
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	Th-230	0.341	0.326	0.381	pCi/L	UJ
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	Th-232	0	0.203	0.527	pCi/L	UJ
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	R-226	0.568	0.651	1.12	pCi/L	UJ
CWC200934	CWC003	04/10/18	Alpha Spectroscopy	U-235	0	0.306	0.796	pCi/L	UJ
CWC200936	CWC004	04/10/18	Metals	Barium	140		0.9	µg/L	=
CWC200936	CWC004	04/10/18	Metals	Molybdenum	9.1		2	µg/L	=

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC200936	CWC004	04/10/18	Metals	Nickel	2.3		2	µg/L	=
CWC200936	CWC004	04/10/18	Metals	Selenium	3.6		2	µg/L	=
CWC200936	CWC004	04/10/18	Metals	Antimony	2		2	µg/L	U
CWC200936	CWC004	04/10/18	Metals	Arsenic	4		4	µg/L	U
CWC200936	CWC004	04/10/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200936	CWC004	04/10/18	Metals	Chromium	4		4	µg/L	U
CWC200936	CWC004	04/10/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200936	CWC004	04/10/18	Metals	Vanadium	4		4	µg/L	U
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	U-234	0.912	0.569	0.559	pCi/L	J
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	U-238	1.29	0.677	0.557	pCi/L	J
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	Th-228	0	0	0.625	pCi/L	U
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	Th-230	0.0505	0.139	0.358	pCi/L	UJ
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	Th-232	0.0336	0.143	0.43	pCi/L	UJ
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	R-226	0	0	1.17	pCi/L	U
CWC200936	CWC004	04/10/18	Alpha Spectroscopy	U-235	0.0469	0.199	0.599	pCi/L	UJ
CWC200938	CWC005	04/10/18	Metals	Barium	130		0.9	µg/L	=
CWC200938	CWC005	04/10/18	Metals	Molybdenum	9.1		2	µg/L	=
CWC200938	CWC005	04/10/18	Metals	Nickel	2.3		2	µg/L	=
CWC200938	CWC005	04/10/18	Metals	Selenium	3		2	µg/L	=
CWC200938	CWC005	04/10/18	Metals	Antimony	2		2	µg/L	U
CWC200938	CWC005	04/10/18	Metals	Arsenic	4		4	µg/L	U
CWC200938	CWC005	04/10/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200938	CWC005	04/10/18	Metals	Chromium	4		4	µg/L	U
CWC200938	CWC005	04/10/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200938	CWC005	04/10/18	Metals	Vanadium	4		4	µg/L	U
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	Th-230	0.564	0.43	0.519	pCi/L	J
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	U-234	1.01	0.79	0.933	pCi/L	J
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	U-238	1.64	1.01	0.929	pCi/L	J
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	Th-228	0.422	0.384	0.557	pCi/L	UJ
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	Th-232	0.158	0.252	0.507	pCi/L	UJ
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	R-226	1.08	1.03	1.91	pCi/L	UJ
CWC200938	CWC005	04/10/18	Alpha Spectroscopy	U-235	0.156	0.443	1.15	pCi/L	UJ
CWC200940	CWC006	04/10/18	Metals	Barium	130		0.9	µg/L	=
CWC200940	CWC006	04/10/18	Metals	Molybdenum	7.7		2	µg/L	=
CWC200940	CWC006	04/10/18	Metals	Nickel	2.3		2	µg/L	=
CWC200940	CWC006	04/10/18	Metals	Selenium	3.7		2	µg/L	=

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC200940	CWC006	04/10/18	Metals	Antimony	2		2	µg/L	U
CWC200940	CWC006	04/10/18	Metals	Arsenic	4		4	µg/L	U
CWC200940	CWC006	04/10/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200940	CWC006	04/10/18	Metals	Chromium	4		4	µg/L	U
CWC200940	CWC006	04/10/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200940	CWC006	04/10/18	Metals	Vanadium	4		4	µg/L	U
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	U-234	0.721	0.521	0.589	pCi/L	J
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	U-238	0.757	0.524	0.509	pCi/L	J
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	Th-228	0.125	0.227	0.496	pCi/L	UJ
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	Th-230	0.11	0.181	0.334	pCi/L	UJ
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	Th-232	0	0.177	0.461	pCi/L	UJ
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	R-226	0.209	0.495	1.21	pCi/L	UJ
CWC200940	CWC006	04/10/18	Alpha Spectroscopy	U-235	0.0741	0.204	0.524	pCi/L	UJ
CWC200942	CWC007	04/09/18	Metals	Barium	130		0.9	µg/L	=
CWC200942	CWC007	04/09/18	Metals	Molybdenum	8.5		2	µg/L	=
CWC200942	CWC007	04/09/18	Metals	Nickel	2.2		2	µg/L	=
CWC200942	CWC007	04/09/18	Metals	Selenium	3.9		2	µg/L	=
CWC200942	CWC007	04/09/18	Metals	Antimony	2		2	µg/L	U
CWC200942	CWC007	04/09/18	Metals	Arsenic	4		4	µg/L	U
CWC200942	CWC007	04/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200942	CWC007	04/09/18	Metals	Chromium	4		4	µg/L	U
CWC200942	CWC007	04/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200942	CWC007	04/09/18	Metals	Vanadium	4		4	µg/L	U
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	U-234	1.02	0.581	0.394	pCi/L	J
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	U-238	1.07	0.601	0.472	pCi/L	J
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	Th-228	0.0859	0.255	0.659	pCi/L	UJ
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	Th-230	0	0.154	0.544	pCi/L	UJ
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	Th-232	0.103	0.201	0.439	pCi/L	UJ
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	R-226	0	0	1.5	pCi/L	U
CWC200942	CWC007	04/09/18	Alpha Spectroscopy	U-235	0	0.259	0.674	pCi/L	UJ
CWC200944	CWC008	04/09/18	Metals	Barium	130		0.9	µg/L	=
CWC200944	CWC008	04/09/18	Metals	Molybdenum	8.1		2	µg/L	=
CWC200944	CWC008	04/09/18	Metals	Nickel	2		2	µg/L	=
CWC200944	CWC008	04/09/18	Metals	Selenium	3.5		2	µg/L	=
CWC200944	CWC008	04/09/18	Metals	Antimony	2		2	µg/L	U
CWC200944	CWC008	04/09/18	Metals	Arsenic	4		4	µg/L	U

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC200944	CWC008	04/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200944	CWC008	04/09/18	Metals	Chromium	4		4	µg/L	U
CWC200944	CWC008	04/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200944	CWC008	04/09/18	Metals	Vanadium	4		4	µg/L	U
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	Th-230	0.689	0.437	0.341	pCi/L	J
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	U-234	1.26	0.723	0.486	pCi/L	J
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	U-238	1.18	0.715	0.671	pCi/L	J
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	Th-228	0.176	0.225	0.34	pCi/L	UJ
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	Th-232	0.064	0.181	0.471	pCi/L	UJ
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	R-226	0	0	1.48	pCi/L	U
CWC200944	CWC008	04/09/18	Alpha Spectroscopy	U-235	0	0.319	0.831	pCi/L	UJ
CWC200946	CWC009	04/09/18	Metals	Barium	120		0.9	µg/L	=
CWC200946	CWC009	04/09/18	Metals	Molybdenum	7.7		2	µg/L	=
CWC200946	CWC009	04/09/18	Metals	Nickel	2.1		2	µg/L	=
CWC200946	CWC009	04/09/18	Metals	Selenium	4		2	µg/L	=
CWC200946	CWC009	04/09/18	Metals	Antimony	2		2	µg/L	U
CWC200946	CWC009	04/09/18	Metals	Arsenic	4		4	µg/L	U
CWC200946	CWC009	04/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC200946	CWC009	04/09/18	Metals	Chromium	4		4	µg/L	U
CWC200946	CWC009	04/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC200946	CWC009	04/09/18	Metals	Vanadium	4		4	µg/L	U
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	U-234	0.776	0.531	0.571	pCi/L	J
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	U-238	0.444	0.388	0.41	pCi/L	J
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	Th-228	0.194	0.268	0.512	pCi/L	UJ
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	Th-230	0.324	0.321	0.477	pCi/L	UJ
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	Th-232	0	0.183	0.477	pCi/L	UJ
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	R-226	0	0	1.47	pCi/L	U
CWC200946	CWC009	04/09/18	Alpha Spectroscopy	U-235	0.168	0.276	0.508	pCi/L	UJ
CWC207421	CWC002	10/09/18	Metals	Barium	95		0.9	µg/L	=
CWC207421	CWC002	10/09/18	Metals	Molybdenum	18		2	µg/L	=
CWC207421	CWC002	10/09/18	Metals	Selenium	2.2		2	µg/L	J
CWC207421	CWC002	10/09/18	Metals	Nickel	2.5		2	µg/L	J
CWC207421	CWC002	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207421	CWC002	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207421	CWC002	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207421	CWC002	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC207421	CWC002	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207421	CWC002	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	Th-230	0.453	0.355	0.294	pCi/L	J
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	U-238	0.445	0.335	0.335	pCi/L	J
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	Th-228	0.148	0.233	0.46	pCi/L	UJ
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	Th-232	-0.0247	0.135	0.377	pCi/L	UJ
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	R-226	0.596	0.806	1.59	pCi/L	UJ
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	U-234	0.264	0.266	0.364	pCi/L	UJ
CWC207421	CWC002	10/09/18	Alpha Spectroscopy	U-235	0.0633	0.146	0.322	pCi/L	UJ
CWC207423	CWC003	10/09/18	Metals	Barium	110		0.9	µg/L	=
CWC207423	CWC003	10/09/18	Metals	Molybdenum	17		2	µg/L	=
CWC207423	CWC003	10/09/18	Metals	Selenium	2.5		2	µg/L	J
CWC207423	CWC003	10/09/18	Metals	Nickel	2.2		2	µg/L	J
CWC207423	CWC003	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207423	CWC003	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207423	CWC003	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207423	CWC003	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207423	CWC003	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207423	CWC003	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	U-234	0.68	0.443	0.307	pCi/L	J
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	U-238	0.583	0.419	0.425	pCi/L	J
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	Th-228	0.16	0.238	0.479	pCi/L	UJ
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	Th-230	0.262	0.264	0.361	pCi/L	UJ
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	Th-232	0.0436	0.118	0.301	pCi/L	UJ
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	R-226	0.0773	0.319	0.959	pCi/L	UJ
CWC207423	CWC003	10/09/18	Alpha Spectroscopy	U-235	0	0	0.23	pCi/L	U
CWC207425	CWC004	10/09/18	Metals	Barium	100		0.9	µg/L	=
CWC207425	CWC004	10/09/18	Metals	Molybdenum	16		2	µg/L	=
CWC207425	CWC004	10/09/18	Metals	Selenium	2.4		2	µg/L	J
CWC207425	CWC004	10/09/18	Metals	Nickel	2.8		2	µg/L	J
CWC207425	CWC004	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207425	CWC004	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207425	CWC004	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207425	CWC004	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207425	CWC004	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207425	CWC004	10/09/18	Metals	Arsenic	4		4	µg/L	U

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	U-234	0.61	0.402	0.324	pCi/L	J
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	U-238	0.304	0.281	0.277	pCi/L	J
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	Th-228	0.169	0.238	0.419	pCi/L	UJ
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	Th-230	0.102	0.195	0.42	pCi/L	UJ
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	Th-232	0.0423	0.139	0.388	pCi/L	UJ
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	R-226	0.0403	0.337	1.12	pCi/L	UJ
CWC207425	CWC004	10/09/18	Alpha Spectroscopy	U-235	0	0	0.209	pCi/L	U
CWC207427	CWC005	10/09/18	Metals	Barium	98		0.9	µg/L	=
CWC207427	CWC005	10/09/18	Metals	Molybdenum	15		2	µg/L	=
CWC207427	CWC005	10/09/18	Metals	Selenium	2.2		2	µg/L	J
CWC207427	CWC005	10/09/18	Metals	Nickel	2.7		2	µg/L	J
CWC207427	CWC005	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207427	CWC005	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207427	CWC005	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207427	CWC005	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207427	CWC005	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207427	CWC005	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	U-238	0.778	0.537	0.391	pCi/L	J
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	Th-228	0.0592	0.173	0.452	pCi/L	UJ
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	Th-230	0.163	0.207	0.307	pCi/L	UJ
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	Th-232	0.037	0.121	0.339	pCi/L	UJ
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	R-226	0	0	1.09	pCi/L	U
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	U-234	0.562	0.475	0.582	pCi/L	UJ
CWC207427	CWC005	10/09/18	Alpha Spectroscopy	U-235	0.312	0.38	0.484	pCi/L	UJ
CWC207429	CWC006	10/09/18	Metals	Barium	92		0.9	µg/L	=
CWC207429	CWC006	10/09/18	Metals	Molybdenum	13		2	µg/L	=
CWC207429	CWC006	10/09/18	Metals	Nickel	11		2	µg/L	J
CWC207429	CWC006	10/09/18	Metals	Selenium	2.5		2	µg/L	J
CWC207429	CWC006	10/09/18	Metals	Vanadium	4.2		4	µg/L	=
CWC207429	CWC006	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207429	CWC006	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207429	CWC006	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207429	CWC006	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207429	CWC006	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	Th-230	0.41	0.339	0.391	pCi/L	J
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	U-234	0.347	0.321	0.317	pCi/L	J

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	Th-228	0.197	0.257	0.461	pCi/L	UJ
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	Th-232	0.244	0.254	0.28	pCi/L	UJ
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	R-226	0	0	0.331	pCi/L	U
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	U-235	0	0	0.238	pCi/L	U
CWC207429	CWC006	10/09/18	Alpha Spectroscopy	U-238	0.266	0.286	0.367	pCi/L	UJ
CWC207431	CWC007	10/09/18	Metals	Barium	78		0.9	µg/L	=
CWC207431	CWC007	10/09/18	Metals	Molybdenum	8.8		2	µg/L	=
CWC207431	CWC007	10/09/18	Metals	Nickel	2.6		2	µg/L	J
CWC207431	CWC007	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Selenium	2		2	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207431	CWC007	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	Th-228	0.176	0.295	0.646	pCi/L	UJ
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	Th-230	0.288	0.291	0.397	pCi/L	UJ
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	Th-232	-0.024	0.131	0.366	pCi/L	UJ
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	R-226	0.147	0.43	1.13	pCi/L	UJ
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	U-234	0.307	0.292	0.335	pCi/L	UJ
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	U-235	0	0	0.216	pCi/L	U
CWC207431	CWC007	10/09/18	Alpha Spectroscopy	U-238	0.298	0.291	0.369	pCi/L	UJ
CWC207433	CWC008	10/09/18	Metals	Barium	70		0.9	µg/L	=
CWC207433	CWC008	10/09/18	Metals	Molybdenum	6.8		2	µg/L	=
CWC207433	CWC008	10/09/18	Metals	Nickel	2.5		2	µg/L	J
CWC207433	CWC008	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Selenium	2		2	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Vanadium	4		4	µg/L	U
CWC207433	CWC008	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	Th-228	0.371	0.307	0.354	pCi/L	J
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	Th-230	0.222	0.231	0.255	pCi/L	UJ
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	Th-232	-0.0357	0.119	0.377	pCi/L	UJ
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	R-226	0	0	1.21	pCi/L	U

Table D-1. CWC Surface-Water Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	U-234	0.224	0.272	0.347	pCi/L	UJ
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	U-235	0.0841	0.194	0.428	pCi/L	UJ
CWC207433	CWC008	10/09/18	Alpha Spectroscopy	U-238	0	0	0.721	pCi/L	U
CWC207435	CWC009	10/09/18	Metals	Barium	61		0.9	µg/L	=
CWC207435	CWC009	10/09/18	Metals	Nickel	5.3		2	µg/L	J
CWC207435	CWC009	10/09/18	Metals	Molybdenum	4.5		2	µg/L	=
CWC207435	CWC009	10/09/18	Metals	Vanadium	4.4		4	µg/L	=
CWC207435	CWC009	10/09/18	Metals	Antimony	2		2	µg/L	U
CWC207435	CWC009	10/09/18	Metals	Cadmium	0.2		0.2	µg/L	U
CWC207435	CWC009	10/09/18	Metals	Chromium	4		4	µg/L	U
CWC207435	CWC009	10/09/18	Metals	Selenium	2		2	µg/L	U
CWC207435	CWC009	10/09/18	Metals	Thallium	0.9		0.9	µg/L	U
CWC207435	CWC009	10/09/18	Metals	Arsenic	4		4	µg/L	U
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	U-234	0.412	0.356	0.371	pCi/L	J
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	Th-228	0.241	0.293	0.527	pCi/L	UJ
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	Th-230	0.225	0.261	0.398	pCi/L	UJ
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	Th-232	0.016	0.134	0.447	pCi/L	UJ
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	R-226	0.0179	0.301	1.05	pCi/L	UJ
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	U-235	0	0	0.822	pCi/L	U
CWC207435	CWC009	10/09/18	Alpha Spectroscopy	U-238	0.187	0.25	0.409	pCi/L	UJ

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200931	CWC002	04/10/18	Metals	Arsenic	3.6	0.46	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Cadmium	0.24	0.028	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Chromium	8.2	0.52	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Molybdenum	0.63	0.23	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Nickel	8.3	0.23	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Selenium	1.1	0.37	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Vanadium	11	0.46	mg/kg	=	
CWC200931	CWC002	04/10/18	Metals	Barium	110	0.57	mg/kg	J	H01, H02, H04
CWC200931	CWC002	04/10/18	Metals	Antimony	0.23	0.23	mg/kg	U	
CWC200931	CWC002	04/10/18	Metals	Thallium	0.23	0.23	mg/kg	U	
CWC200931	CWC002	04/10/18	Alpha Spectroscopy	Th-228	0.324	0.244	pCi/g	J	T04, T20
CWC200931	CWC002	04/10/18	Alpha Spectroscopy	Th-230	0.648	0.217	pCi/g	J	T04, T20
CWC200931	CWC002	04/10/18	Alpha Spectroscopy	Th-232	0.101	0.156	pCi/g	UJ	T06
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	K-40	10.2	0.222	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	R-226	0.976	0.0554	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	R-228	0.34	0.0558	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Th-228	0.34	0.0558	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Th-232	0.34	0.0558	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	U-238	0.632	0.436	pCi/g	=	
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Ac-227	-0.29	0.125	pCi/g	UJ	T04, T06, T07
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Am241	-0.0199	0.0375	pCi/g	UJ	T04, T06
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Cs-137	0.00408	0.023	pCi/g	UJ	T04, T06
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Pa-231	-0.138	0.824	pCi/g	UJ	T04, T06
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	Th-230	1.1	3.77	pCi/g	UJ	T04, T06
CWC200931	CWC002	04/10/18	Gamma Spectroscopy	U-235	0.0829	0.272	pCi/g	UJ	T04, T06
CWC200933	CWC003	04/10/18	Metals	Arsenic	5.3	0.59	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Barium	140	0.73	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Cadmium	0.48	0.035	mg/kg	J	Q02
CWC200933	CWC003	04/10/18	Metals	Chromium	26	0.66	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Molybdenum	1.5	0.29	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Nickel	14	0.29	mg/kg	J	Q02
CWC200933	CWC003	04/10/18	Metals	Selenium	2	0.47	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Vanadium	15	0.59	mg/kg	=	
CWC200933	CWC003	04/10/18	Metals	Antimony	0.36	0.29	mg/kg	J	Q02
CWC200933	CWC003	04/10/18	Metals	Thallium	0.29	0.29	mg/kg	U	
CWC200933	CWC003	04/10/18	Alpha Spectroscopy	Th-228	1.14	0.239	pCi/g	=	
CWC200933	CWC003	04/10/18	Alpha Spectroscopy	Th-230	2.7	0.156	pCi/g	=	

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200933	CWC003	04/10/18	Alpha Spectroscopy	Th-232	0.954	0.156	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Ac-227	0.233	0.1	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	K-40	12.5	0.207	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	R-226	1.04	0.0534	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	R-228	0.655	0.0467	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Th-228	0.655	0.0467	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Th-232	0.655	0.0467	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	U-238	0.744	0.5	pCi/g	=	
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Am241	0.00104	0.0417	pCi/g	UJ	T04, T06
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Cs-137	-0.00476	0.0194	pCi/g	UJ	T04, T06
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Pa-231	0.207	0.795	pCi/g	UJ	T04, T06
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	Th-230	5.27	4.31	pCi/g	UJ	T04
CWC200933	CWC003	04/10/18	Gamma Spectroscopy	U-235	0.114	0.261	pCi/g	UJ	T04, T06
CWC200935	CWC004	04/10/18	Metals	Arsenic	4.7	0.54	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Barium	130	0.67	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Cadmium	0.32	0.032	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Chromium	12	0.61	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Nickel	13	0.27	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Selenium	1.6	0.43	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Vanadium	16	0.54	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Molybdenum	0.56	0.27	mg/kg	=	
CWC200935	CWC004	04/10/18	Metals	Antimony	0.27	0.27	mg/kg	U	
CWC200935	CWC004	04/10/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC200935	CWC004	04/10/18	Alpha Spectroscopy	Th-228	0.915	0.198	pCi/g	=	
CWC200935	CWC004	04/10/18	Alpha Spectroscopy	Th-230	1.83	0.12	pCi/g	=	
CWC200935	CWC004	04/10/18	Alpha Spectroscopy	Th-232	0.857	0.12	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	K-40	13.2	0.195	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	R-226	1.17	0.0563	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	R-228	0.711	0.0519	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Th-228	0.711	0.0519	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Th-232	0.711	0.0519	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	U-238	0.818	0.514	pCi/g	=	
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Ac-227	-0.678	0.142	pCi/g	UJ	T04, T06, T07
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Am241	0.0104	0.0567	pCi/g	UJ	T04, T06
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Cs-137	0.00174	0.0201	pCi/g	UJ	T04, T06
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Pa-231	0.0346	0.845	pCi/g	UJ	T04, T06
CWC200935	CWC004	04/10/18	Gamma Spectroscopy	Th-230	0.544	5.08	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200935	CWC004	04/10/18	Gamma Spec	U-235	0.0799	0.292	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Metals	Arsenic	10	0.53	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Barium	210	0.67	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Cadmium	0.42	0.032	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Chromium	16	0.6	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Nickel	19	0.27	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Selenium	2.2	0.43	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Vanadium	30	0.53	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Antimony	0.28	0.27	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Molybdenum	0.62	0.27	mg/kg	=	
CWC200937	CWC005	04/10/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC200937	CWC005	04/10/18	Alpha Spectroscopy	Th-228	1.24	0.17	pCi/g	=	
CWC200937	CWC005	04/10/18	Alpha Spectroscopy	Th-230	1.61	0.218	pCi/g	J	F01
CWC200937	CWC005	04/10/18	Alpha Spectroscopy	Th-232	1.1	0.218	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	K-40	14.7	0.466	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	R-226	1.78	0.0954	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	R-228	0.918	0.0949	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Th-228	0.918	0.0949	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Th-232	0.918	0.0949	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	U-238	1	0.448	pCi/g	=	
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Ac-227	-0.564	0.324	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Am241	-0.0399	0.08	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Cs-137	-0.00156	0.0421	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Pa-231	0.137	1.47	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	Th-230	0.207	7.61	pCi/g	UJ	T04, T06
CWC200937	CWC005	04/10/18	Gamma Spectroscopy	U-235	0.0529	0.459	pCi/g	UJ	T04, T06
CWC200939	CWC006	04/10/18	Metals	Arsenic	5.8	0.61	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Barium	150	0.76	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Cadmium	0.51	0.036	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Chromium	20	0.68	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Molybdenum	0.9	0.3	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Nickel	23	0.3	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Selenium	1.9	0.49	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Vanadium	19	0.61	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Antimony	0.31	0.3	mg/kg	=	
CWC200939	CWC006	04/10/18	Metals	Thallium	0.3	0.3	mg/kg	U	
CWC200939	CWC006	04/10/18	Alpha Spectroscopy	Th-228	1.11	0.219	pCi/g	=	

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200939	CWC006	04/10/18	Alpha Spectroscopy	Th-230	2.71	0.148	pCi/g	=	
CWC200939	CWC006	04/10/18	Alpha Spectroscopy	Th-232	1.06	0.244	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	K-40	14.5	0.243	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	R-226	1.23	0.0656	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	R-228	0.791	0.0567	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Th-228	0.791	0.0567	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Th-232	0.791	0.0567	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	U-238	1.01	0.487	pCi/g	=	
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Ac-227	-1.43	0.14	pCi/g	UJ	T04, T06, T07
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Am241	0.000333	0.0472	pCi/g	UJ	T04, T06
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Cs-137	0.00649	0.0245	pCi/g	UJ	T04, T06
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Pa-231	-0.502	0.876	pCi/g	UJ	T04, T06
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	Th-230	3.94	4.73	pCi/g	UJ	T04, T05
CWC200939	CWC006	04/10/18	Gamma Spectroscopy	U-235	-0.0878	0.282	pCi/g	UJ	T04, T06
CWC200941	CWC007	04/09/18	Metals	Arsenic	6.7	0.54	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Barium	200	0.67	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Cadmium	1	0.032	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Chromium	34	0.61	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Molybdenum	1.6	0.27	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Nickel	18	0.27	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Selenium	1.8	0.43	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Vanadium	20	0.54	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Antimony	0.45	0.27	mg/kg	=	
CWC200941	CWC007	04/09/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC200941	CWC007	04/09/18	Alpha Spectroscopy	Th-228	0.947	0.175	pCi/g	=	
CWC200941	CWC007	04/09/18	Alpha Spectroscopy	Th-230	3.79	0.208	pCi/g	=	
CWC200941	CWC007	04/09/18	Alpha Spectroscopy	Th-232	1.01	0.126	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	K-40	11.6	0.343	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	R-226	1.14	0.0681	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	R-228	0.686	0.0674	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Th-228	0.686	0.0674	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Th-232	0.686	0.0674	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	U-238	0.797	0.593	pCi/g	=	
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Ac-227	-0.725	0.246	pCi/g	UJ	T04, T06, T07
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Am241	-0.0227	0.0605	pCi/g	UJ	T04, T06
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Cs-137	0.0194	0.0199	pCi/g	U	T04, T05
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Pa-231	-0.296	1.1	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	Th-230	3.04	5.77	pCi/g	UJ	T04, T05
CWC200941	CWC007	04/09/18	Gamma Spectroscopy	U-235	0.0657	0.364	pCi/g	UJ	T04, T06
CWC200943	CWC008	04/09/18	Metals	Arsenic	4.2	0.56	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Barium	130	0.7	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Cadmium	0.34	0.033	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Chromium	15	0.63	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Nickel	16	0.28	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Selenium	1.9	0.45	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Vanadium	17	0.56	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Molybdenum	0.44	0.28	mg/kg	=	
CWC200943	CWC008	04/09/18	Metals	Antimony	0.28	0.28	mg/kg	U	
CWC200943	CWC008	04/09/18	Metals	Thallium	0.28	0.28	mg/kg	U	
CWC200943	CWC008	04/09/18	Alpha Spectroscopy	Th-228	1.12	0.25	pCi/g	=	
CWC200943	CWC008	04/09/18	Alpha Spectroscopy	Th-230	2.11	0.16	pCi/g	=	
CWC200943	CWC008	04/09/18	Alpha Spectroscopy	Th-232	0.895	0.263	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	K-40	14.5	0.594	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	R-226	1.2	0.156	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	R-228	0.739	0.139	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Th-228	0.739	0.139	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Th-232	0.739	0.139	pCi/g	=	
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Ac-227	-1.07	0.279	pCi/g	UJ	T04, T06, T07
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Am241	-0.0166	0.0943	pCi/g	UJ	T04, T06
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Cs-137	0.0165	0.0515	pCi/g	UJ	T04, T06
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Pa-231	-0.67	1.83	pCi/g	UJ	T04, T06
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	Th-230	14.2	9.9	pCi/g	UJ	T04
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	U-235	-0.063	0.542	pCi/g	UJ	T04, T06
CWC200943	CWC008	04/09/18	Gamma Spectroscopy	U-238	0.456	0.799	pCi/g	UJ	T04, T05
CWC200945	CWC009	04/09/18	Metals	Arsenic	5.3	0.47	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Barium	110	0.58	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Cadmium	0.53	0.028	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Chromium	21	0.53	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Molybdenum	0.89	0.23	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Nickel	17	0.23	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Selenium	1.3	0.37	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Vanadium	14	0.47	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Antimony	0.35	0.23	mg/kg	=	
CWC200945	CWC009	04/09/18	Metals	Thallium	0.23	0.23	mg/kg	U	

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC200945	CWC009	04/09/18	Alpha Spectroscopy	Th-228	1.25	0.215	pCi/g	=	
CWC200945	CWC009	04/09/18	Alpha Spectroscopy	Th-230	2.21	0.25	pCi/g	=	
CWC200945	CWC009	04/09/18	Alpha Spectroscopy	Th-232	0.861	0.215	pCi/g	J	T04, T20
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Ac-227	0.162	0.118	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	K-40	12.5	0.259	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	R-226	1.25	0.0614	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	R-228	0.725	0.0634	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Th-228	0.725	0.0634	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Th-232	0.725	0.0634	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	U-238	0.716	0.512	pCi/g	=	
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Am241	0.0132	0.0464	pCi/g	UJ	T04, T06
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Cs-137	0.00265	0.0261	pCi/g	UJ	T04, T06
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Pa-231	0.337	1	pCi/g	UJ	T04, T06
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	Th-230	2.17	4.49	pCi/g	UJ	T04, T06
CWC200945	CWC009	04/09/18	Gamma Spectroscopy	U-235	-0.119	0.285	pCi/g	UJ	T04, T06
CWC207420	CWC002	10/09/18	Metals	Arsenic	8.9	0.55	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Barium	190	0.69	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Cadmium	0.6	0.033	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Chromium	16	0.62	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Molybdenum	1.4	0.28	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Nickel	17	0.28	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Selenium	2	0.44	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Vanadium	21	0.55	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Antimony	0.49	0.28	mg/kg	=	
CWC207420	CWC002	10/09/18	Metals	Thallium	0.28	0.28	mg/kg	U	
CWC207420	CWC002	10/09/18	Alpha Spectroscopy	Th-228	0.917	0.19	pCi/g	=	
CWC207420	CWC002	10/09/18	Alpha Spectroscopy	Th-230	1.3	0.137	pCi/g	J	F01
CWC207420	CWC002	10/09/18	Alpha Spectroscopy	Th-232	0.615	0.149	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	K-40	12	0.302	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	R-226	1.24	0.0644	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	R-228	0.613	0.0629	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	Th-228	0.613	0.0629	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	Th-232	0.613	0.0629	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	U-238	0.852	0.346	pCi/g	=	
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	Ac-227	-0.503	0.165	pCi/g	UJ	T04, T06, T07
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	Am241	0.00694	0.051	pCi/g	UJ	T04, T06
CWC207420	CWC002	10/09/18	Gamma Spectroscopy	Cs-137	0.000724	0.0287	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207420	CWC002	10/09/18	Gamma Spec	Pa-231	0.303	1.14	pCi/g	UJ	T04, T06
CWC207420	CWC002	10/09/18	Gamma Spec	Th-230	1.96	4.74	pCi/g	UJ	T04, T06
CWC207420	CWC002	10/09/18	Gamma Spec	U-235	-0.123	0.317	pCi/g	UJ	T04, T06
CWC207422	CWC003	10/09/18	Metals	Arsenic	6.9	0.61	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Barium	160	0.76	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Cadmium	0.65	0.037	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Chromium	27	0.69	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Molybdenum	1.1	0.3	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Nickel	17	0.3	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Selenium	2.6	0.49	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Vanadium	21	0.61	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Antimony	0.41	0.3	mg/kg	=	
CWC207422	CWC003	10/09/18	Metals	Thallium	0.3	0.3	mg/kg	U	
CWC207422	CWC003	10/09/18	Alpha Spectroscopy	Th-228	1.05	0.174	pCi/g	=	
CWC207422	CWC003	10/09/18	Alpha Spectroscopy	Th-230	1.48	0.151	pCi/g	J	F01
CWC207422	CWC003	10/09/18	Alpha Spectroscopy	Th-232	0.857	0.116	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	K-40	13.7	0.321	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	R-226	1.47	0.0743	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	R-228	0.805	0.0692	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Th-228	0.805	0.0692	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Th-232	0.805	0.0692	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	U-238	0.895	0.379	pCi/g	=	
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Ac-227	-0.98	0.174	pCi/g	UJ	T04, T06, T07
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Am241	0.0339	0.0581	pCi/g	UJ	T04, T06
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Cs-137	0.0014	0.0318	pCi/g	UJ	T04, T06
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Pa-231	0.132	1.24	pCi/g	UJ	T04, T06
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	Th-230	1.27	5.37	pCi/g	UJ	T04, T06
CWC207422	CWC003	10/09/18	Gamma Spectroscopy	U-235	0.153	0.368	pCi/g	UJ	T04, T06
CWC207424	CWC004	10/09/18	Metals	Arsenic	5.2	0.53	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Barium	140	0.67	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Cadmium	0.5	0.032	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Chromium	17	0.6	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Molybdenum	0.77	0.27	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Nickel	15	0.27	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Selenium	2	0.43	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Vanadium	20	0.53	mg/kg	=	
CWC207424	CWC004	10/09/18	Metals	Antimony	0.3	0.27	mg/kg	=	

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207424	CWC004	10/09/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC207424	CWC004	10/09/18	Alpha Spectroscopy	Th-228	0.911	0.23	pCi/g	=	
CWC207424	CWC004	10/09/18	Alpha Spectroscopy	Th-230	1.5	0.151	pCi/g	J	F01
CWC207424	CWC004	10/09/18	Alpha Spectroscopy	Th-232	0.938	0.141	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	K-40	13.2	0.297	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	R-226	1.33	0.069	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	R-228	0.792	0.0667	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Th-228	0.792	0.0667	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Th-232	0.792	0.0667	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	U-238	0.978	0.315	pCi/g	=	
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Ac-227	-0.865	0.156	pCi/g	UJ	T04, T06, T07
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Am241	-0.00779	0.0593	pCi/g	UJ	T04, T06
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Cs-137	-0.0126	0.0252	pCi/g	UJ	T04, T06
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Pa-231	-0.177	0.991	pCi/g	UJ	T04, T06
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	Th-230	0.696	5.01	pCi/g	UJ	T04, T06
CWC207424	CWC004	10/09/18	Gamma Spectroscopy	U-235	0.118	0.303	pCi/g	UJ	T04, T06
CWC207426	CWC005	10/09/18	Metals	Arsenic	7.7	0.54	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Barium	180	0.67	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Cadmium	0.76	0.032	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Chromium	27	0.61	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Molybdenum	1	0.27	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Nickel	21	0.27	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Selenium	2.6	0.43	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Vanadium	25	0.54	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Antimony	0.57	0.27	mg/kg	=	
CWC207426	CWC005	10/09/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC207426	CWC005	10/09/18	Alpha Spectroscopy	Th-228	1.04	0.209	pCi/g	=	
CWC207426	CWC005	10/09/18	Alpha Spectroscopy	Th-230	3.5	0.164	pCi/g	=	
CWC207426	CWC005	10/09/18	Alpha Spectroscopy	Th-232	0.888	0.181	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	K-40	12.8	0.588	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	R-226	1.68	0.134	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	R-228	0.869	0.116	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Th-228	0.869	0.116	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Th-232	0.869	0.116	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	U-238	0.949	0.634	pCi/g	=	
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Ac-227	-0.867	0.298	pCi/g	UJ	T04, T06, T07
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Am241	-0.0374	0.101	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Cs-137	0.00605	0.0535	pCi/g	UJ	T04, T06
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Pa-231	0.182	2.08	pCi/g	UJ	T04, T06
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	Th-230	4.47	9.71	pCi/g	UJ	T04, T06
CWC207426	CWC005	10/09/18	Gamma Spectroscopy	U-235	0.199	0.575	pCi/g	UJ	T04, T06
CWC207428	CWC006	10/09/18	Metals	Arsenic	6.8	0.55	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Barium	210	0.69	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Cadmium	0.92	0.033	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Chromium	27	0.62	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Molybdenum	1.3	0.27	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Nickel	21	0.27	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Selenium	2.3	0.44	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Vanadium	25	0.55	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Antimony	0.42	0.27	mg/kg	=	
CWC207428	CWC006	10/09/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC207428	CWC006	10/09/18	Alpha Spectroscopy	Th-228	1.27	0.177	pCi/g	=	
CWC207428	CWC006	10/09/18	Alpha Spectroscopy	Th-230	4.52	0.15	pCi/g	=	
CWC207428	CWC006	10/09/18	Alpha Spectroscopy	Th-232	1.18	0.16	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	K-40	13.9	0.572	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	R-226	1.59	0.136	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	R-228	0.805	0.127	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Th-228	0.805	0.127	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Th-232	0.805	0.127	pCi/g	=	
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Ac-227	-2.07	0.289	pCi/g	UJ	T04, T06, T07
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Am241	-0.0706	0.105	pCi/g	UJ	T04, T06
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Cs-137	0.00916	0.0602	pCi/g	UJ	T04, T06
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Pa-231	0.686	2.03	pCi/g	UJ	T04, T06
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	Th-230	8.04	10	pCi/g	UJ	T04, T05
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	U-235	0.27	0.581	pCi/g	UJ	T04, T06
CWC207428	CWC006	10/09/18	Gamma Spectroscopy	U-238	0.609	0.675	pCi/g	UJ	T04, T05
CWC207430	CWC007	10/09/18	Metals	Arsenic	6.5	0.57	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Barium	160	0.72	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Cadmium	0.64	0.034	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Chromium	53	0.65	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Molybdenum	1.4	0.29	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Nickel	20	0.29	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Selenium	2.5	0.46	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Vanadium	21	0.57	mg/kg	=	

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207430	CWC007	10/09/18	Metals	Antimony	0.51	0.29	mg/kg	=	
CWC207430	CWC007	10/09/18	Metals	Thallium	0.29	0.29	mg/kg	U	
CWC207430	CWC007	10/09/18	Alpha Spectroscopy	Th-228	1.01	0.209	pCi/g	=	
CWC207430	CWC007	10/09/18	Alpha Spectroscopy	Th-230	3.29	0.156	pCi/g	=	
CWC207430	CWC007	10/09/18	Alpha Spectroscopy	Th-232	0.728	0.134	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	K-40	12.2	0.247	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	R-226	1.39	0.0633	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	R-228	0.638	0.0624	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Th-228	0.638	0.0624	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Th-232	0.638	0.0624	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	U-238	0.866	0.323	pCi/g	=	
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Ac-227	-1.16	0.164	pCi/g	UJ	T04, T06, T07
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Am241	0.0121	0.048	pCi/g	UJ	T04, T06
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Cs-137	0.00975	0.0267	pCi/g	UJ	T04, T06
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Pa-231	0.0873	1	pCi/g	UJ	T04, T06
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	Th-230	4.22	4.9	pCi/g	UJ	T04, T05
CWC207430	CWC007	10/09/18	Gamma Spectroscopy	U-235	0.174	0.312	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Metals	Arsenic	5.2	0.55	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Barium	170	0.68	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Cadmium	0.37	0.033	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Chromium	20	0.62	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Nickel	21	0.27	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Selenium	2.4	0.44	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Vanadium	24	0.55	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Molybdenum	0.47	0.27	mg/kg	=	
CWC207432	CWC008	10/09/18	Metals	Antimony	0.27	0.27	mg/kg	U	
CWC207432	CWC008	10/09/18	Metals	Thallium	0.27	0.27	mg/kg	U	
CWC207432	CWC008	10/09/18	Alpha Spectroscopy	Th-228	1.01	0.128	pCi/g	=	
CWC207432	CWC008	10/09/18	Alpha Spectroscopy	Th-230	2.23	0.128	pCi/g	J	F01
CWC207432	CWC008	10/09/18	Alpha Spectroscopy	Th-232	1.18	0.156	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	K-40	14.5	0.713	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	R-226	1.7	0.156	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	R-228	0.883	0.132	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Th-228	0.883	0.132	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Th-232	0.883	0.132	pCi/g	=	
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Ac-227	-0.651	0.324	pCi/g	UJ	T04, T06, T07

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Am241	-0.00209	0.11	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Cs-137	-0.0209	0.0551	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Pa-231	0.165	2.21	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	Th-230	0.949	10	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	U-235	0.215	0.634	pCi/g	UJ	T04, T06
CWC207432	CWC008	10/09/18	Gamma Spectroscopy	U-238	-0.192	1.24	pCi/g	UJ	T04, T06
CWC207434	CWC009	10/09/18	Metals	Arsenic	16	0.56	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Barium	160	0.7	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Cadmium	0.52	0.033	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Chromium	23	0.63	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Molybdenum	0.92	0.28	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Nickel	22	0.28	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Selenium	2.5	0.45	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Vanadium	42	0.56	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Antimony	0.47	0.28	mg/kg	=	
CWC207434	CWC009	10/09/18	Metals	Thallium	0.28	0.28	mg/kg	U	
CWC207434	CWC009	10/09/18	Alpha Spectroscopy	Th-228	0.866	0.192	pCi/g	=	
CWC207434	CWC009	10/09/18	Alpha Spectroscopy	Th-230	4.6	0.139	pCi/g	=	
CWC207434	CWC009	10/09/18	Alpha Spectroscopy	Th-232	0.718	0.151	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	K-40	13.7	0.251	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	R-226	1.67	0.0678	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	R-228	0.878	0.0672	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Th-228	0.878	0.0672	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Th-232	0.878	0.0672	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	U-238	0.879	0.34	pCi/g	=	
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Ac-227	-1.3	0.164	pCi/g	UJ	T04, T06, T07
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Am241	0.01	0.0508	pCi/g	UJ	T04, T06
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Cs-137	-0.00288	0.0285	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2018

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Pa-231	0.212	1.06	pCi/g	UJ	T04, T06
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	Th-230	3.86	5.03	pCi/g	UJ	T04, T05
CWC207434	CWC009	10/09/18	Gamma Spectroscopy	U-235	-0.00523	0.313	pCi/g	UJ	T04, T06

VQs

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

F01 Blanks: Sample data were qualified as a result of the method blank.

H01 Matrix Spike/Matrix Spike Duplicate: Matrix Spike/Matrix Spike Duplicate recovery was above the upper control limit.

H02 Matrix Spike/Matrix Spike Duplicate: Matrix Spike/Matrix Spike Duplicate recovery was above the lower control limit.

H04 Matrix Spike/Matrix Spike Duplicate: Matrix Spike/Matrix Spike Duplicate pairs exceed the RPD limit.

Q02 Radiological field duplicate NAD was outside the control limit.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainty 50 percent to 100 percent of the result.

APPENDIX E

GROUND-WATER FIELD PARAMETER DATA AND ANALYTICAL DATA RESULTS FOR CALENDAR YEAR 2018

(On the CD-ROM on the Back Cover of this Report)

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Table E-1. Ground-Water Monitoring
First Quarter 2018 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 02/13/18
HISS-01	---	---	---	---	---	---	---	---	---	---	8.14
HISS-06A	---	---	---	---	---	---	---	---	---	---	8.19
HISS-10	---	---	---	---	---	---	---	---	---	---	8.81
HISS-11A	---	---	---	---	---	---	---	---	---	---	13.89
HISS-17S	---	---	---	---	---	---	---	---	---	---	8.7
HISS-19S	---	---	---	---	---	---	---	---	---	---	14.82
HW22	---	---	---	---	---	---	---	---	---	---	15.23
HW23	---	---	---	---	---	---	---	---	---	---	9.9

Table E-1. Ground-Water Monitoring
Second Quarter 2018 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 05/14/18
HISS-01	---	---	---	---	---	---	---	---	---	---	8.59
HISS-06A	---	---	---	---	---	---	---	---	---	---	8.11
HISS-10	---	---	---	---	---	---	---	---	---	---	6.43
HISS-11A	---	---	---	---	---	---	---	---	---	---	12.93
HISS-17S	---	---	---	---	---	---	---	---	---	---	6.98
HISS-19	---	---	---	---	---	---	---	---	---	---	14.4
HW22	---	---	---	---	---	---	---	---	---	---	13.42
HW23	05/14/18	80	1200	7.22	0.113	212	7.91	17	-140	9.87	9.68

Table E-1. Ground-Water Monitoring
Third Quarter 2018 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 08/13/18
HISS-01	---	---	---	---	---	---	---	---	---	---	13.03
HISS-06A	---	---	---	---	---	---	---	---	---	---	9.69
HISS-10	08/16/18	150	1800	6.58	0.125	8.2	4.72	18.6	167	8.31	8.11
HISS-11A	08/14/18	50	600	6.88	93	8.9	4.76	22	165	14.62	13.52
HISS-17S	---	---	---	---	---	---	---	---	---	---	8.14
HISS-19	---	---	---	---	---	---	---	---	---	---	14.60
HW22	---	---	---	---	---	---	---	---	---	---	17.88
HW23	---	---	---	---	---	---	---	---	---	---	10.05

Table E-1. Ground-Water Monitoring
Fourth Quarter 2018 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 11/08/18
HISS-01	---	---	---	---	---	---	---	---	---	---	9.77
HISS-06A	---	---	---	---	---	---	---	---	---	---	8.13
HISS-10	11/12/18	150	1350	7.2	0.118	16.2	4.06	12.7	187	6.24	5.33
HISS-11A	---	---	---	---	---	---	---	---	---	---	10.87
HISS-17S	---	---	---	---	---	---	---	---	---	---	4.64
HISS-19S	---	---	---	---	---	---	---	---	---	---	13.92
HW22	---	---	---	---	---	---	---	---	---	---	14.22
HW23	---	---	---	---	---	---	---	---	---	---	9.95

No ground-water samples were collected at the HISS during the first quarter of 2018.

--- Monitoring well was not sampled during this event.

BTOC – below top of casing

Table E-2. Ground-Water Monitoring
First Quarter 2018 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 02/13/18
B53W01D	---	---	---	---	---	---	---	---	---	---	10.5
B53W01S	---	---	---	---	---	---	---	---	---	---	17.09
B53W06S	---	---	---	---	---	---	---	---	---	---	17.32
B53W07D	---	---	---	---	---	---	---	---	---	---	10.96
B53W07S	---	---	---	---	---	---	---	---	---	---	21.44
B53W09S	---	---	---	---	---	---	---	---	---	---	17.91
B53W13S	---	---	---	---	---	---	---	---	---	---	15.64
B53W17S	---	---	---	---	---	---	---	---	---	---	16.63
B53W18S	---	---	---	---	---	---	---	---	---	---	13.85
B53W19S	---	---	---	---	---	---	---	---	---	---	8.52
MW31-98	---	---	---	---	---	---	---	---	---	---	19.48
MW32-98	---	---	---	---	---	---	---	---	---	---	18.75
PW35	---	---	---	---	---	---	---	---	---	---	10.52
PW36	---	---	---	---	---	---	---	---	---	---	10.1
PW42	---	---	---	---	---	---	---	---	---	---	11.06
PW43	02/13/18	50	750	6.7	0.115	1.3	5.72	13.2	154	20.82	20.41
PW44	02/14/18	50	450	7.18	83.5	0	7.17	13.3	192	7.28	6.83
PW45	02/14/18	80	480	6.98	0.119	0	6.73	14.2	217	11.44	11.09
PW46	02/14/18	50	450	6.48	0.275	0	9.67	11.8	228	15.23	15.02

Table E-2. Ground-Water Monitoring
Second Quarter 2018 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 05/14/18
B53W01D	05/15/18	120	2520	7.11	0.109	92.2	6.73	15.7	-158	10.55	10.47
B53W01S	05/15/18	50	450	6.93	90	27.5	7.95	16.8	45	13.94	13.3
B53W06S	05/16/18	25	300	6.67	0.161	36.7	6.87	17.3	160	14.49	13.08
B53W07D	---	---	---	---	---	---	---	---	---	---	10.79
B53W07S	---	---	---	---	---	---	---	---	---	---	17.73
B53W09S	05/16/18	35	420	6.68	0.127	36.5	7.45	15.5	182	16.18	15.31
B53W13S	---	---	---	---	---	---	---	---	---	---	9.80
B53W17S	05/16/18	50	600	6.77	0.395	8	8.29	15.5	191	9.01	8.37
B53W18S	---	---	---	---	---	---	---	---	---	---	13.37
B53W19S	---	---	---	---	---	---	---	---	---	---	7.11
MW31-98	---	---	---	---	---	---	---	---	---	---	9.59
MW32-98	---	---	---	---	---	---	---	---	---	---	12.73
PW35	05/15/18	45	540	7.74	0.183	18.2	8.25	22.9	-69	12.13	10.80
PW36	---	---	---	---	---	---	---	---	---	---	10.15
PW42	---	---	---	---	---	---	---	---	---	---	10.72
PW43	---	---	---	---	---	---	---	---	---	---	12.80
PW44	---	---	---	---	---	---	---	---	---	---	4.76
PW45	---	---	---	---	---	---	---	---	---	---	7.90
PW46	---	---	---	---	---	---	---	---	---	---	12.93

Table E-2. Ground-Water Monitoring
Third Quarter 2018 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 08/13/18
B53W01D	---	---	---	---	---	---	---	---	---	---	10.7
B53W01S	---	---	---	---	---	---	---	---	---	---	18.42
B53W06S	---	---	---	---	---	---	---	---	---	---	15.28
B53W07D	08/13/18	50	750	6.98	0.111	150	3.52	17.9	-159	11.19	11.13
B53W07S	---	---	---	---	---	---	---	---	---	---	19.79
B53W09S	08/14/18	30	270	6.58	0.129	45.4	5.3	17.6	166	17.45	16.70
B53W13S	---	---	---	---	---	---	---	---	---	---	13.93
B53W17S	---	---	---	---	---	---	---	---	---	---	13.09
B53W18S	---	---	---	---	---	---	---	---	---	---	13.54
B53W19S	---	---	---	---	---	---	---	---	---	---	7.98
MW31-98	---	---	---	---	---	---	---	---	---	---	15.13
MW32-98	---	---	---	---	---	---	---	---	---	---	16.24
PW35	---	---	---	---	---	---	---	---	---	---	11.70
PW36	---	---	---	---	---	---	---	---	---	---	10.34
PW42	---	---	---	---	---	---	---	---	---	---	11.15
PW43	08/14/18	50	450	6.43	0.105	0	5.05	18.4	179	19.1	18.7
PW44	---	---	---	---	---	---	---	---	---	---	6.45
PW45	---	---	---	---	---	---	---	---	---	---	9.30
PW46	---	---	---	---	---	---	---	---	---	---	16.89

Table E-2. Ground-Water Monitoring
Fourth Quarter 2018 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 11/08/18
B53W01D	---	---	---	---	---	---	---	---	---	---	10.62
B53W01S	11/08/18	50	450	6.3	85.4	15	4.94	12.1	244	18.28	17.43
B53W06S	11/14/18	20	240	6.76	0.183	159	4.27	12.2	26	17.1	16.05
B53W07D	---	---	---	---	---	---	---	---	---	---	11.05
B53W07S	---	---	---	---	---	---	---	---	---	---	19.8
B53W09S	11/09/18	30	450	6.36	0.144	10.5	3.81	13.5	-130	18.11	16.83
B53W13S	---	---	---	---	---	---	---	---	---	---	13.19
B53W17S	---	---	---	---	---	---	---	---	---	---	12
B53W18S	---	---	---	---	---	---	---	---	---	---	13.35
B53W19S	---	---	---	---	---	---	---	---	---	---	7.03
MW31-98	11/12/18	60	720	6.71	0.32	22.5	4.31	12.6	199	15.53	14.68
MW32-98	---	---	---	---	---	---	---	---	---	---	16.81
PW35	---	---	---	---	---	---	---	---	---	---	9.89
PW36	---	---	---	---	---	---	---	---	---	---	10.23
PW42	11/09/18	35	315	6.84	0.107	18.6	5.56	10.9	-124	11.9	11.14
PW43	---	---	---	---	---	---	---	---	---	---	19.47
PW44	---	---	---	---	---	---	---	---	---	---	3.77
PW45	---	---	---	---	---	---	---	---	---	---	7.81
PW46	---	---	---	---	---	---	---	---	---	---	14.83

--- Monitoring well was not sampled during this event.

Table E-3. CY 2018 Ground-Water Sampling Data for the Latty Avenue Properties

Site: Latty Avenue Properties											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
HIS205335	HISS-01	08/16/18	ML-006	Ra-226	0	0	1.48	pCi/L	U		No
HIS205335	HISS-01	08/16/18	ML-005	Th-228	0	0	0.563	pCi/L	U		No
HIS205335	HISS-01	08/16/18	ML-005	Th-230	0.41	0.327	0.322	pCi/L	J	F01, T04, T20	No
HIS205335	HISS-01	08/16/18	ML-005	Th-232	0	0	0.164	pCi/L	U		No
HIS205335	HISS-01	08/16/18	ML-015	U-234	6.39	1.72	0.636	pCi/L	=		No
HIS205335	HISS-01	08/16/18	ML-015	U-235	0.4	0.433	0.566	pCi/L	UJ	T06	No
HIS205335	HISS-01	08/16/18	ML-015	U-238	7.91	1.96	0.633	pCi/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Antimony	2		2	µg/L	U		No
HIS205336	HISS-10	08/16/18	SW846 6020	Arsenic	4		4	µg/L	U		No
HIS205336	HISS-10	08/16/18	SW846 6020	Barium	120		0.9	µg/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Cadmium	1.1		0.2	µg/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Chromium	4		4	µg/L	U		No
HIS205336	HISS-10	08/16/18	SW846 6020	Molybdenum	39		2	µg/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Nickel	3.1		2	µg/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Selenium	69		2	µg/L	=		No
HIS205336	HISS-10	08/16/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
HIS205336	HISS-10	08/16/18	SW846 6020	Vanadium	4		4	µg/L	U		No
HIS208654	HISS-10	11/12/18	SW846 6020	Antimony	2		2	µg/L	U		No
HIS208654	HISS-10	11/12/18	SW846 6020	Arsenic	4		4	µg/L	U		No
HIS208654	HISS-10	11/12/18	SW846 6020	Barium	100		0.9	µg/L	=		No
HIS208654	HISS-10	11/12/18	SW846 6020	Cadmium	4.20E-01		0.2	µg/L	=		No
HIS208654	HISS-10	11/12/18	SW846 6020	Chromium	4		4	µg/L	U		No
HIS208654	HISS-10	11/12/18	SW846 6020	Molybdenum	40		2	µg/L	=		No
HIS208654	HISS-10	11/12/18	SW846 6020	Nickel	3.8		2	µg/L	=		No
HIS208654	HISS-10	11/12/18	SW846 6020	Selenium	41		2	µg/L	=		No
HIS208654	HISS-10	11/12/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
HIS208654	HISS-10	11/12/18	SW846 6020	Vanadium	4		4	µg/L	U		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Antimony	2		2	µg/L	U		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Arsenic	4		4	µg/L	U		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Barium	160		0.9	µg/L	=		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Cadmium	1.5		0.2	µg/L	=		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Chromium	4		4	µg/L	U		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Molybdenum	5		2	µg/L	J	F01	No

Table E-3. CY 2018 Ground-Water Sampling Data for the Latty Avenue Properties

Site: Latty Avenue Properties

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
HIS205337	HISS-11A	08/14/18	SW846 6020	Nickel	11		2	µg/L	=		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Selenium	32		2	µg/L	=		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
HIS205337	HISS-11A	08/14/18	SW846 6020	Vanadium	4		4	µg/L	U		No
HIS203632	HW23	05/14/18	SW846 6020	Antimony	2		2	µg/L	U		No
HIS203632	HW23	05/14/18	SW846 6020	Arsenic	230		4	µg/L	=		No
HIS203632	HW23	05/14/18	SW846 6020	Barium	460		0.9	µg/L	=		No
HIS203632	HW23	05/14/18	SW846 6020	Cadmium	0.2		0.2	µg/L	U		No
HIS203632	HW23	05/14/18	SW846 6020	Chromium	4		4	µg/L	U		No
HIS203632	HW23	05/14/18	SW846 6020	Molybdenum	7.6		2	µg/L	=		No
HIS203632	HW23	05/14/18	SW846 6020	Nickel	4.6		2	µg/L	=		No
HIS203632	HW23	05/14/18	ML-006	Ra-226	1.82	1.06	1.11	pCi/L	J	T04, T20	No
HIS203632	HW23	05/14/18	SW846 6020	Selenium	2		2	µg/L	U		No
HIS203632	HW23	05/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
HIS203632	HW23	05/14/18	ML-005	Th-228	0.235	0.302	0.592	pCi/L	UJ	T06	No
HIS203632	HW23	05/14/18	ML-005	Th-230	0.133	0.282	0.668	pCi/L	UJ	T06	No
HIS203632	HW23	05/14/18	ML-005	Th-232	0.118	0.213	0.465	pCi/L	UJ	T06	No
HIS203632	HW23	05/14/18	ML-015	U-234	0.564	0.466	0.593	pCi/L	UJ	T04, T05	No
HIS203632	HW23	05/14/18	ML-015	U-235	-0.0497	0.211	0.635	pCi/L	UJ	T06	No
HIS203632	HW23	05/14/18	ML-015	U-238	0.803	0.55	0.591	pCi/L	J	T04, T20	No
HIS203632	HW23	05/14/18	SW846 6020	Vanadium	4.8		4	µg/L	=		No

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

F01 Blanks: Sample data were qualified as a result of the method blank.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainly 50% to 100% of the result

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP203634	B53W01D	05/15/18	ML-006	Ra-226	0	0	2.3	pCi/L	U		No
SVP203634	B53W01D	05/15/18	ML-005	Th-228	0.0327	0.202	0.594	pCi/L	UJ	T06	No
SVP203634	B53W01D	05/15/18	ML-005	Th-230	0.442	0.353	0.348	pCi/L	J	T04, T20	No
SVP203634	B53W01D	05/15/18	ML-005	Th-232	0.0817	0.194	0.471	pCi/L	UJ	T06	No
SVP203634	B53W01D	05/15/18	ML-015	U-234	0.101	0.196	0.428	pCi/L	UJ	T06	No
SVP203634	B53W01D	05/15/18	ML-015	U-235	0	0.234	0.609	pCi/L	UJ	T06	No
SVP203634	B53W01D	05/15/18	ML-015	U-238	-0.0167	0.138	0.355	pCi/L	UJ	T06	No
SVP203633	B53W01S	05/15/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP203633	B53W01S	05/15/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP203633	B53W01S	05/15/18	SW846 6020	Barium	110		0.9	µg/L	=		No
SVP203633	B53W01S	05/15/18	SW846 6020	Cadmium	0.38		0.2	µg/L	=		No
SVP203633	B53W01S	05/15/18	SW846 6020	Chromium	9.8		4	µg/L	=		No
SVP203633	B53W01S	05/15/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SVP203633	B53W01S	05/15/18	SW846 6020	Nickel	5.4		2	µg/L	=		No
SVP203633	B53W01S	05/15/18	SW846 6020	Selenium	2		2	µg/L	U		No
SVP203633	B53W01S	05/15/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP203633	B53W01S	05/15/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Barium	110		0.9	µg/L	=		No
SVP208655	B53W01S	11/08/18	SW846 6020	Cadmium	0.69		0.2	µg/L	=		No
SVP208655	B53W01S	11/08/18	SW846 6020	Chromium	4		4	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Molybdenum	2.3		2	µg/L	=		No
SVP208655	B53W01S	11/08/18	SW846 6020	Nickel	15		2	µg/L	=		No
SVP208655	B53W01S	11/08/18	SW846 6020	Selenium	2		2	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP208655	B53W01S	11/08/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP203635	B53W06S	05/16/18	SW846 6020	Antimony	2		2	µg/L	U		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
SVP203635	B53W06S	05/16/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP203635	B53W06S	05/16/18	SW846 6020	Barium	98		0.9	µg/L	=		No
SVP203635	B53W06S	05/16/18	SW846 6020	Cadmium	2.8		0.2	µg/L	=		No
SVP203635	B53W06S	05/16/18	SW846 6020	Chromium	4		4	µg/L	U		No
SVP203635	B53W06S	05/16/18	SW846 6020	Molybdenum	5.3		2	µg/L	=		No
SVP203635	B53W06S	05/16/18	SW846 6020	Nickel	14		2	µg/L	=		No
SVP203635	B53W06S	05/16/18	SW846 6020	Selenium	52		2	µg/L	=		No
SVP203635	B53W06S	05/16/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP203635	B53W06S	05/16/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP208656	B53W06S	11/14/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP208656	B53W06S	11/14/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP208656	B53W06S	11/14/18	SW846 6020	Barium	90		0.9	µg/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Cadmium	3.5		0.2	µg/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Chromium	4		4	µg/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Molybdenum	6.7		2	µg/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Nickel	27		2	µg/L	=		No
SVP208656	B53W06S	11/14/18	ML-006	Ra-226	0.156	0.562	1.51	pCi/L	UJ	T06	No
SVP208656	B53W06S	11/14/18	SW846 6020	Selenium	8.1		2	µg/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP208656	B53W06S	11/14/18	ML-005	Th-228	0.214	0.257	0.418	pCi/L	UJ	T06	No
SVP208656	B53W06S	11/14/18	ML-005	Th-230	0.404	0.341	0.419	pCi/L	UJ	T04, T05	No
SVP208656	B53W06S	11/14/18	ML-005	Th-232	0.087	0.183	0.418	pCi/L	UJ	T06	No
SVP208656	B53W06S	11/14/18	ML-015	U-234	6.91	1.65	0.511	pCi/L	=		No
SVP208656	B53W06S	11/14/18	ML-015	U-235	0.623	0.496	0.6	pCi/L	J	T04, T20	No
SVP208656	B53W06S	11/14/18	ML-015	U-238	4.41	1.26	0.607	pCi/L	=		No
SVP208656	B53W06S	11/14/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Arsenic	91		4	µg/L	=		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP205339	B53W07D	08/13/18	SW846 6020	Barium	380		0.9	µg/L	=		No
SVP205339	B53W07D	08/13/18	SW846 6020	Cadmium	1.2		0.2	µg/L	=		No
SVP205339	B53W07D	08/13/18	SW846 6020	Chromium	4		4	µg/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Nickel	9.6		2	µg/L	=		No
SVP205339	B53W07D	08/13/18	ML-006	Ra-226	0	0	1.39	pCi/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Selenium	2		2	µg/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP205339	B53W07D	08/13/18	ML-005	Th-228	0.391	0.339	0.451	pCi/L	UJ	T04, T05	No
SVP205339	B53W07D	08/13/18	ML-005	Th-230	0.235	0.254	0.332	pCi/L	UJ	T06	No
SVP205339	B53W07D	08/13/18	ML-005	Th-232	0	0	0.169	pCi/L	U		No
SVP205339	B53W07D	08/13/18	ML-015	U-234	0	0	0.183	pCi/L	U		No
SVP205339	B53W07D	08/13/18	ML-015	U-235	0	0	0.226	pCi/L	U		No
SVP205339	B53W07D	08/13/18	ML-015	U-238	0	0	0.182	pCi/L	U		No
SVP205339	B53W07D	08/13/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP203636	B53W09S	05/16/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP203636	B53W09S	05/16/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP203636	B53W09S	05/16/18	SW846 6020	Barium	360		0.9	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Cadmium	0.74		0.2	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Chromium	200		4	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Molybdenum	4.8		2	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Nickel	240		2	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Selenium	5.7		2	µg/L	=		No
SVP203636	B53W09S	05/16/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP203636	B53W09S	05/16/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP205340	B53W09S	08/14/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP205340	B53W09S	08/14/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP205340	B53W09S	08/14/18	SW846 6020	Barium	360		0.9	µg/L	=		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
SVP205340	B53W09S	08/14/18	SW846 6020	Cadmium	1.1		0.2	µg/L	=		No
SVP205340	B53W09S	08/14/18	SW846 6020	Chromium	98		4	µg/L	=		No
SVP205340	B53W09S	08/14/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SVP205340	B53W09S	08/14/18	SW846 6020	Nickel	75		2	µg/L	=		No
SVP205340	B53W09S	08/14/18	SW846 6020	Selenium	4.5		2	µg/L	=		No
SVP205340	B53W09S	08/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP205340	B53W09S	08/14/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP208657	B53W09S	11/09/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP208657	B53W09S	11/09/18	SW846 6020	Arsenic	4.00E+00		4	µg/L	U		No
SVP208657	B53W09S	11/09/18	SW846 6020	Barium	430		0.9	µg/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Cadmium	0.4		0.2	µg/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Chromium	7.1		4	µg/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Molybdenum	3.3		2	µg/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Nickel	47		2	µg/L	=		No
SVP208657	B53W09S	11/09/18	ML-006	Ra-226	0.375	0.525	0.929	pCi/L	UJ	T06	No
SVP208657	B53W09S	11/09/18	SW846 6020	Selenium	4.2		2	µg/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP208657	B53W09S	11/09/18	ML-005	Th-228	0.0239	0.132	0.421	pCi/L	UJ	T06	No
SVP208657	B53W09S	11/09/18	ML-005	Th-230	0.191	0.26	0.487	pCi/L	UJ	T06	No
SVP208657	B53W09S	11/09/18	ML-005	Th-232	-0.175	0.149	0.693	pCi/L	UJ	T06	No
SVP208657	B53W09S	11/09/18	ML-015	U-234	1.72	0.712	0.296	pCi/L	=		No
SVP208657	B53W09S	11/09/18	ML-015	U-235	-0.0205	0.167	0.424	pCi/L	UJ	T06	No
SVP208657	B53W09S	11/09/18	ML-015	U-238	1.17	0.581	0.343	pCi/L	=		No
SVP208657	B53W09S	11/09/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP203638	B53W17S	05/16/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP203638	B53W17S	05/16/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP203638	B53W17S	05/16/18	SW846 6020	Barium	240		0.9	µg/L	=		No
SVP203638	B53W17S	05/16/18	SW846 6020	Cadmium	0.2		0.2	µg/L	U		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
SVP203638	B53W17S	05/16/18	SW846 6020	Chromium	8.9		4	µg/L	=		No
SVP203638	B53W17S	05/16/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SVP203638	B53W17S	05/16/18	SW846 6020	Nickel	2.8		2	µg/L	=		No
SVP203638	B53W17S	05/16/18	ML-006	Ra-226	0	0	1.39	pCi/L	U		No
SVP203638	B53W17S	05/16/18	SW846 6020	Selenium	80		2	µg/L	=		No
SVP203638	B53W17S	05/16/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP203638	B53W17S	05/16/18	ML-005	Th-228	0	0	0.809	pCi/L	U		No
SVP203638	B53W17S	05/16/18	ML-005	Th-230	0.253	0.313	0.575	pCi/L	UJ	T06	No
SVP203638	B53W17S	05/16/18	ML-005	Th-232	0.0337	0.143	0.43	pCi/L	UJ	T06	No
SVP203638	B53W17S	05/16/18	ML-015	U-234	1.56	0.696	0.48	pCi/L	J	F01	No
SVP203638	B53W17S	05/16/18	ML-015	U-235	0.241	0.324	0.592	pCi/L	UJ	T06	No
SVP203638	B53W17S	05/16/18	ML-015	U-238	1.8	0.743	0.345	pCi/L	=		No
SVP203638	B53W17S	05/16/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP208658	MW31-98	11/12/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP208658	MW31-98	11/12/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SVP208658	MW31-98	11/12/18	SW846 6020	Barium	410		0.9	µg/L	=		No
SVP208658	MW31-98	11/12/18	SW846 6020	Cadmium	0.32		0.2	µg/L	=		No
SVP208658	MW31-98	11/12/18	SW846 6020	Chromium	4		4	µg/L	U		No
SVP208658	MW31-98	11/12/18	SW846 6020	Molybdenum	2.3		2	µg/L	=		No
SVP208658	MW31-98	11/12/18	SW846 6020	Nickel	2.4		2	µg/L	=		No
SVP208658	MW31-98	11/12/18	ML-006	Ra-226	0.193	0.446	1.08	pCi/L	UJ	T06	No
SVP208658	MW31-98	11/12/18	SW846 6020	Selenium	11		2	µg/L	=		No
SVP208658	MW31-98	11/12/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SVP208658	MW31-98	11/12/18	ML-005	Th-228	0.373	0.336	0.476	pCi/L	UJ	T04, T05	No
SVP208658	MW31-98	11/12/18	ML-005	Th-230	0.421	0.36	0.512	pCi/L	UJ	T04, T05	No
SVP208658	MW31-98	11/12/18	ML-005	Th-232	-0.0389	0.129	0.411	pCi/L	UJ	T06	No
SVP208658	MW31-98	11/12/18	ML-015	U-234	3.98	1.24	0.479	pCi/L	=		No
SVP208658	MW31-98	11/12/18	ML-015	U-235	0.227	0.336	0.631	pCi/L	UJ	T06	No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP208658	MW31-98	11/12/18	ML-015	U-238	4.14	1.26	0.399	pCi/L	=		No
SVP208658	MW31-98	11/12/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SVP203637	PW35	05/15/18	ML-006	Ra-226	2.98	1.31	1.07	pCi/L	=		No
SVP203637	PW35	05/15/18	ML-005	Th-228	0.193	0.244	0.428	pCi/L	UJ	T06	No
SVP203637	PW35	05/15/18	ML-005	Th-230	0.268	0.271	0.38	pCi/L	UJ	T06	No
SVP203637	PW35	05/15/18	ML-005	Th-232	0.0445	0.122	0.315	pCi/L	UJ	T06	No
SVP203637	PW35	05/15/18	ML-015	U-234	0.234	0.274	0.427	pCi/L	UJ	T06	No
SVP203637	PW35	05/15/18	ML-015	U-235	0	0.185	0.652	pCi/L	UJ	T06	No
SVP203637	PW35	05/15/18	ML-015	U-238	0	0.237	0.425	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	SW846 6020	Antimony	2		2	µg/L	U		No
SVP208659	PW42	11/09/18	SW846 6020	Arsenic	140		4	µg/L	=		No
SVP208659	PW42	11/09/18	SW846 6020	Barium	320		0.9	µg/L	=		No
SVP208659	PW42	11/09/18	SW846 6020	Cadmium	0.23		0.2	µg/L	=		No
SVP208659	PW42	11/09/18	SW846 6020	Chromium	4		4	µg/L	U		No
SVP208659	PW42	11/09/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SVP208659	PW42	11/09/18	SW846 6020	Nickel	2		2	µg/L	U		No
SVP208659	PW42	11/09/18	ML-006	Ra-226	0.333	0.575	1.26	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	SW846 6020	Selenium	2		2	µg/L	U		No
SVP208659	PW42	11/09/18	SW846 6020	Thallium	1		0.9	µg/L	U		No
SVP208659	PW42	11/09/18	ML-005	Th-228	0.18	0.282	0.584	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	ML-005	Th-230	0.215	0.28	0.504	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	ML-005	Th-232	-0.0172	0.139	0.355	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	ML-015	U-234	0.239	0.277	0.424	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	ML-015	U-235	-0.0105	0.17	0.376	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	ML-015	U-238	0.0426	0.139	0.39	pCi/L	UJ	T06	No
SVP208659	PW42	11/09/18	SW846 6020	Vanadium	4		4	µg/L	U		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
SVP200663	PW43	02/13/18	SW846 6020	Antimony	2		2	μg/L	U		No
SVP200663	PW43	02/13/18	SW846 6020	Arsenic	4		4	μg/L	U		No
SVP200663	PW43	02/13/18	SW846 6020	Barium	160		0.9	μg/L	=		No
SVP200663	PW43	02/13/18	SW846 6020	Cadmium	0.21		0.2	μg/L	=		No
SVP200663	PW43	02/13/18	SW846 6020	Chromium	4		4	μg/L	U		No
SVP200663	PW43	02/13/18	SW846 6020	Molybdenum	2		2	μg/L	U		No
SVP200663	PW43	02/13/18	SW846 6020	Nickel	6		2	μg/L	=		No
SVP200663	PW43	02/13/18	ML-006	Ra-226	1.87	1.61	1.64	pCi/L	J	T04, T20	No
SVP200663	PW43	02/13/18	SW846 6020	Selenium	2		2	μg/L	U		No
SVP200663	PW43	02/13/18	SW846 6020	Thallium	0.9		0.9	μg/L	U		No
SVP200663	PW43	02/13/18	ML-005	Th-228	0.091	0.235	0.51	pCi/L	UJ	T06	No
SVP200663	PW43	02/13/18	ML-005	Th-230	0.334	0.342	0.511	pCi/L	UJ	T06	No
SVP200663	PW43	02/13/18	ML-005	Th-232	-0.0303	0.0608	0.364	pCi/L	UJ	T06	No
SVP200663	PW43	02/13/18	ML-015	U-234	4.04	1.3	0.59	pCi/L	=		No
SVP200663	PW43	02/13/18	ML-015	U-235	-0.0433	0.0869	0.519	pCi/L	UJ	T06	No
SVP200663	PW43	02/13/18	ML-015	U-238	3.21	1.11	0.189	pCi/L	=		No
SVP200663	PW43	02/13/18	SW846 6020	Vanadium	4		4	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Antimony	2		2	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Arsenic	4.2		4	μg/L	=		No
SVP205338	PW43	08/14/18	SW846 6020	Barium	200		0.9	μg/L	=		No
SVP205338	PW43	08/14/18	SW846 6020	Cadmium	0.65		0.2	μg/L	=		No
SVP205338	PW43	08/14/18	SW846 6020	Chromium	4		4	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Molybdenum	2		2	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Nickel	2.2		2	μg/L	=		No
SVP205338	PW43	08/14/18	SW846 6020	Selenium	2		2	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Thallium	0.9		0.9	μg/L	U		No
SVP205338	PW43	08/14/18	SW846 6020	Vanadium	4.4		4	μg/L	=		No
SLA200660	PW44	02/14/18	SW846 6020	Antimony	2		2	μg/L	U		No
SLA200660	PW44	02/14/18	SW846 6020	Arsenic	4		4	μg/L	U		No
SLA200660	PW44	02/14/18	SW846 6020	Barium	69		0.9	μg/L	=		No
SLA200660	PW44	02/14/18	SW846 6020	Cadmium	0.86		0.2	μg/L	=		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SLA200660	PW44	02/14/18	SW846 6020	Chromium	4		4	µg/L	U		No
SLA200660	PW44	02/14/18	SW846 6020	Molybdenum	2		2	µg/L	U		No
SLA200660	PW44	02/14/18	SW846 6020	Nickel	2		2	µg/L	U		No
SLA200660	PW44	02/14/18	ML-006	Ra-226	1.38	1.38	2.03	pCi/L	UJ	T06	No
SLA200660	PW44	02/14/18	SW846 6020	Selenium	2		2	µg/L	U		No
SLA200660	PW44	02/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SLA200660	PW44	02/14/18	ML-005	Th-228	0.381	0.556	0.915	pCi/L	UJ	T06	No
SLA200660	PW44	02/14/18	ML-005	Th-230	0.153	0.307	0.414	pCi/L	UJ	T06	No
SLA200660	PW44	02/14/18	ML-005	Th-232	0.152	0.307	0.413	pCi/L	UJ	T06	No
SLA200660	PW44	02/14/18	ML-015	U-234	0.686	0.51	0.561	pCi/L	J	T04, T20	No
SLA200660	PW44	02/14/18	ML-015	U-235	0	0	0.255	pCi/L	U		No
SLA200660	PW44	02/14/18	ML-015	U-238	0.38	0.347	0.206	pCi/L	J	F01, T04, T20	No
SLA200660	PW44	02/14/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SLA200661	PW45	02/14/18	SW846 6020	Antimony	2		2	µg/L	U		No
SLA200661	PW45	02/14/18	SW846 6020	Arsenic	4		4	µg/L	U		No
SLA200661	PW45	02/14/18	SW846 6020	Barium	90		0.9	µg/L	=		No
SLA200661	PW45	02/14/18	SW846 6020	Cadmium	0.27		0.2	µg/L	=		No
SLA200661	PW45	02/14/18	SW846 6020	Chromium	4		4	µg/L	U		No
SLA200661	PW45	02/14/18	SW846 6020	Molybdenum	39		2	µg/L	=		No
SLA200661	PW45	02/14/18	SW846 6020	Nickel	3.4		2	µg/L	=		No
SLA200661	PW45	02/14/18	ML-006	Ra-226	0.445	1.14	2.4	pCi/L	UJ	T06	No
SLA200661	PW45	02/14/18	SW846 6020	Selenium	23		2	µg/L	=		No
SLA200661	PW45	02/14/18	SW846 6020	Thallium	0.9		0.9	µg/L	U		No
SLA200661	PW45	02/14/18	ML-005	Th-228	0.191	0.272	0.469	pCi/L	UJ	T06	No
SLA200661	PW45	02/14/18	ML-005	Th-230	0.319	0.29	0.173	pCi/L	J	F01, T04, T20	No
SLA200661	PW45	02/14/18	ML-005	Th-232	0	0	0.173	pCi/L	U		No
SLA200661	PW45	02/14/18	ML-015	U-234	4.06	1.21	0.361	pCi/L	=		No
SLA200661	PW45	02/14/18	ML-015	U-235	0.223	0.26	0.201	pCi/L	UJ	T02	No
SLA200661	PW45	02/14/18	ML-015	U-238	3.36	1.06	0.162	pCi/L	=		No
SLA200661	PW45	02/14/18	SW846 6020	Vanadium	4		4	µg/L	U		No
SLA200662	PW46	02/14/18	SW846 6020	Antimony	5		5	µg/L	U		No
SLA200662	PW46	02/14/18	SW846 6020	Arsenic	10		10	µg/L	U		No

Table E-4. CY 2018 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SLA200662	PW46	02/14/18	SW846 6020	Barium	45		2.3	µg/L	=		No
SLA200662	PW46	02/14/18	SW846 6020	Cadmium	0.5		0.5	µg/L	U		No
SLA200662	PW46	02/14/18	SW846 6020	Chromium	10		10	µg/L	U		No
SLA200662	PW46	02/14/18	SW846 6020	Molybdenum	5		5	µg/L	U		No
SLA200662	PW46	02/14/18	SW846 6020	Nickel	5		5	µg/L	U		No
SLA200662	PW46	02/14/18	ML-006	Ra-226	0.606	0.996	1.75	pCi/L	UJ	T06	No
SLA200662	PW46	02/14/18	SW846 6020	Selenium	8		5	µg/L	=		No
SLA200662	PW46	02/14/18	SW846 6020	Thallium	2.3		2.3	µg/L	U		No
SLA200662	PW46	02/14/18	ML-005	Th-228	-0.0958	0.192	0.642	pCi/L	UJ	T06	No
SLA200662	PW46	02/14/18	ML-005	Th-230	0.256	0.302	0.47	pCi/L	UJ	T06	No
SLA200662	PW46	02/14/18	ML-005	Th-232	0.0957	0.192	0.383	pCi/L	UJ	T06	No
SLA200662	PW46	02/14/18	ML-015	U-234	305	51.6	0.434	pCi/L	=		No
SLA200662	PW46	02/14/18	ML-015	U-235	14	3.09	0.197	pCi/L	=		No
SLA200662	PW46	02/14/18	ML-015	U-238	298	50.4	0.159	pCi/L	=		No
SLA200662	PW46	02/14/18	SW846 6020	Vanadium	10		10	µg/L	U		No

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

F01 Blanks: Sample data were qualified as a result of the method blank.

T02 Radionuclide Quantitation: Analytical uncertainties were not met and/or not reported.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T20 Radionuclide Quantitation: Analytical result is greater than the associated MDA, with uncertainly 50 to 100 percent of the result.

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APPENDIX F

CALCULATION OF THE RECORD OF DECISION GROUND-WATER EVALUATION GUIDELINES

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CALCULATION OF THE RECORD OF DECISION GROUND-WATER MONITORING GUIDELINES

This appendix briefly outlines the methodology used to develop the ground-water monitoring guidelines for select wells and analytes at the NC Sites. The development of these guidelines was necessary to meet the requirements of response-action monitoring and long-term monitoring specified in the ROD (USACE 2005). These requirements are also identified in the EMICY18 (USACE 2017). The results of these calculations are used in the EMDAR to evaluate ground-water monitoring data at the Latty Avenue Properties and the SLAPS and SLAPS VPs for CY 2018.

INTRODUCTION

Response-action monitoring is conducted for HZ-A and HZ-C ground water at the NC Sites to assess if water quality has improved due to source removals or if ground-water conditions have significantly degraded. Based on the ROD, a significantly degraded ground-water condition requires all of the following:

1. that soil COC concentrations have statistically increased in ground water (relative to the well’s historical data and accounting for uncertainty) for more than a 12-month period. Significantly increased concentrations are defined as doubling of an individual COC concentration above the UCL of the mean (based on the historical concentration before remedial activity) for a period of 12 months;
2. that the degraded well is close enough to impact CWC; and
3. that a significant degradation of CWC surface water is anticipated (USACE 2005).

In addition to the previous requirements, the ROD specifies that the maximum contaminant level for total U of 30 µg/L be used as a monitoring guideline for both response-action and long-term monitoring of ground water. If ground-water monitoring indicates the presence of COCs at significantly increased concentrations and total U significantly above 30 µg/L, then an evaluation of potential response actions would be conducted.

METHODOLOGY

In order to evaluate ground water for significant degradation, the UCL must be calculated using the historical ground-water data (i.e., data collected before remedial activity). The UCL is used to represent a historical average concentration for an analyte in a particular well. As stated in the USEPA’s *Supplemental Guidance to RAGS: Calculating the Concentration Term,* “because of the uncertainty associated with estimating the true average concentration at a site, the UCL_{95} of the arithmetic mean should be used for this variable” (USEPA 1992). Based on the previously specified guidance, a 95 percent confidence interval was used in the UCL calculations.

Consistent with the ROD, UCL_{95} values for the soil COCs are used in the EMDAR to evaluate if concentrations have statistically increased in ground water for more than a 12-month period. The soil COCs defined in the ROD include antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. Because the SLAPS well PW46 is a replacement well, pre-2006 data from PW38 were used to develop the ground-water monitoring guideline to compare with the PW46 results. PW46 was installed in April of 2006 near the former location of PW38 and is screened across the same interval. Similarly, pre-2006 data from HISS-06 and HISS-11 were used to develop the ground-water monitoring guidelines for the two replacement wells (HISS-06A and HISS-11A) installed in CY 2011 at the HISS. For wells located in areas in which a response action has occurred, significant degradation is defined as occurring if the concentration of any COC in a recent sample from that well is double its UCL_{95}, and the total U is significantly above 30 µg/L. The ROD ground-water monitoring guideline for the soil COC for a particular well is defined as equivalent to two times the UCL_{95} value.

The dataset used for this evaluation was reduced prior to performing the statistical analysis. Filtered data, results qualified with an "R" designation, and QC samples were removed from each of the datasets. The analytical result was used when the VQ was assigned an "=" or a "J." For nondetect chemical data (i.e., the VQ was assigned a "U" or "UJ"), the value used in the UCL_{95} calculation was half the DL. For nondetect radiological data, the reported value was used, except in cases in which the value reported was negative. In those cases, a value of zero was substituted for the negative value.

RESULTS

The USEPA software package ProUCL (Version 5.0) was used to calculate the UCL_{95} value. ProUCL computes parametric UCLs (for normal, lognormal, and gamma distributions) and nonparametric UCLs using several nonparametric methods (USEPA 2013). Based upon the data distribution and the associated skewness, ProUCL performs and recommends the appropriate UCL.

The UCL_{95} values are those recommended by ProUCL with the following exceptions.

- If the calculated UCL_{95} exceeded the maximum detected value, then the maximum detected value was used, as recommended in the USEPA's *Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual (Part A)* (USEPA 1989c).
- If no values were detected for the COC in the historical database for that well, then the UCL_{95} was not determined. If only one value of the COC was detected, then the detected value was used.

The ground-water monitoring guidelines based on these UCL_{95} values are listed in Tables F-1 and F-2 for the Latty Avenue Properties and the SLAPS and SLAPS VPs, respectively.

Table F-1. ROD Monitoring Guidelines for Ground Water at the Latty Avenue Properties

Analyte Type	Soil COCs	HISS-01	HISS-06A[a]	HISS-09	HISS-10	HISS-11A[a]	HISS-14
Inorganics (µg/L)	Antimony	12	---	---	---	---	---
	Arsenic	---	---	---	---	5.2	---
	Barium	250	240	420	270	370	1,080
	Cadmium	---	---	---	1.4	---	---
	Chromium	13	2.2	---	2.4	7.0	---
	Molybdenum	23	40	22	5.6	4.8	---
	Nickel	20	34	21	3.8	20	11
	Selenium	570	770	19	7.6	---	610
	Thallium	4.6	---	---	---	---	5.8
	Total U	30	30	30	30	30	30
	Vanadium	37	31	17	16	---	250
Radionuclides (pCi/L)	Ra-226	5.3	---	---	---	16	4.2
	Th-228	1.9	2.4	3.2	3.4	3.4	2.0
	Th-230	4.2	7.0	7.4	6.0	5.0	21
	Th-232	---	1.8	---	0.2	---	---
	U-234	12	32	1.8	6.6	4.8	14
	U-235	---	4.2	---	---	---	---
	U-238	13	31	1.4	5.2	3.0	11

Table F-1. ROD Monitoring Guidelines for Ground Water at the Latty Avenue Properties

Analyte Type	Soil COCs	HISS-17S	HISS-18S	HISS-19S	HW21	HW22	HW23
Inorganics (µg/L)	Antimony	---	---	7.4	---	---	4.6
	Arsenic	---	6.6	510	6.8	2.4	320
	Barium	500	410	1,200	3,700	460	810
	Cadmium	---	---	---	2.8	1.6	3.4
	Chromium	12	---	3.0	7.0	9.0	8.1
	Molybdenum	16	---	10	5.6	3.4	26
	Nickel	30	39	7.0	44	7.0	12
	Selenium	250	---	---	110	17	---
	Thallium	---	---	8.0	6.2	---	5.4
	Total U	30	30	30	30	30	30
	Vanadium	18	16	4.4	12	4.0	6.4
Radionuclides (pCi/L)	Ra-226	5.7	5.5	2.5	8.4	11	2.4
	Th-228	2.4	3.2	10	4.2	1.8	2.6
	Th-230	3.8	5.8	12	5.2	3.8	5.2
	Th-232	---	1.9	---	---	---	1.0
	U-234	8.2	8.2	---	24	6.4	3.8
	U-235	---	---	---	2.0	---	---
	U-238	5.6	3.7	---	16	5.4	3.2

[a] The ROD evaluation criteria for HISS-06A and HISS-11A were calculated using historical data from the previous wells at these locations (HISS-06 and HISS-11).

Ground-Water Monitoring Guideline = 2 x UCL_{95}

Total U monitoring guide = 30 µg/L.

--- The analyte was not detected in the historical database, so a monitoring guideline was not developed.

Table F-2. ROD Monitoring Guidelines for Ground Water at the SLAPS and SLAPS VPs

Analyte Type	Soil COCs	B53W01D	B53W01S	B53W06S	B53W07D	B53W07S	B53W09S	B53W13S	B53W17S	B53W18S
Inorganics (µg/L)	Antimony	---	---	105	5.0	---	---	---	---	---
	Arsenic	170	---	---	150	140	---	---	---	3.6
	Barium	840	390	190	730	530	630	510	450	1,200
	Cadmium	---	---	---	---	---	---	---	8.8	---
	Chromium	7.2	15	47	5.6	11	9.6	9.1	7.0	51
	Molybdenum	---	---	22	4.0	4.4	14	3.2	21	28
	Nickel	---	30	16	12	5.2	83	38	5.2	910
	Selenium	---	---	---	4.0	5.2	700	790	140	---
	Thallium	---	8.0	---	7.4	---	---	7.0	---	---
	Total U	30	30	30	30	30	30	30	30	30
	Vanadium	19	44	48	12	17	24	---	83	54
Radionuclides (pCi/L)	Ra-226	4.4	---	3.8	3.4	7.2	2.5	---	---	7.2
	Th-228	1.6	1.0	1.5	---	2.2	3.0	4.4	3.8	7.0
	Th-230	5.8	2.9	3.9	4.4	4.0	5.0	6.0	5.6	8.0
	Th-232	---	---	---	---	---	---	---	---	1.4
	U-234	3.4	8.2	66	3.6	11	18	13	5.4	4.5
	U-235	---	---	2.9	---	---	6.1	---	4.4	---
	U-238	2.7	2.7	57	4.6	8.2	13	10	4.2	3.4

Table F-2. ROD Monitoring Guidelines for Ground Water at the SLAPS and SLAPS VPs

Analyte Type	Soil COCs	B53W19S	MW31-98	MW32-98	PW35	PW36	PW42	PW43	PW44	PW45	PW46[a]
Inorganics (µg/L)	Antimony	---	---	---	---	---	---	---	---	---	---
	Arsenic	36	---	5.8	90	220	280	53	13	---	7.0
	Barium	510	1,300	700	3,300	1,500	670	260	260	610	250
	Cadmium	0.7	3.8	3.8	0.6	---	0.8	---	---	---	1.2
	Chromium	290	4.6	5.6	16	3.2	52	3.5	---	---	37
	Molybdenum	130	35	3.0	32	8.0	6.0	6.4	12	1,500	2.2
	Nickel	1,100	7.8	4.0	35	13	28	3.6	---	67	3.4
	Selenium	4.2	390	740	2.8	3.8	---	---	---	7,200	710
	Thallium	7.7	---	9.8	7.4	14	7.6	---	---	---	---
	Total U	30	30	30	30	30	30	30	30	30	30
	Vanadium	36	110	54	35	13	12	3.1	---	---	67
Radionuclides (pCi/L)	Ra-226	1.4	3.4	1.6	8.0	2.0	4.0	6.1	1.8	2.4	22
	Th-228	5.2	4.6	1.4	2.6	2.6	1.6	2.4	3.4	2.5	2.1
	Th-230	6.0	4.0	4.0	4.1	3.6	3.4	2.6	12	5.8	60
	Th-232	2.2	---	0.4	2.3	---	---	---	---	---	7.0
	U-234	2.4	7.0	21	4.3	3.2	9.0	29	4.7	79	5,500
	U-235	---	5.9	9.4	---	---	---	2.2	---	3.0	290
	U-238	1.8	5.7	19	4.7	4.9	6.6	26	3.4	64	5,600

[a] The ROD evaluation criteria for PW46 were calculated using historical data from the previous well at this location (PW38).

Ground-Water Monitoring Guideline = 2 x UCL_{95}

Total U monitoring guide = 30 µg/L.

--- The analyte was not detected in the historical database, so a monitoring guideline was not developed.

APPENDIX G

WELL MAINTENANCE CHECKLISTS FOR THE ANNUAL GROUND-WATER MONITORING WELL INSPECTIONS CONDUCTED AT THE NORTH ST. LOUIS COUNTY SITES IN CALENDAR YEAR 2018

(On the CD-ROM on the Back Cover of this Report)

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CALENDAR YEAR 2018 WELL MAINTENANCE CHECKLISTS FOR THE HAZELWOOD INTERIM STORAGE SITE

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Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1305

Monitoring Well Station Identification: HISS-01 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level – 7.47’

Sounding – 26.35’ Very Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1020

Monitoring Well Station Identification: HISS-06A ☐SLAPS* ☐SLDS ☒HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level: 7.43’

Sounding: 22.12’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1300

Monitoring Well Station Identification: HISS-10 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Remark/label the well ID on protective casing.

Poor housekeeping around the well by the property owner.

Water Level: 5.23’

Sounding: 25.75’ Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1250

Monitoring Well Station Identification: HISS-11A ☐SLAPS* ☐SLDS ☒HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label the well ID on the protective casing.

Water Level: 11.15’

Sounding: 23.50’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1030

Monitoring Well Station Identification: HISS-17S ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☒	☐	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on the protective casing.

Water Level: 4.66’

Sounding: 22.15’ solid bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1035

Monitoring Well Station Identification: HISS-19S ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☐	☒	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label the well ID on the lid.

Water Level: 14.22’

Sounding: 29.11’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1315

Monitoring Well Station Identification: HW22 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☐	☒	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 13.30’

Sounding: 27.70’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 1320

Monitoring Well Station Identification: HW23 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☐	☒	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 9.58’

Sounding: 91.20’ soft bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

WELL MAINTENANCE CHECKLISTS FOR CALENDAR YEAR 2018
THE ST. LOUIS AIRPORT SITE

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Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0855

Monitoring Well Station Identification: B53W01D ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label ID number on the protective casing.

Water Level: 10.38’

Sounding: 95.40’ Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0850

Monitoring Well Station Identification: B53W01S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 14.61’

Sounding: 28.48’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1050

Monitoring Well Station Identification: B53W06S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Paint lid.

Re-mark/label well ID on lid.

Water Level: 17.84’

Sounding: 36.04’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1045

Monitoring Well Station Identification: B53W07D ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 10.78’

Sounding: 87.45’ Semi-soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1040

Monitoring Well Station Identification: B53W07S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on the protective casing.

Water Level: 19.44’

Sounding: 36.06’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1025

Monitoring Well Station Identification: B53W09S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☒	☐	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on the protective casing.

Water Level: 17.85’

Sounding: 35.92’ Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1245

Monitoring Well Station Identification: B53W13S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☐	☒	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

Addition of protective bollards or decommissioning the well recommended.

Water Level: 11.31’

Sounding: 29.10’ Semi-solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1230

Monitoring Well Station Identification: B53W17S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

Paint lid. Re-mark/label well ID on protective casing.

Water Level: 11.58’

Sounding: 37.40’ Semi-solid bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0840

Monitoring Well Station Identification: B53W18S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on the protective casing. Lubricate lock.

Water Level: 13.33’

Sounding: 27.50’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0925

Monitoring Well Station Identification: B53W19S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☐	☒	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level: 6.71’

Sounding: 22.30’ Semi-solid bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1240

Monitoring Well Station Identification: MW31-98 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 14.18’

Sounding: 35.72’ Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1250

Monitoring Well Station Identification: MW32-98 ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level: 16.16’

Sounding: 22.95’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0930

Monitoring Well Station Identification: PW35 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☐	☒	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☒	☐	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☐	☒	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☒	☐	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

Well pad is cracked and needs replacement. Vault fills with water.

Water Level: 10.55’

Sounding: 116.15’ Soft Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0945

Monitoring Well Station Identification: PW36 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☐	☒	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☐	☒	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☐	☒	☐
18.	Are the locks rusted?	☒	☐	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

Well pad is loose and needs repair/replacement. Vault fills with water.

Water Level: Not collected. Vault full of water. Vault pushed up by the freeze thaw cycle to the point where the pressure cap cannot be removed without water from the vault getting into the well.

Sounding: see note above.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1030

Monitoring Well Station Identification: PW42 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 10.80’

Sounding: 87.45’ Semi-solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1035

Monitoring Well Station Identification: PW43 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level: 17.30’

Sounding: 27.51’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0915

Monitoring Well Station Identification: PW44 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☒	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☒	☐	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Paint and re-mark/label well ID on the protective casing.

Water Level: 3.10’

Sounding: 20.27’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/13/18 Time: 0910

Monitoring Well Station Identification: PW45 ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

None.

Water Level: 7.27’

Sounding: 22.65’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 03/14/18 Time: 1010

Monitoring Well Station Identification: PW46 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☒	☐	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

Re-mark/label well ID on protective casing.

Water Level: 11.51’

Sounding: 22.44’ Solid Bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

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APPENDIX H

DOSE ASSESSMENT ASSUMPTIONS

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DOSE ASSESSMENT ASSUMPTIONS

DOSE FROM THE LATTY AVENUE PROPERTIES TO A MAXIMALLY EXPOSED INDIVIDUAL

The TEDE to a hypothetical maximally exposed individual was calculated for an area adjacent to the VP-40A railroad tracks. A small excavation was also performed at Futura during CY 2018. Dose from the remainder of the Latty Avenue Properties is considered negligible.

This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to work in an area directly adjacent to the railroad tracks on VP-40A near the fence on the boundary of VP-40A and Futura. No private residences are adjacent to the site. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than 100 percent. A full-time-employee business receptor was considered the maximally exposed individual for the Latty Avenue Properties.

The exposure scenario assumptions are as follows:

- Exposure to external gamma radiation and radon from VP-40A sources occurs to the maximally exposed individual while working full time outside at the receptor location (i.e., Futura) located approximately 75 m east from the area identified as having the highest external gamma level in the area adjacent to Futura. Exposure time is 2,000 hours per year (Leidos 2019b).
- Exposure from external gamma radiation was calculated using environmental TLD monitoring data at the perimeter between the source and the receptor. The site is assumed to represent a line-source to the receptor (Leidos 2019b).
- Exposure from inhalation of radioactive particulates dispersed through wind erosion of contaminated soil and airborne particulates during excavation activities was conservatively estimated at a distance of 55 m to the southwest of the Futura excavation (Leidos 2019b).
- Exposure from Rn-222 (and progeny) was calculated using a dispersion factor and Rn-222 (ATD) monitoring data at the site perimeter between the source and the receptor (Leidos 2019b).

Airborne Radioactive Particulates

The EDE of less than 0.1 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 55 m southwest of the Futura power pole excavation area (Leidos 2019b). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

External Gamma Pathway

The VP-40A TLDs measured an average above background annual exposure of 5.5 mrem per year based on 8,760 hours of continuous exposure. The dose equivalent due to gamma exposure for the maximally exposed individual is estimated by assuming the site approximates a line source with a source strength (H_1) that is the average of the TLD measurements between the source and the receptor (Cember 1996).

$$H_1 = 5.5 \text{ mrem/year}$$

Based on a 100-percent occupancy rate, the exposure rate (H_2) to the receptor was calculated.

$$H_2 = H_1 \times \frac{h_1}{h_2} * \frac{\tan^{-1}(L/h_2)}{\tan^{-1}(L/h_1)}$$

$$H_2 = 4.5E\text{-}02 \text{ mrem/year}$$

where:

H_2 = exposure rate to the receptor (continuous exposure)
H_1 = exposure rate to TLDs
h_2 = distance from source to receptor = 75 m
h_1 = distance from source to TLDs = 1.6 m
L = average distance from centerline of the line source (H_1) to the end of the line source = 50 m

The actual dose to the maximally exposed individual, who is present during a normal work year only, was calculated.

$$H_{MEI} = H_2 \times \frac{2{,}000 \text{ hours per work year}}{8{,}760 \text{ hours per total year}} = 1E\text{-}02 \text{ mrem/year}$$

$$H_{MEI} = <0.1 \text{ mrem/year}$$

Airborne Radon Pathway

The VP-40A ATDs measured an average above background annual exposure of 0.12 pCi/L based on 8,760 hours of continuous exposure. Exposure to the receptor from radon (and progeny) was estimated using a dispersion factor (C_2) and the average ATD monitoring data (S_1) at the site perimeter between the source and the receptor (Leidos 2019b).

In order to calculate the dispersion factor, the radon concentrations were determined for a receptor located at 1 m and 75 m east of the monitored area on VP-40A by inputting a radon release rate of 1 Ci per year, the St. Louis – Lambert International Airport wind file, and a surface area of 300 m^2 into the CAP88-PC model. The CAP88-PC input data and the result of the CAP88-PC run are highlighted and presented in Appendix A. The radon dispersion factor (C_2) for the site was calculated as follows:

$$C_2 = (9.45E\text{-}03)/(2.25E\text{-}02) = 0.42$$

The average of ATD monitoring data (S_1) at the site perimeter (SLAPS Loadout area) was calculated as follows:

$$S_1 = 0.12 \text{ pCi/L}$$

The actual radon exposure dose to the hypothetical maximally exposed individual was calculated.

$$S_{MEI} = S_1 \times F \times DCF \times T \times C_1 \times C_2$$

$$S_{MEI} = 0.12 \text{ pCi/L} * 0.007 \text{ WL/pCi.L} * 1{,}250 \text{ mrem/WLM} * 2{,}000 \text{ hours/year} * 1 \text{ month/170 hours} * 0.42$$

$$S_{MEI} = 5.0 \text{ mrem/year}$$

where:

S_{MEI} = radon exposure to the hypothetical maximally exposed individual
S_1 = fenceline average of ATD measurements between source and receptor

F = equilibrium fraction based on Section 4 of *Measurement of Radon and Radon Daughters in Air,* 1 WL = 100 pCi/L and 0.7 outdoor equilibrium factor (NRCP 1988)
DCF = dose conversion factor (USEPA 1989b) = 1,250 mrem per working level month (WLM)
T = exposure time = 2,000 hours per year
C_1 = occupancy factor constant = 1 month per 170 hours
C_2 = constant derived using CAP88-PC Version 4.0, the Lambert – St. Louis International Airport wind file (assuming a distance of 75 m), and an impacted surface area of 300 m^2). Calculation assumes a 1 Ci per year radon release rate, then ratios the concentrations at 1 m and 75 m to determine the constant.
WL = working level (concentration unit)
WLM = working level month (exposure unit)

Total Effective Dose Equivalent

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the receptor facility 75 m east of the area adjacent to Futura identified as having the highest external gamma level would have received less than 0.1 mrem per year from airborne particulate, less than 0.1 mrem per year from external gamma, and 5.0 mrem per year from Rn-222, for a TEDE of 5.0 mrem per year (Leidos 2019b).

$$\text{TEDE} = \text{CEDE (airborne particulates)} + H_{MEI} \text{ (external gamma)} + S_{MEI} \text{ (airborne radon)}$$

$$\text{TEDE} = <0.1 \text{ mrem/year} + <0.1 \text{ mrem/year} + 5.0 \text{ mrem/year} = 5.0 \text{ mrem/year}$$

DOSE FROM THE ST. LOUIS AIRPORT SITE TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time-employee business receptor was evaluated to determine the maximally exposed individual from the SLAPS. The business receptor worked full time outside of the facility, located approximately 500 m west-southwest of the center of the SLAPS Loadout area. Exposure time was 2,000 hours per year (250 days per year).

Gamma radiation and radon exposure measured at the SLAPS perimeter assumes a hypothetical member of the public would be at the same location 24 hours per day, 365 days per year. Off-site dose to the nearest member of the public is dependent upon the member’s proximity to the gamma source and amount of time spent at the affected site. A more realistic approach to project dose is to evaluate members of the public as either residence-based or off-site-worker-based receptors. A residence-based, off-site exposure assumes a 100-percent occupancy rate at a given location. No public areas or residences exist near the SLAPS; therefore, exposure to a residence-based receptor is greatly reduced due to the distance relative to the site. An off-site-worker exposure assumes that a worker’s occupancy rate is 23 percent, based on 40 hours per week for 50 weeks per year. The off-site-worker-based receptor is a more realistic choice to represent the hypothetical maximally exposed individual, because of the proximity of the receptor. A realistic assessment of dose can be performed using conservative assumptions of occupancy rate and distance from the source.

The following dose assessment is for a maximally exposed individual who works full time (2,000 hours per year) at a location approximately 500 m west-southwest of the center of the SLAPS Loadout area.

Airborne Radioactive Particulates

The EDE of less than 0.1 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 500 m southwest of the center of the SLAPS Loadout area (Leidos 2019c). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

External Gamma Pathway

The SLAPS TLDs measured an average above background annual exposure of 10.5 mrem per year based on 8,760 hours of continuous exposure. The dose equivalent due to gamma exposure for the maximally exposed individual is estimated by assuming the site approximates a line source with a source strength (H_1) that is the average of the TLD measurements between the source and the receptor (Cember 1996).

$$H_1 = 10.5 \text{ mrem/year}$$

Based on a 100-percent occupancy rate, the exposure rate (H_2) to the receptor was calculated.

$$H_2 = H_1 \times \frac{h_1}{h_2} * \frac{\tan^{-1}(L/h_2)}{\tan^{-1}(L/h_1)}$$

$$H_2 = 2.2\text{E-03 mrem/year}$$

where:

- H_2 = exposure rate to the receptor (continuous exposure)
- H_1 = exposure rate to TLDs
- h_2 = distance from source to receptor = 500 m
- h_1 = distance from source to TLDs = 1.6 m
- L = average distance from centerline of the line source (H_1) to the end of the line source = 50 m

The actual dose to the maximally exposed individual, who is present during a normal work year only, was calculated.

$$H_{MEI} = H_2 \times \frac{2{,}000 \text{ hours per work year}}{8{,}760 \text{ hours per total year}} = 5\text{E-04 mrem/year}$$

$$H_{MEI} = <0.1 \text{ mrem/year}$$

Airborne Radon Pathway

The SLAPS ATDs measured an average above background annual exposure of 0 pCi/L based on 8,760 hours of continuous exposure. Exposure to the receptor from radon (and progeny) was estimated using a dispersion factor (C_2) and the average ATD monitoring data (S_1) at the site perimeter between the source and the receptor (Leidos 2019c).

In order to calculate the dispersion factor, the radon concentrations were determined to a receptor located at 1 m and 500 m, southwest of the SLAPS by inputting a radon release rate of 1 Ci per year, the St. Louis – Lambert International Airport wind file, and a surface area of 460 m^2 into the CAP88-PC model. Effective surface area was determined by summing the time-weighted average annual open surface areas for the SLAPS Loadout. The CAP88-PC input data and the result of the CAP88-PC run are highlighted and presented in Appendix A. The radon dispersion factor (C_2) for the site was calculated as follows:

$$C_2 = (9.26E\text{-}05)/(4.32E\text{-}02) = 0.002$$

The average of ATD monitoring data (S_1) at the site perimeter (SLAPS Loadout area) was calculated as follows:

$$S_1 = 0.0 \text{ pCi/L}$$

The actual radon exposure dose to the hypothetical maximally exposed individual was calculated.

$$S_{MEI} = S_1 \times F \times DCF \times T \times C_1 \times C_2$$

$$S_{MEI} = 0.0 \text{ pCi/L} * 0.007 \text{ WL/pCi.L} * 1250 \text{ mrem/WLM} * 2000 \text{ hours/year} * 1 \text{ month/170 hours} * 0.002$$

$$S_{MEI} = 0.0 \text{ mrem/year}$$

where:

- S_{MEI} = radon exposure to the hypothetical maximally exposed individual
- S_1 = fenceline average of ATD measurements between source and receptor
- F = equilibrium fraction based on Section 4 of *Measurement of Radon and Radon Daughters in Air*, 1 WL = 100 pCi/L and 0.7 outdoor equilibrium factor (NRCP 1988)
- DCF = dose conversion factor (USEPA 1989b) = 1,250 mrem per WLM
- T = exposure time = 2,000 hours per year
- C_1 = occupancy factor constant = 1 month per 170 hours
- C_2 = constant derived using CAP88-PC Version 4.0, the Lambert – St. Louis International Airport wind file (assuming a distance of 500 m), and an impacted surface area of 460 m^2). Calculation assumes a 1 Ci per year radon release rate, then ratios the concentrations at 1 m and 500 m to determine the constant.
- WL = working level (concentration unit)
- WLM = working level month (exposure unit)

Total Effective Dose Equivalent

$$TEDE = CEDE \text{ (airborne particulates)} + H_{MEI} \text{ (external gamma)} + S_{MEI} \text{ (airborne radon)}$$

$$TEDE = <0.1 \text{ mrem/year} + <0.1 \text{ mrem/year} + 0.0 \text{ mrem/year} = < 0.1 \text{ mrem/year}$$

DOSE FROM THE ST. LOUIS AIRPORT SITE VICINITY PROPERTIES TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time, residence-based receptor was evaluated to determine the maximally exposed individual from the SLAPS VPs, because the RA work conducted on the SLAPS VPs occurred in the vicinity of the receptor. The residence-based receptors lived full-time between the three areas remediated during 2018 at a location approximately 205 m east of Eva Avenue excavation area, approximately 780 m northeast of the IA-09 Ballfields excavation area, and approximately 70 m west of the Chez Paree Properties excavation area. Exposure time was 8,760 hours per year (365 days per year).

Gamma radiation and radon exposure were considered negligible at the excavation area. Therefore, only exposure to airborne radioactive particulates was considered in the dose estimate calculation.

Airborne Radioactive Particulates

The EDE of 0.2 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 70 m west of the center of the Chez Paree Properties excavation area (Leidos 2019c). The same process was followed to calculate a dose to the receptor from the other two excavation areas. Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

Total Effective Dose Equivalent

$$TEDE = CEDE \text{ (airborne particulates)} + H_{MEI} \text{ (external gamma)} + S_{MEI} \text{ (airborne radon)}$$

$$TEDE = 0.2 \text{ mrem/year} + 0 \text{ mrem/year} + 0 \text{ mrem/year} = 0.2 \text{ mrem/year}$$

DOSE FROM COLDWATER CREEK TO A MAXIMALLY EXPOSED INDIVIDUAL

The following dose assessment is for a maximally exposed individual assumed to be a youth (10-year-old child) who spends time at CWC for recreational purposes.

Contaminated Water Ingestion (Leidos 2019d)

The UCL_{95} values of the average contamination values measured in CWC surface water in CY 2018 at each monitoring station (Table H-1) were used to calculate the EDE to the receptor from an intake of contaminated water. Assumptions follow.

The receptor visits CWC as a recreational user once every 2 weeks (26 visits per year), and the receptor drinks 2 L per day of contaminated water from CWC during each visit (USEPA 1989c).

The TEDE due to ingestion of surface water ($TEDE_w$) was calculated.

$$TEDE_W = \Sigma\ (TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$$TEDE_i = (UCL_{95}) \text{ pCi/L} \times 2.0 \text{ L/day} \times 26 \text{ days/year} \times DCF \text{ mrem/pCi}$$

Table H-1. UCL_{95} Values for Radionuclides for CY 2018

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.37	pCi/L
Th-228	0.55	pCi/L
Th-230	0.47	pCi/L
Th-232	0.45	pCi/L
Total U	2.38	pCi/L

The DCFs (ORNL 2014) for radionuclides present in CWC surface water are presented in Table H-2.

Table H-2. Radionuclide Dose Conversion Factors for CY 2018

Radionuclides	DCF[a]	Unit
Ra-226	2.97E-03	mrem/pCi
Th-228	5.07E-04	mrem/pCi
Th-230	9.10E-04	mrem/pCi
Th-232	1.07E-03	mrem/pCi
Total U	2.63E-04	mrem/pCi

[a] For a youth (10-year-old child).

The USEPA software ProUCL, Version 5.1, software was used to determine the UCL_{95} values for radiological contaminants present in CWC (Leidos 2019d). The UCL_{95} values are presented in Table H-1.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.37 \text{ pCi/L} \times 2.0 \text{ L/day} \times 26 \text{ days/year} \times 2.97\text{E-03 mrem/pCi} = 2.11\text{E-01 mrem/year}$$

$$TEDE_{Th\text{-}228} = 0.55 \text{ pCi/L} \times 2.0 \text{ L/ day} \times 26 \text{ days/year} \times 5.07\text{E-04 mrem/pCi} = 1.45\text{E-02 mrem/year}$$

$$TEDE_{Th\text{-}230} = 0.47 \text{ pCi/L} \times 2.0 \text{ L/ day} \times 26 \text{ days/year} \times 9.10\text{E-04mrem/pCi} = 2.22\text{E-02 mrem/year}$$

$$TEDE_{Th\text{-}232} = 0.45 \text{ pCi/L} \times 2.0 \text{ L/ day} \times 26 \text{ days/year} \times 1.07\text{E-3 mrem/pCi} = 2.48\text{E-02 mrem/year}$$

$$TEDE_{Tot\text{-}U} = 2.38 \text{ pCi/L} \times 2.0 \text{ L/ day} \times 26 \text{ days/year} \times 2.63\text{E-04 mrem/pCi} = 3.26\text{E-02 mrem/year}$$

$$TEDE_{W} = 3.05\text{E-01 mrem/year}$$

Contaminated Sediment Ingestion (Leidos 2019d)

The UCL_{95} values of the average contamination values measured in CWC sediment in CY 2018 at each monitoring station (Table H-3) were used to calculate the EDE to the receptor from an intake of contaminated sediment. Assumptions follow.

The receptor visits CWC as a recreational user once every 2 weeks (26 visits per year). The receptor ingests 50 mg per day of contaminated sediment from CWC during each visit (USEPA 1989c).

The TEDE due to ingestion of contaminated sediment ($TEDE_S$) was calculated.

$$TEDE_S = \Sigma\,(TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$$TEDE_i = (UCL_{95}) \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times \text{DCF mrem/pCi}$$

Table H-3. UCL_{95} Values for Radionuclide for CY 2018

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.48	pCi/g
Ra-228	0.80	pCi/g
Th-228	1.11	pCi/g
Th-230	7.92	pCi/g
Th-232	0.99	pCi/g
Total U	2.31	pCi/g

The DCFs (ORNL 2014) for radionuclides present in CWC sediment are presented in Table H-4.

Table H-4. Radionuclide Dose Conversion Factors for CY 2018

Radionuclides	DCF[a]	Unit
Ra-226	2.97E-03	mrem/pCi
Ra-228	1.45E-02	mrem/pCi
Th-228	5.07E-04	mrem/pCi
Th-230	9.10E-04	mrem/pCi
Th-232	1.07E-03	mrem/pCi
Total U	2.63E-04	mrem/pCi

[a] For a youth (10-year-old child).

The USEPA ProUCL, Version 5.1, software was used to determine UCL_{95} values for radiological contaminants present in CWC sediment (Leidos 2019d). The UCL_{95} values are presented in Table H-3.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.48 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 2.97\text{E-}03 \text{ mrem/pCi}$$
$$= 5.70\text{E-}03 \text{ mrem/year}$$

$$TEDE_{Ra\text{-}228} = 0.80 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 1.45\text{E-}02 \text{ mrem/pCi}$$
$$= 1.51\text{E-}02 \text{ mrem/year}$$

$$TEDE_{Th\text{-}228} = 1.11 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 5.07\text{E-}04 \text{ mrem/pCi}$$
$$= 7.31\text{E-}04 \text{ mrem/year}$$

$$TEDE_{Th\text{-}230} = 7.92 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 9.10\text{E-}04 \text{ mrem/pCi}$$
$$= 9.37\text{E-}03 \text{ mrem/year}$$

$$TEDE_{Th\text{-}232} = 0.99 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 1.07\text{E-}3 \text{ mrem/pCi}$$
$$= 1.38\text{E-}03 \text{ mrem/year}$$

$$TEDE_{Tot\text{-}U} = 2.31 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 2.63\text{E-}4 \text{ mrem/pCi}$$
$$= 7.89\text{E-}04 \text{ mrem/year}$$

$$TEDE_S = 3.31\text{E-}02 \text{ mrem/year}$$

Total Effective Dose Equivalent

$$TEDE = TEDE_W + TEDE_S$$

$$TEDE = 3.05\text{E-}01 \text{ mrem/year} + 3.31\text{E-}02 \text{ mrem/year} = 0.3 \text{ mrem/year}$$