



**US Army Corps
of Engineers**

Buffalo District

Springville Dam Sediment Sampling Report

**Springville Dam Ecosystem Restoration Project
Springville, NY**

Authorized under GLFER

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EXECUTIVE SUMMARY

The United States Army Corps of Engineers (USACE) performed pre-construction sediment sampling upstream of the Springville Dam in the Cattaraugus Creek, which is located south of Springville, NY. The investigation was funded under the Great Lakes Fishery and Ecosystem Restoration Program (GLFER).

Sediment samples collected from the channel of the Cattaraugus Creek at specific locations upstream of the Springville Dam were selected to meet several Data Quality Objectives (DQOs) integral to decision making and the application of a case-specific beneficial use determination (BUD) for the sediment. The Corps sampled surface and subsurface sediment behind the dam for a wide array of chemical, radiological, and physical characteristics to meet the NYSDEC requirements for a case-specific BUD under 6 NYCRR Part 360-1.15(d) or other sediment management goals.

Tables, figures, and appendices enclosed in this report present the findings that indicate the sediments can be managed as an unrestricted upland or riverine material in the Cattaraugus Creek system.

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ACRONYMS, FORMULAS, AND SYMBOLS

bgs	Below-ground Surface
BUD	Beneficial Used Determination
DPR	Design Project Report
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
ESA	Environmental Site Assessment
ft	Feet
FIPS	Federal Information Processing Standard
FSP	Field Sampling Plan
GIS	Graphical Information System
GLFER	Great Lakes Fishery and Ecosystem Restoration Program
IDW	Investigation-Derived Waste
LLC	Limited Liability Company
amsl	Above Mean sea level
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAD	North American Datum
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAL	Project Action Limit
PCB	Polychlorinated biphenyl
PID	Photoionization Detector
PPA	Project Partner Agreement
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
SAP	Sampling and Analysis Plan
SJB	Stan J. Blas
UFP-QAPP	United Federal Guidance – Quality Assurance Project Plan
SVOC	Semi-Volatile Organic Compound
TOC	Total Organic Carbon
USACE	U.S. Army Corps of Engineers
USDOE	U. S. Department of Energy
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound
WNYNSC	Western New York Nuclear Service Center
WVDP	West Valley Demonstration Project

1.0 GENERAL

The U.S. Army Corps of Engineers (USACE) provided contracted and governmental labor, material, and equipment to install 19 sediment borings that yielded 47 primary sample intervals from upstream of the Springville Dam (Tables 1 and 2). Each sample interval was tested for 216 analytes where sediment retrieval volumes sufficiently filled every laboratory analysis container; several intervals did not yield sufficient volume, so analytical priorities or redrilling a location was performed per Table 2. The sampling was guided by the Field Sampling Plan (FSP) and contracted laboratory analyses according to the project Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP or QAPP), both found in Appendix A. The USACE oversaw the contractor execution and received all contractor deliverables to ensure quality control, accuracy, and completeness of the work. The USACE provided health physics coverage based upon the means and methods presented in the FSP; the results of radiological field-screening are presented in Appendix B.

2.0 SITE BACKGROUND

The Springville Dam is located along the border of Erie and Cattaraugus Counties, NY, just south of Springville, NY; Erie County owns the dam and adjacent park property. Figures 1 and 2 show the site location and sediment sampling locations upstream of the dam. The sediment sampling supports the design and construction of dam modifications that will expand fisheries in the upper Cattaraugus Creek system. The dam includes a former hydroelectric facility that became inoperable in 1997 due to cost associated with upgrades needed to relicense the facility. The costs were not an efficient expenditure for the Village of Springville, who later deeded the facility to Erie County, NY.

A primary driver to characterize the dam sediments from the rural watershed is the presence of the Western New York Nuclear Service Center (WNYNSC) in the Buttermilk Creek tributary, where the U.S. Department of Energy (USDOE) is conducting the West Valley Demonstration Project (WVDP). Known chemical and radiological contamination in the environment from the precursor to the WVDP required a robust chemical, radiological, and physical profiling of the sediments. The sampling regimen was intended to detect chemicals, metals, and radionuclides irrespective of their origin to ensure a comprehensive characterization.

2.1 PHYSICAL SETTING

The Springville Dam on Cattaraugus Creek is located in a steep-sided valley incised into shale bedrock that is mapped as the Upper Devonian Canadaway and Conneaut Groups (or Chadakoin) (Tesmer 1975). The location is accessed via Scoby Hill Road (Figure 1). About 1.8 river miles upstream of the dam (or above the Mill Street bridge south of Springville), the bedrock valley opens into broader floodplains that exhibit creek meandering and high-water elevations evident via debris lines. The Cattaraugus Creek watershed is rural and contains notable cold-water fishing habitats. The sediment behind the dam varies from fine-grained (silt and clay) layers to loose silty sand and gravel that together vary up to 25 feet in thickness. The creek water varies in depth from less than one to over nine feet in the sampling area, thus the sediment sampling contractor used a floating platform mounted with a hollow-stem drill rig to provide the greatest flexibility in sample retrieval.

2.2 PREVIOUS INVESTIGATIONS

The USDOE, under the WVDP environmental monitoring program, and the NYS Department of Health (NYSDOH) periodically sampled the sediments behind the Springville Dam for over 25 years and 10 years, respectively. The results are summarized in the 2010 WVDP Annual Site Environmental Report (DOE 2011) and more comprehensively evaluated in the original 2012 USACE Phase 1, Environmental Site Assessment (ESA). This ESA was updated in 2015 for inclusion into the final USACE Detailed

Project Report (DPR), specifically in Appendix 4 (USACE 2015). The Phase I study also included data from USACE sediment sampling actions performed in 2007 and 2011, which are summarized presently.

The 2007 sampling program included 16 surface sediment locations sampled for a wide array of chemicals, radionuclides, and metals. No evidence of contamination above human-health risk levels (specifically the construction worker) were encountered. The 2011 sampling program included 22 locations behind the dam that were sampled using vibracore, hand-auger, and ponar-grab techniques (USACE 2015). Thirteen (13) surface sediment samples were collected via ponar for only grain-size analyses; these locations extended upstream from the Town of Gowanda, through the Springville Dam area, and ended at the Route 219 Bridge.

The 2011 sample locations behind the dam suffered from poor sample recovery due to coarse-grained layers difficult to penetrate with a small-scale vibrocore sampler. Consequently, only an 18-inch deep sample of finer grained sediment taken from core location C6 immediately upstream of the dam was analyzed in a laboratory. The sample was tested for organochlorine pesticides, total polychlorinated biphenyls (PCBs aroclors), chlorinated herbicides, reactivity-corrosivity-ignitability, reactivity of cyanide, metals, silver, antimony, mercury, semi-volatile organic compounds (sVOCs), percent moisture, total organic carbon (TOC), reactivity/corrosivity/ignitability of sulfide compounds, and radiological analyses. All constituents fell within regulatory exposure goals, with only arsenic and potassium-40 (K-40) being above certain criteria, but within observed background levels (USACE 2015, USDOE 2013).

An analysis of all the sediment sampling data and reports from the USDOE, NYSDOH, and USACE led to a determination that the dam-pool sediments are not an ecologic risk (aquatic) or human-health risk to the construction worker that would perform the dam modifications. The updated 2015 Phase 1 ESA clarified language for the Project Partnership Agreement (PPA), yet contained the same conclusion.

The USACE and NYSDEC agree the sediment behind the dam may be partially scoured by high-volume, low-frequency flow events and replaced by new sediment. Previous maintenance of the dam (at least through 1995) included routine flushing of sediment downstream to optimize electrical generation, thereby dispersing historic sediments throughout the lower creek system and Lake Erie. The USACE and NYSDEC assume that the 25-year record of sediment sampling reflects creek-bed conditions at multiple points in time. Consequently, the 25-year dataset likely represents an array of sediment levels (paleo-surfaces) behind the dam and thus varying depths in the current sediment wedge (i.e., a previous channel bottom overlain by newer sediments has been sampled throughout the accumulation period). The 2018 sampling effort generally verified this sediment-accumulation assumption via laboratory results supportive of past analyses and risk-based decisions.

3.0 2018 SAMPLING OBJECTIVES AND EXECUTION

This section briefly recaps the objectives of the 2018 sediment sampling effort and the methods applied in accordance with the FSP and UFP-QAPP that are found in Appendix A.

3.1 SAMPLING OBJECTIVES

The principal goal of the sediment sampling effort was to obtain samples of surface and subsurface sediment at 13 or more locations that were analyzed for grain size distributions, chemical compounds, and radionuclides. These data were compared potential risk-based standards and background levels common to the Cattaraugus Creek (see FSP Tables 1, 2, and 3 and UFP-QAPP Worksheet #15 in Appendix A). The drilling contractor installed a total of 21 penetrations to ensure optimal sample recovery (retrieve adequate volumes for laboratory containers) and also define bedrock elevations for design input.

The following data quality objectives for the sediment sampling were assembled to support the BUD-acquisition process in accordance with 6 NYCRR Part 360-1.15(d):

- Determine contaminant concentrations in sediments behind the dam;
- Determine whether sampling results compare with Cattaraugus Creek background, NYSDEC screening limits, WVDP-based cleanup goals, and U.S. Nuclear Regulatory Commission (USNRC) decommissioning criteria (10 CFR 20); and
- Determine whether a case-specific BUD permit is obtainable to support construction.

The NYSDEC Region 3 issued guidance regarding the upland disposal and management of dredged sediments; see <http://www.dec.ny.gov/chemical/8734.html>. This guidance recommends that undisturbed dredge cores (samples) be collected to represent the entire depth interval and the entire project area (i.e., throughout the construction or dredge prism). The guidance indicates that eight (8) samples should be minimally collected from a dredge prism ranging between 20,000 and 30,000 cubic yards, which is the range expected at the Springville Dam. The USACE chose to minimize uncertainty by sampling at least 13 locations and retrieve three to four samples from each location, or up to 52 primary samples (or about 6-times the guidance minimum). A total of 47 primary and three duplicate (field and blind) samples were retrieved by the end of sampling, for up to 50 samples per analysis.

3.2 SAMPLING EXECUTION

The following section describes the field investigation that the USACE and drilling contractor team executed using cost-effective methods.

The USACE contracted SJB Empire LLC to retrieve sediment samples with a hollow-stem auger drill rig mounted on a pontoon-based platform that provided workspace for sediment processing. The rig was modified to use a “spin and wash” drilling method to obtain continuous sediment samples from the vertical profile at each boring location (i.e., to refusal or bedrock). The method included the following actions:

- Locate and anchor the drilling platform over the boring location using GPS technology;
- Place a 6-inch diameter pipe casing on the creek bed and anchor to platform;
- Drive multiple 3.25-inch diameter split spoons into a singular two-foot interval to acquire enough sample volume from that interval (i.e. adequate sample retrieval required multiple split-spoon penetrations in each 2-foot interval);
- Install the drilling augers into the casing and advance the augers and casing through the interval just sampled;
- Surge any drill cuttings from the casing using pressurized water applied via the drill string (i.e., spin and wash);
- Continue with multiple split-spoon sampling of the next two-foot interval, then drill through the interval after collecting enough volume to represent the interval; and
- Perform the sampling and drilling cycle in two-foot intervals until refusal at bedrock or another obstacle (e.g., wooden cribbing of historical dams), as verified by split-spoon samples.

Twenty-one (21) borings were completed to obtain the required vertical sampling at 14 locations. Planned locations that required multiple penetrations include SVD-SD001, -SD002, -SD005, -SD006, and -SD015, as noted on Table 1 and Figure 2. This sampling regimen ensured that adequate sample volumes were recovered to meet both analytical and geotechnical laboratory quantities, along with ensuring full penetration to bedrock. For example, locations SVD-SD005 and -SD006 did not initially yield adequate sample volumes using normal split spoons without a sediment basket, so “twinned holes” were drilled (e.g., SVD-SD005A) using a modified split spoon method (multiple deployments in one sampling interval) to produce the required sediment volumes for sampling. Other examples include SVD-SD001 and -SD002, where the primary borings could not penetrate the old wooden dam structure and were

moved, and -SD015, where only the bedrock depth was the target interval (i.e., no analytical samples were retrieved). Planned locations SVD-SD007 and SVD-SD013 were limited by the water depth in the creek, so were moved to accommodate the three-foot draft of the drilling barge.

The final distribution of horizontal and vertical sediment samples in the planned construction area provides for an adequate analytical and physical characterization of the sediment (Figure 2), as well as provide data to estimate bedrock topography (Figure 3), sediment thickness (Figure 4), and unique texture zones (silt and clay layers) in the coarse-grained sediments (Figures 5 and 6).

Table 1 provides the NY State Plane coordinates of the entire boring array and Table 2 summarizes the samples analyzed for chemical, radiological, and physical characteristics (i.e., tests performed on each sample). Very few samples were obtained from borings deeper than 24 feet due to bedrock elevations that were shallower than expected.

Each split-spoon sample characterized (logged) by a SJB geologist was then transferred to the on-site USACE personnel, who processed the sediment samples per the FSP in the following manner:

- Chemically and radiologically screen the sediment with field instruments;
- Select equal-mass sub-samples from three two-foot split-spoon intervals to generate a 6-foot vertical composite of the targeted sample interval;
- Homogenize the composite sample;
- Containerize and package samples for shipping; and
- Send the samples to a USACE-contracted laboratory.

Prior to sample combination and homogenization, VOC (volatile organic compound) samples were collected discretely from a sediment core that exhibited 1) chemical detections on field screening instruments (e.g., photo-ionizing detector - PID), 2) visual indicators of impacts (e.g., sheening), or 3) unique texture or characteristic the USACE representative deemed appropriate to sample (i.e., professional judgment to bias the sample high for conservation). The USACE employed the Terra Core sampling method to assess VOCs in the discrete interval, as listed on Table 2.

Appendix B presents the radiological scanning results for all sediment retrieved from the creek bed and Appendix C provides the geologic logs and grain-size distribution data derived from the geotechnical analyses; Table 3 summarizes the grain-size analysis data. Appendix D provides the hand-written field logs from both the SJB and USACE field teams.

The remaining sediment (residual split-spoon samples) were retained by the USACE in a custody controlled manner until the laboratory sample results were received and are compared to the Project Action Limits (PALs) summarized in Table 4, which is based upon the UFG-QAPP in Appendix A. No retained sub-samples were analyzed since all laboratory quality assurance and data validation procedures indicate decision-level data were retrieved from the laboratories (i.e., no data outliers were observed, so follow-up analyses of the original subsamples were not required).

The USACE then performed data validation, screening, and reporting of the analytical results and believes this dataset is sufficient to either execute a case-specific BUD for the sediment wedge behind the dam or achieve alternative management goals.

4.0 DATA SUMMARY

Previous analytical results of sediment samples taken by the USDOE, NYSDOH, and USACE near the Springville Dam do not show chemical or radiological concentrations that would pose a risk to human health or the environment (Appendix 4 of USACE 2015).

The following sections discuss the 2018 sample results and comparative criteria for chemicals and radionuclides.

Grain-size analyses are presented in Appendix C, summarized on Table 3, and provide design-level data exemplified on Figures 3, 4, and 5.

The 2018 sediment sampling effort generally confirmed the background to low-risk chemical and radiological conditions throughout the construction prism and potential sediment management areas. Radiological results generally reflect the Cattaraugus Creek background ranges compiled by the USDOE (USDOE 2013) and listed in Table 4 (also see Table 3 and Worksheet #15 the UFP-QAPP in Appendix A).

4.1 PROJECT ACTION LEVEL ASSESSMENT

The chemical and radiological project action limits (PALs) or screening criteria listed in Table 4 are compared to the analytical data in Appendix E, which together are summarized on Tables 5 and 7. The USACE used guidance-based levels to screen chemical results and background to risk-based criteria for radionuclides. The primary PALs for radionuclides reflect Cattaraugus Creek sediment background (10-year averages) at the Bigelow Bridge location (WVDP location SFBISED), whereas the secondary PALs reflect background soils near a distal air monitoring station in Great Valley (WVDP location SFGRVAL). These locations are discussed in Appendix F of the 2012 Annual Site Environmental Report (ASER) for the WVDP (USDOE 2013) that is available here: <https://www.wv.doe.gov/>. Table 6 presents the WVDP background data and associated statistics that also were compared to dam-area sediments on Table 7.

The chemical and radiological laboratory results reported non-detectable concentrations of 121 constituents, or about 56% of the 216 constituents assessed per sample interval. This is reflected in Table 5 as blank values for many chemicals and Americium-214. Digital Appendix F contains the validated laboratory results in an ERPIMS-formatted (Environmental Resources Program Info Management System) database retained via Microsoft Access. Digital Appendix G contains the laboratory electronic data deliverables (EDDs) for the Springville Dam sediment samples.

The following sections discuss the sampling results.

4.1.1 Field Measurements

Field measurements performed on sediment samples and sediment-contact materials (split spoons) included chemical and radiation detectors that are presented in Appendix A (see Section 8.1 and Appendix A of the FSP). These steps ensured the USACE would bias the VOC and radionuclide samples for conservation (i.e., sample sediment zones showing chemical vapors or elevated radiation).

Appendix B presents the radiological screening results (field radiation) and Appendix C shows the PID results on the boring logs. No above-background or above ambient-air readings were observed, so VOC sampling relied on professional field judgment prior to sample compositing (i.e., fine-grained layers or discolorations in the sediment were targeted preferentially). No other biased chemical or radiological sampling was performed, so all other values reflect vertically homogenized composite samples (Table 2).

All sampling locations were surveyed with a sub-meter GPS and the coordinates reported in New York State Plane, NAD1983, FIPS 3103, as noted on Table 1.

SJB and USACE field teams maintain daily logbooks or forms of field investigation activities, which are found in Appendix D, along with field photographs of sampling activities.

4.1.2 Radionuclides

Fifty sediment samples analyzed for radionuclides listed on Table 4 were compared to background sediment and soils results listed in Table 5. The radiological PALs on Table 5 reflect the upper bound of the background range on Table 4 (i.e., radionuclide average plus the uncertainty).

Forty-seven (47) primary samples and three field duplicates were included in the Table 5 summary; the maximum reported value of the primary and duplicate samples were used in Table 5 statistics. An abbreviated version of Table 5 (below) is sorted by the number of detections; these averages are for detections only. Table 7 presents all radiological results reported by the lab and associated screening criteria discussed presently.

Radionuclide	Detections	Sediment-wide Average (pCi/g)	Primary PAL (pCi/g)	Secondary PAL (pCi/g)
Potassium-40 (K-40)	47	13.4	15.2	11.9
Gross Beta	47	13.1	19.8	33.8
Gross Alpha	46	10.4	15.1	32.1
Uranium-238 (U-238)	47	0.65	0.64	1.14
Uranium-234 (U-234)	47	0.70	0.66	0.92
Uranium-235 (U-235)	34	0.13	0.096	0.07
Cesium-137 (Cs-137)	31	0.28	0.06	0.41
Uranium-232 (U-232)	14	0.09	0.06	0.02
Plutonium-238 (Pu-238)	7	0.08	0.03	0.01
Plutonium-239/240 (Pu-239/240)	5	0.03	0.03	0.03
Cobalt-60 (Co-60)	2	0.07	0.02	0.03
Strontium-90 (Sr-90)	2	0.66	0.03	0.08

The range of results and site-wide averages, when compared to the PALs, indicate that 1) an expanded list of radionuclides are not required from the gamma spectroscopy results and 2) retesting of subsamples archived by the USACE are not needed (i.e., results are all qualified and approximate background conditions).

The dam-site sediment averages generally reflect background ranges for the frequently detected radionuclides, gross alpha, and gross beta. Americium-241 was not detected in any sediment sample.

The averages of lesser detected radionuclides (U-232 and below) are slightly above PALs, with U-232, Pu-238, and Pu-239/240 results all being J-flag (estimated) detections. Sr-90 detections are not collocated with Cs-137 detections; these radionuclides are normally collocated with WVDP-related contamination. The two Co-60 detections have one collocated Cs-137 detection that is below the secondary PAL.

Several sediment sampling results that exceed one or both PALs for several radionuclides and/or gross alpha and beta appear coincident with finer-grained samples or coarse-grained samples with notable fine-

grained fractions. This is not uniformly observed, yet the fine-grained sediments influence select results, which is expected due to their adsorptive capabilities for metals (whether radionuclides or common metals like iron). This is notable since the background criteria is derived from coarser grained sediments and upland soils that apparently have less adsorptive capacity for radionuclides and metals. This indicates the background criteria are highly conservative (reflect low-adsorptive material) relative to the variably textured sediments behind the dam that promote variability in results.

Tables 6 and 7 were compiled to further assess the dam-site sediment results. The WVDP background data listed in Table 6, which are copied from the 1995 to 2005 ASERs, were used to calculate the 95% upper confidence limits (UCLs) of the two background datasets (sediment and residential soil). Table 7 lists the radionuclide data (laboratory-reported detections and flagged estimates) and compares those UCLs to the background UCLs. Table 7 includes all reported data to reflect similar values in the WVDP dataset (i.e., detections and estimates). This comparison also indicates that Co-60 and U-235 UCLs are above or near the PALs, with the U-235 UCL generally coincident with the background UCL. Co-60 appears to be the only radionuclide above these comparative criteria, although with few detections.

An additional consideration for all radionuclides is the very low UCLs with respect to the WVDP decommissioning-plan cleanup goals and soil-screening values from NUREG-1757 (USNRC decommissioning criteria). Both these goals and criteria significantly exceed the sediment UCLs on Table 7, which verifies the dam sediment is a low-risk to freely releasable material. Figure 7 presents all the comparative criteria on one graphic.

Consequently, the radionuclides appear to reflect background conditions that vary with sediment texture, but do not exhibit a sediments impacted by elevated levels of radionuclides that would limit dam construction and associated sediment management decisions.

4.1.3 Metals

Metal analyses performed on 47 sediment samples listed on Table 2 are summarized on Table 5 and fully listed in Appendix E. The comparison of sediment results with Table 4 criteria indicate that naturally occurring metals vary within the sediment profile, yet do not indicate hazardous conditions (e.g., mercury and lead were detected at levels that are orders of magnitude below their respective PALs).

The following maximum detected metal results exceeded only their primary PALs (number of exceedances within detections):

- Antimony (8 of 8 detections)
- Vanadium (1 of 45 detections)

The maximum detected values of the following metals exceed their primary and secondary PALs:

- Aluminum (12 of 47 detections)
- Calcium (4 of 47 detections)
- Iron (47 of 47 detections)
- Manganese (42 of 47 detections)

The following sediment-wide averages for each metal exceeded their respective PALs:

- Antimony (7.4 mg/kg average versus the 2 mg/kg primary PAL)
- Iron (18,614 mg/kg average versus the 2,000 mg/kg primary and secondary PAL)
- Manganese (313 mg/kg average versus the 200 mg/kg primary and secondary PAL)

These results indicate that iron and manganese are ubiquitous in the sediment, which reflects the predominance of the regional shale rock in the sediment from the watershed. Antimony was detected

only in borings SVD-SD003 and SVD-SD009, with a silty clay sample from SD009 exhibiting the highest value of 12 mg/kg. The singular vanadium result of 47 mg/kg that exceeds the primary PAL of 33 mg/kg is also from the silty clay zone in SD009 (8-12 feet below the creek bed). These two boring locations are not proximal and intervening locations with similar silty clay zones (see Figures 4 and 6) do not show antimony detections or elevated vanadium. For further comparison, the USEPA regional screening level (RSL) for antimony is 31 mg/kg (non-carcinogenic health index = 1 for a child), which is greater than the sediment-wide average of 7.4 mg/kg and maximum detection of 12 mg/kg. Vanadium has a comparative USEPA RSL of 390 mg/kg, which is significantly greater than the 47 mg/kg detection.

Consequently, the metal results do not indicate anthropogenic contamination that would require sediment controls during construction of the modified dam.

4.1.4 Chemicals

Chemical analyses performed on sediment samples listed on Table 4 are found in Appendix E and summarized on Table 5. The chemical suites covered under this section include volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, polychlorinated biphenyls, and miscellaneous analyses (i.e., cyanide, total organic carbon, and moisture). The results indicate that anthropogenic chemical compounds are evident (detected) in the sediment profile, but not at levels of concern.

No maximum detections or sediment-wide averages of chemicals exceeded the primary PALs.

The maximum detected chemicals that exceeded their secondary PALs include:

- Acetone (18 of 28 detections above 0.05 mg/kg)
- Methylene Chloride (2 of 23 detections above 0.05 mg/kg)
- 2-Methylnaphthalene (1 of 1 detection at 0.2 mg/kg above PAL of 0.19 mg/kg)

The sediment-wide average of 0.09 mg/kg for acetone exceeded its secondary PAL of 0.05 mg/kg, while the methylene chloride average of 0.01 mg/kg is below the 0.05 mg/kg secondary PAL. Only one minor detection of 2-Methylnaphthalene in 44 samples represents ~2% of samples analyzed, which indicates the detection is an outlier in the sediment dataset.

Both acetone and methylene chloride are well-recognized laboratory contaminants commonly found in laboratory method blanks due to their use as solvents. Since few VOCs were detected in the sediments at levels near their respective PALs (see Table 5), the USACE believes that these two volatile compounds are laboratory artifacts that are not representative of the sediment profile.

Consequently, the chemical results indicate that sediment controls are not required during construction of the modified dam or management of sediment.

4.1.5 Geotechnical

Forty-five (45) sediment samples were retained by the SJB geotechnical laboratory for grain-size analyses, including hydrometer analyses of fine-grained samples. Appendix C presents the formalized drilling logs and grain-size distribution data. These data are summarized on Table 3 and indicate the following trends:

- Well- to poorly-graded sand is the dominant grain size behind the dam.
- Well- to poorly-graded gravel constitutes the second most notable texture.
- Silt and clay average about 10% of the coarse-grained (sand and gravel) samples.

- Fine-grained layers are normally dominated by clay-size particles, with silt balancing the finer gradation.

The fine-grained layers noted in logs and assessed for grain-sizes are somewhat lenticular and appear to occupy portions of the sediment profile upstream of the now-submerged historic wooden dams built in the 1890s. This is evident on Figure 6, where the finer grained zones are predominantly upstream (to the right of) locations SD005, SD005A, and SD015, which are somewhat coincident with the submerged structures.

These grain-size data corroborate well with the chemical and radiological results, which together indicate the dominantly coarse-grained sediments behind the Springville Dam are not prone to adsorption of chemicals, metals, or radionuclides. Some finer grained layers have slightly higher concentrations for some constituents, which is expected relative to the coarse sediments, but these results do not indicate the sediments require special handling or contaminant controls.

5.0 LABORATORY DATA VALIDATION

The data management activities performed by the USACE included the planning, collection, tracking, verification, validation, analysis, presentation, and storage of sediment sampling data to ensure high-quality laboratory-data reporting.

All electronic data stored solely on field instruments or computers were downloaded and backed-up on the USACE Buffalo District network system. The sediment data from the analytical laboratories (RTI for chemical constituents and Pace Analytical for radionuclides) were delivered electronically via PDF reports and tabular electronic data deliverables (EDDs). The number of samples and resulting parameter records in the EDD spreadsheets and PDF reports provide a basis for the data validation process. The USACE performed a Level 4 data validation on all analytical data.

The final validated data was imported into the overall project database (Microsoft Access based), which is the basis for data reporting and GIS interfacing.

Digital Appendices F and G are a separate electronic file containing the database and a large array of laboratory reports derived from the chemical and radiological analyses. These appendices were provided under separate cover to the project stakeholders due to size and format.

6.0 INVESTIGATION-DERIVED WASTE MANAGEMENT

The FSP indicated that the USACE will control and dispose of any investigation derived waste (IDW), including materials generated during performance of an investigation that cannot be effectively reused, recycled, or decontaminated in the field. The IDW generated during the drilling phase did not show signs of chemical or radiological impacts via field instruments, including “long-count” or one-minute scintillator readings. Consequently, daily consumables were treated as municipal trash and disposed of at the USACE reservation. The small amount of excess sediment retained by the USACE was disposed as municipal waste at the Buffalo District.

7.0 SEDIMENT SAMPLING PROGRAM CONCLUSION

The 2018 sediment sampling event produced a voluminous amount of data to characterize the sediment behind the Springville Dam. The various laboratory results were accepted by the USACE and validated for decision-making purposes. The results were compared to background values, residential-use criteria, and groundwater-protection criteria derived from both USDOE and NYSDEC sources. Additional comparisons of the radiologic data to other relevant criteria show a significantly low-risk condition. The

analytical results and subsequent analyses indicate the sediment behind the dam reflects background conditions with minor variances due to a range of sediment textures. The field-screening, chemical, radiological, and metals data, when compared to a body of comparative data, holistically indicate the sediment is beneficially useful in an upland setting or a resource to be managed within the Cattaraugus Creek system.

8.0 REFERENCES

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T A B L E S

Table 1. Sediment Boring Information

Boring Location	Easting (feet)	Northing (feet)	Creek Water Elevation (ft)	Creek Bed Elevation (ft)	Bedrock Elevation (ft)	Water Depth (ft)	Sediment Thickness (ft)	Total Boring Depth (ft)	Fine Sediment Layer (total depth ft)
SVD-SD001	1116705.0	903939.0	1090.6	1087.0	1068.0	3.6	19.0	22.6	13-14
SVD-SD001A	1116731.0	903914.0	1090.6	1087.0	Wood Refusal	3.6	0.5	4.1	--
SVD-SD001B	1116739.0	903903.0	1090.6	1087.8	1063.3	2.8	24.5	27.3	--
SVD-SD002	1116769.0	903924.0	1090.6	1080.7	Wood Refusal	9.9	14.5	24.4	--
SVD-SD002A	1116784.0	903914.0	1090.6	1080.7	1063.2	9.9	17.5	27.4	--
SVD-SD003	1116829.0	903934.0	1091.1	1079.1	1062.2	12.0	16.9	28.9	--
SVD-SD004	1116821.0	903822.0	1090.3	1086.9	1065.2	3.4	21.7	25.1	--
SVD-SD005	1116814.0	903853.0	1090.4	1085.4	1065.7	5.0	14.0	19.0	--
SVD-SD005A	1116836.0	903849.0	1090.4	1084.2	1065.7	6.2	18.5	24.7	20-23
SVD-SD006	1116881.0	903873.0	1090.4	1074.6	1065.3	15.8	9.3	25.1	16.5-19, 24-25
SVD-SD006A	1116866.0	903873.0	1090.3	1074.5	1065.9	15.8	8.6	24.4	20-23.5
SVD-SD007	1116868.0	903719.0	1091.1	1087.9	1067.2	3.2	20.7	23.9	--
SVD-SD008	1116903.0	903751.0	1090.3	1085.1	1064.6	5.2	20.5	25.7	21-23
SVD-SD009	1116933.0	903751.0	1090.3	1083.6	1064.8	6.7	18.8	25.5	13-22
SVD-SD0010	1116948.0	903620.0	1090.3	1083.0	1065.7	7.3	17.3	24.6	12-13, 15-19
SVD-SD0011	1116971.0	903518.0	1090.3	1085.3	1067.9	5.0	17.4	22.4	15-22
SVD-SD012	1117008.0	903387.0	1090.3	1087.3	1068.6	3.0	18.7	21.7	16-20
SVD-SD013	1116993.0	903417.0	1090.4	1087.4	1068.0	3.0	19.4	22.4	14-20
SVD-SD014	1116948.0	903751.0	1090.3	1082.5	1064.5	7.8	18.0	25.8	14-20
SVD-SD015	1116836.0	903883.0	1090.3	1074.3	1068.3	16.0	8.9	24.9	--
SVD-SD015A	1116844.0	903883.0	1090.3	1077.3	1065.4	13.0	11.9	24.9	--

Notes:

- Easting and Northing datum: NY State Plane West feet (NAV 1988)
- Elevation Datum: feet above mean sea level (NADV 1983)
- Locations with "A" or "B" designations are offset boring from the original to ensure adequate sample volumes or avoid refusal.
- Water, Sediment, and Boring Depths recorded from water datum.

Table 2. Sediment Sample Summary

Boring Location	Sample Interval	VOC	TOC	Other	Rad	Grain Size	Dup	Notes
SVD-SD001	0-6	X	X	X	X	--	--	VOC 1-1.5
SVD-SD001	6-12	X	X	X	X	X	--	VOC 7-7.5
SVD-SD001	12-18	X	X	X	X	X	--	VOC 17-17.5
SVD-SD001B	18-23.7	X	X	X	X	X	--	VOC 19-19.5
SVD-SD002	0-6	X	X	X	X	X	--	VOC 3-3.5
SVD-SD002	6-12	X	X	X	X	X	--	VOC 11-11.5
SVD-SD002A	12-17.5	X	X	X	X	X	--	VOC 13-13.5
SVD-SD003	2-6	X	X	X	X	X	--	VOC 3-3.5
SVD-SD003	6-12	X	X	X	X	X	--	VOC 8.5-9
SVD-SD003	12-16.9	X	X	X	X	X	--	VOC 15-15.5
SVD-SD004	0-6	X	X	X	X	X	--	VOC 5-5.5
SVD-SD004	6-12	X	X	X	X	X	--	VOC 9-9.5
SVD-SD004	12-18	X	X	X	X	X	--	VOC 14.5-15
SVD-SD004	18-22	X	X	X	X	--	--	VOC 20.5-21
SVD-SD005	--	--	--	--	--	--	--	No Samples
SVD-SD005A	0-6	X	X	X	X	X	--	VOC 3-3.5
SVD-SD005A	6-12	X	X	X	X	X	--	VOC 11.5-12
SVD-SD005A	12-18	X	--	--	X	X	--	VOC 15.5-16
SVD-SD006	--	--	--	--	--	--	--	No Samples
SVD-SD006A	0-6	X	X	X	X	X	--	VOC 5-5.5
SVD-SD006A	6-8	X	X	X	X	--	--	VOC 6.75-7.25
SVD-SD007	0-6	X	X	X	X	X	--	VOC 5-5.5
SVD-SD007	6-12	X	X	X	X	X	--	VOC 9-9.5
SVD-SD007	12-18	X	X	X	X	X	--	VOC 13.5-14
SVD-SD007	18-20.7	X	X	X	X	X	--	VOC 19-19.5
SVD-SD008	0-6	X	X	X	X	X	--	VOC 3.5-4
SVD-SD008	6-12	X	X	X	X	X	--	VOC 9.5-10
SVD-SD008	12-18	X	X	X	X	X	--	VOC 16.5-17
SVD-SD008	18-20.6	X	X	X	X	X	--	VOC 19-19.5
SVD-SD009	0-6	X	X	X	X	X	--	VOC 4.5-5
SVD-SD009	8-12	X	X	X	X	X	--	VOC 11-11.5
SVD-SD009	12-18.5	X	X	X	X	X	D	VOC 14.5-15
SVD-SD010	0-6	X	X	X	X	X	--	VOC 5.5-6
SVD-SD010	6-12	X	X	X	X	X	D	VOC 11-11.5
SVD-SD010	12-17.6	X	X	X	X	X	--	VOC 15-15.5
SVD-SD011	0-6	X	X	X	X	X	--	VOC 5-5.5
SVD-SD011	6-12	X	X	X	X	X	--	VOC 11.5-12
SVD-SD011	12-18	X	X	X	X	X	--	VOC 15.5-16
SVD-SD012	0-6	X	X	X	X	X	--	VOC 2.5-3
SVD-SD012	6-12	--	X	--	X	X	--	No VOC sampled
SVD-SD012	12-18	X	X	X	X	X	D	VOC 14.5-15
SVD-SD012	18-18.8	--	X	--	X	X	--	No VOC sampled
SVD-SD013	0-6	X	X	X	X	X	--	VOC 3-3.5
SVD-SD013	6-12	X	X	X	X	X	--	VOC 9-9.5
SVD-SD013	12-18	X	X	X	X	X	--	VOC 15-15.5
SVD-SD013	18-19.6	X	X	X	X	X	--	VOC 18-19.6
SVD-SD014	0-6	X	X	X	X	X	--	VOC 5.5-6
SVD-SD014	6-12	X	X	X	X	X	--	VOC 19-9.5
SVD-SD014	12-17.8	X	X	X	X	--	--	VOC 13.5-14
SVD-SD015	--	--	--	--	--	--	--	Bedrock Delineation
SVD-SD015A	--	--	--	--	--	--	--	Bedrock Delineation
Totals	47	45	46	44	47	43	3	

Notes:

Sample Interval: Depth range (feet) of sampling interval below the top of sediment (creek bed)

VOC: Volatile Organic Compounds

TOC: Total Organic Carbon

Other: Target Analyte List Metals, Semi-VOCs, PCBs, Pesticides, Herbicides, Total Cyanide

Rad: Radionuclides, Gross Alpha, Gross Beta

Grain Size: Geotechnical analysis for sediment grain-size distribution

Dup: Field duplicates for quality control

Depth interval for discreet VOC sampling or other information.

Table 3. Sediment Grain-Size and Geotechnical Data

Boring Location	Sample Depth (feet)	D100	D60	D30	D10	Pecent Gravel	Pecent Sand	Pecent Silt	Pecent Clay	Curvature Coefficient	Uniformity Coefficient	USCS Classification
SVD-SD001	13.0	6.3	0.027	0.006	--	0.3	9.9	63.5	26.3	--	--	SM
SVD-SD001	16.0	25.0	3.596	0.86	0.144	32.6	60.5	6.9		1.43	25	SW
SVD-SD001B	22.0	50.0	22.752	3.553	0.261	65.5	29.5	5.0		2.13	87.17	GW
SVD-SD002	10.0	37.5	4.142	0.733	0.088	36.8	53.7	9.5		1.48	47.17	SW
SVD-SD002	16.0	25.0	5.485	2.608	0.941	48.3	49.2	2.5		1.32	5.83	SP
SVD-SD003	14.0	25.0	3.26	1.113	0.206	31.3	62.3	6.4		1.85	15.87	SW
SVD-SD003	20.0	37.5	4.304	2.231	0.901	35.5	61.5	3.0		1.28	4.78	SP
SVD-SD003	26.0	19.0	3.052	0.843	0.108	22.0	69.8	8.2		2.15	28.19	SW
SVD-SD004	3.0	25.0	10.175	2.255	0.452	57.6	38.8	3.6		1.11	22.51	GW
SVD-SD004	9.0	25.0	5.524	2.223	0.454	47.7	49.2	3.1		1.97	12.18	SW
SVD-SD004	15.0	50.0	2.964	0.503	0.154	26.7	67.4	5.9		0.56	19.3	SW
SVD-SD005A	10.0	37.5	8.339	3.379	0.64	62.4	34.8	2.8		2.14	13.04	GW
SVD-SD005A	12.0	37.5	5.971	2.224	0.318	46.4	49.3	4.3		2.61	18.81	SW
SVD-SD005A	24.0	37.5	11.703	1.816	0.047	58.0	29.7	8.7	3.6	5.94	246.68	GP
SVD-SD006	20.0	19.0	0.208	0.05	0.006	13.6	48.9	28.6	8.9	2.08	35.1	SP-ML
SVD-SD007	3.0	37.5	16.056	7.157	1.014	77.7	20.1	2.2		3.15	15.84	GP
SVD-SD007	9.0	37.5	8.029	3.555	0.415	63.9	32.3	3.8		3.79	19.33	GP
SVD-SD007	17.0	12.5	0.287	0.176	--	2.3	86.2	11.5		1.63	4.32	SP
SVD-SD007	19.0	25.0	3.651	0.431	0.157	35.1	59.6	5.3		0.32	23.26	SW
SVD-SD008	5.0	37.5	10.101	5.129	1.967	73.4	26.0	0.6		1.32	5.14	GW
SVD-SD008	11.0	25.0	5.024	1.536	0.159	42.7	51.0	6.3		2.95	31.57	SW
SVD-SD008	21.0	25.0	1.757	0.081	0.007	22.1	48.8	21.2	7.9	0.52	244.81	SW-ML
SVD-SD008	23.0	25.0	5.734	0.581	--	43.8	43.0	13.2		--	--	GW-SW
SVD-SD009	11.0	12.5	0.139	0.067	0.01	2.4	65.1	26.6	5.9	3.17	13.59	SW
SVD-SD009	13.0	9.5	0.025	0.003	--	8.2	24.6	25.2	42.0	--	--	CL-ML
SVD-SD009	21.0	6.3	0.034	0.003	--	0.1	24.2	39.9	35.8	--	--	ML-CL
SVD-SD009	22.5	75.0	15.292	1.607	--	56.1	32.1	11.8		3.64	329.46	GW
SVD-SD010	7.0	19.0	3.65	2.116	0.998	25.5	73.4	1.1		1.23	3.66	SP
SVD-SD010	12.0	19.0	0.029	0.003	--	8.2	29.8	23.2	38.8	--	--	CL
SVD-SD010	15.0	4.8	0.006	0.002	--	0.0	7.6	37.1	55.3	--	--	CL
SVD-SD011	5.0	25.0	6.243	2.325	0.503	52.0	46.3	1.7		1.72	12.4	GW
SVD-SD011	11.0	37.5	6.938	2.558	0.46	55.4	41.4	3.2		2.05	15.08	GW
SVD-SD011	15.0	25.0	2.181	0.005	--	16.7	29.5	23.9	29.9	--	--	CL-SM
SVD-SD011	17.0	37.5	0.038	0.003	--	3.9	23.4	37.5	35.2	--	--	ML-CL
SVD-SD012	3.0	75.0	12.355	4.479	0.946	69.0	29.9	1.1		1.72	13.06	GW
SVD-SD012	9.0	37.5	5.241	1.356	0.161	43.1	49.7	7.2		2.18	32.6	SW
SVD-SD012	17.0	9.5	0.029	0.005	--	3.2	15.4	51.1	30.3	--	--	ML-CL
SVD-SD012	21.0	19.0	0.319	0.18	0.027	9.9	75.5	10.3	4.3	3.76	11.84	SP
SVD-SD013	3.0	25.0	4.378	0.777	0.226	38.5	57.5	4.0		0.61	19.39	SP
SVD-SD013	9.0	37.5	6.353	1.414	0.113	49.4	42.3	8.3		2.8	56.42	GW
SVD-SD013	17.0	4.8	0.024	0.005	--	0.0	6.8	61.0	32.2	--	--	ML
SVD-SD013	19.0	4.8	0.117	0.035	0.004	0.0	52.5	35.8	11.7	2.57	28.26	SW
SVD-SD013	21.0	9.5	0.144	0.042	0.006	0.5	56.1	34.6	8.8	2.21	25.63	SW
SVD-SD014	8.0	50.0	8.395	1.518	0.089	53.5	37.0	9.5		3.08	94.13	GW
SVD-SD014	14.0	9.5	0.006	0.001	--	0.7	5.7	38.3	55.3	--	--	CL

NOTES:
D100: Largest grain diameter (millimeter) in sample.
D60: Grain diameter of 60th percentile of sample.
D30: Grain diameter of 30th percentile of sample.
D10: Grain diameter of 10th percentile of sample.
Curvature Coefficient: Cc = D30^2/(D10*D60)
Uniformity Coefficient: Cu = D60/D10

Table 4. Sediment Screening Criteria

Constituent	Primary Screening Source				Secondary Screening Source		
Cyanide, Total	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection [a] [b]				6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection [a] [b]		
TAL Metals (23 Elements), Hg, Zn							
Individual Polycyclic Aromatic Hydrocarbons (Semi-volatile PAHs)							
Volatile Organic Compounds (VOCs)							
Pesticides							
Total PCBs							
Aluminum	For TAL Metals not listed in 6 NYCRR Part 375, use CP-51, Soil Cleanup Guidance Policy (2010) Residential for Co, Fe, V [c]				For TAL Metals not listed in 6 NYCRR Part 375, use CP-51, Soil Cleanup Guidance Policy (2010) Ecologic for Al, An, Ca, Mo, Th [c]		
Antimony							
Calcium							
Cobalt							
Iron							
Molybdenum							
Thallium							
Vanadium							
Magnesium	Nutrient Metals No Comparative Goals Available				Nutrient Metals No Comparative Goals Available		
Potassium							
Sodium							
WVDP Radionuclides	Symbol	Primary Screening Range [d]	Units	Primary Screening Source	Secondary Screening Range [d]	Units	Secondary Screening Source
Potassium-40	K-40	13.7±1.5	pCi/g	WVDP ASER 2012 (DOE 2013) Table F-2E, Bigelow Bridge 10-year Average for Cattaraugus Creek Background (Sediment last collected in 2012 on five- year periodicity.)	10.6±1.3	pCi/g	WVDP ASER 2012 (DOE 2013) Table F-2D, 10-year Average for Background Soil at Great Valley Air Monitor (Soil last collected in 2012 on five-year periodicity.)
Cobalt-60	Co-60	0.0002±0.0162	pCi/g		0.0005±0.0261	pCi/g	
Strontium-90	Sr-90	0.0004±0.0497	pCi/g		0.0349±0.0403	pCi/g	
Cesium-137	Cs-137	0.0373±0.0227	pCi/g		0.350±0.058	pCi/g	
Uranium-232	U-232	0±0.0552	pCi/g		-0.0034±0.0273	pCi/g	
Uranium-233/234	U-233/234	0.542±0.119	pCi/g		0.80±0.12	pCi/g	
Uranium-235/236	U-235/236	0.0573±0.0388	pCi/g		0.0371±0.037	pCi/g	
Uranium-238	U-238	0.53±0.114	pCi/g		1.01±0.13	pCi/g	
Plutonium-238	Pu-238	0.0111±0.0186	pCi/g		0.00275±0.00934	pCi/g	
Plutonium-239/240	Pu-239/240	0.0144±0.0144	pCi/g		0.0165±0.0170	pCi/g	
Americium-241	Am-241	0.017±0.0224	pCi/g		0.0061±0.0106	pCi/g	
Gross Alpha Activity	Gross Alpha	11.6±3.5	pCi/g		25.1±7.0	pCi/g	
Gross Beta Activity	Gross Beta	16.9±2.9	pCi/g		29.3±4.5	pCi/g	

NOTES:

a: NYCRR Reference at:

[https://govt.westlaw.com/nycrr/Document/l4eadfca8cd1711dda432a117e6e0f345?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(s](https://govt.westlaw.com/nycrr/Document/l4eadfca8cd1711dda432a117e6e0f345?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(s)

b: U.S. EPA Regional Screening Limits (11/2018) for 1) residential soil and 2) protection of groundwater used if no NYCRR limit (Carcinogenic Limit or Noncarcinogenic HI=1 Child):

<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>

c: Reference at: http://www.dec.ny.gov/docs/remediation_hudson_pdf/cpsoil.pdf

DOE 2013 - Reference at: <http://www.wv.doe.gov/>

d: The project action limit in the QAPP is the upper bound of the Screening Range (e.g., K-40 ranges from 12.2 to 15.2 pCi/g, so 15.2 is the background limit).

TABLE 5. Sediment Sampling Data Summary

Constituent Group	Analyte	Units	PAL ¹	PAL ²	Number of Samples	Number of Detections	Sediment Minimum	Sediment Maximum	Sediment-Wide Average ³
VOC	1,1,1,2-TETRACHLOROETHANE	MG/KG	2	0.00022	19	0			
VOC	1,1,2,2-TETRACHLOROETHANE	MG/KG	0.6	0.00003	47	0			
VOC	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	6700	26	35	0			
VOC	1,1,2-TRICHLOROETHANE	MG/KG	1.1	0.000089	47	0			
VOC	1,1-DICHLOROETHANE	MG/KG	19	0.27	47	0			
VOC	1,1-DICHLOROETHENE	MG/KG	100	0.33	47	0			
VOC	1,1-DICHLOROPROPENE	MG/KG	-	-	19	0			
VOC	1,2,3-TRICHLOROBENZENE	MG/KG	63	63	47	2	0.0014	0.0021	0.0018
VOC	1,2,3-TRICHLOROPROPANE	MG/KG	0.0051	3.2E-07	19	0			
VOC	1,2,4-TRICHLOROBENZENE	MG/KG	24	24	47	3	0.0019	0.0029	0.0024
VOC	1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	19	1	0.0037	0.0037	0.0037
VOC	1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.0053	1.4E-07	47	0			
VOC	1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.036	2.1E-06	47	0			
VOC	1,2-DICHLOROBENZENE	MG/KG	100	1.1	47	4	0.00047	0.00099	0.00076
VOC	1,2-DICHLOROETHANE	MG/KG	2.3	0.02	47	0			
VOC	1,2-DICHLOROPROPANE	MG/KG	-	-	47	0			
VOC	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	19	1	0.0018	0.0018	0.0018
VOC	1,3-DICHLOROBENZENE	MG/KG	17	2.4	47	7	0.00044	0.0015	0.0009
VOC	1,3-DICHLOROPROPANE	MG/KG	2.5	0.00028	19	0			
VOC	1,4-DICHLOROBENZENE	MG/KG	9.8	1.8	47	7	0.00047	0.0017	0.0010
VOC	2,2-DICHLOROPROPANE	MG/KG	-	-	19	0			
VOC	2-CHLOROTOLUENE	MG/KG	1600	0.23	19	1	0.0008	0.0008	0.0008
VOC	2-HEXANONE	MG/KG	200	0.0088	47	0			
VOC	4-CHLOROTOLUENE	MG/KG	1600	0.24	19	1	0.0014	0.0014	0.0014
VOC	ACETONE	MG/KG	100	0.05	47	28	0.0105	0.379	0.091
VOC	BENZENE	MG/KG	2.9	0.06	47	4	0.00029	0.0019	0.001
VOC	BROMOBENZENE	MG/KG	630	290	19	1	0.00059	0.00059	0.001
VOC	BROMOCHLOROMETHANE	MG/KG	150	0.021	47	0			
VOC	BROMODICHLOROMETHANE	MG/KG	0.29	3.6E-05	47	0			
VOC	BROMOFORM	MG/KG	19	8.7E-04	38	0			
VOC	BROMOMETHANE	MG/KG	6.8	0.0019	47	0			
VOC	CARBON DISULFIDE	MG/KG	770	850	47	27	0.0009	0.018	0.004
VOC	CARBON TETRACHLORIDE	MG/KG	1.4	0.76	47	0			
VOC	CHLOROBENZENE	MG/KG	100	1.1	47	3	0.00039	0.00058	0.001
VOC	CHLOROETHANE	MG/KG	-	-	44	0			
VOC	CHLOROFORM	MG/KG	10	0.37	47	3	0.0026	0.0036	0.003
VOC	CHLOROMETHANE	MG/KG	110	0.049	47	0			
VOC	CIS-1,2-DICHLOROETHYLENE	MG/KG	59	0.25	47	0			
VOC	CIS-1,3-DICHLOROPROPENE	MG/KG	1.8	1.7E-04	47	0			
VOC	CYCLOHEXANE	MG/KG	6500	6500	28	4	0.00056	0.0014	0.00104
VOC	DIBROMOCHLOROMETHANE	MG/KG	8.3	0.00023	44	0			
VOC	DIBROMOMETHANE	MG/KG	24	0.0021	19	0			
VOC	DICHLORODIFLUOROMETHANE	MG/KG	87	0.3	47	0			
VOC	ETHYLBENZENE	MG/KG	30	1	47	1	0.00067	0.00067	0.00067
VOC	HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	19	1	0.0021	0.0021	0.0021
VOC	ISOPROPYLBENZENE (CUMENE)	MG/KG	1900	0.74	47	0			
VOC	M+P-XYLENE	MG/KG	550	560	47	4	0.00065	0.0018	0.0014
VOC	METHYL ACETATE	MG/KG	78000	4.1	28	2	0.005	0.0739	0.0395
VOC	METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12	47	15	0.0032	0.0847	0.0202
VOC	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	33000	1.4	47	0			
VOC	METHYLCYCLOHEXANE	MG/KG	-	-	28	7	0.0015	0.0152	0.0051
VOC	METHYLENE CHLORIDE	MG/KG	51	0.05	47	23	0.0024	0.1	0.0130
VOC	NAPHTHALENE	MG/KG	100	12	19	6	0.00029	0.00098	0.0006
VOC	N-BUTYLBENZENE	MG/KG	39	39	19	1	0.0021	0.0021	0.0021
VOC	N-PROPYLBENZENE	MG/KG	100	3.9	19	1	0.001	0.001	0.001
VOC	O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	650	0.19	47	0			
VOC	P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	19	1	0.0014	0.0014	0.0014
VOC	SEC-BUTYLBENZENE	MG/KG	100	11	19	1	0.00074	0.00074	0.00074
VOC	STYRENE	MG/KG	6000	1.3	47	0			
VOC	T-BUTYLBENZENE	MG/KG	100	5.9	19	0			
VOC	TERT-BUTYL METHYL ETHER	MG/KG	62	0.93	47	0			
VOC	TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3	47	14	0.00059	0.0044	0.001
VOC	TOLUENE	MG/KG	100	0.7	47	7	0.00033	0.0088	0.002
VOC	TRANS-1,2-DICHLOROETHENE	MG/KG	-	-	47	0			
VOC	TRANS-1,3-DICHLOROPROPENE	MG/KG	1.8	1.7E-04	47	0			
VOC	TRICHLOROETHANE	MG/KG	100	0.68	47	0			
VOC	TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47	47	1	0.0011	0.0011	0.001
VOC	TRICHLOROFLUOROMETHANE	MG/KG	23000	3.3	47	0			
VOC	VINYL CHLORIDE	MG/KG	0.21	0.02	47	0			
VOC	XYLENES, TOTAL	MG/KG	100	1.6	47	4	0.00065	0.0023	0.002
SVO	1,2,4-TRICHLOROBENZENE	MG/KG	24	24	44	0			
SVO	2,4,5-TRICHLOROPHENOL	MG/KG	6300	4	44	0			
SVO	2,4,6-TRICHLOROPHENOL	MG/KG	49	0.004	44	0			
SVO	2,4-DICHLOROPHENOL	MG/KG	190	0.023	44	0			
SVO	2,4-DIMETHYLPHENOL	MG/KG	1300	0.013	44	0			
SVO	2,4-DINITROPHENOL	MG/KG	130	0.044	44	0			

TABLE 5. Sediment Sampling Data Summary

Constituent Group	Analyte	Units	PAL ¹	PAL ²	Number of Samples	Number of Detections	Sediment Minimum	Sediment Maximum	Sediment-Wide Average ³
SVO	2,4-DINITROTOLUENE	MG/KG	1.7	3.2E-04	44	0			
SVO	2,6-DINITROTOLUENE	MG/KG	0.36	6.7E-05	44	0			
SVO	2-CHLORONAPHTHALENE	MG/KG	4800	3.9	44	0			
SVO	2-CHLOROPHENOL	MG/KG	390	0.089	44	0			
SVO	2-METHYLNAPHTHALENE	MG/KG	240	0.19	44	1	0.2	0.2	0.2
SVO	2-METHYLPHENOL (O-CRESOL)	MG/KG	3200	0.75	44	0			
SVO	2-NITROANILINE	MG/KG	630	0.08	44	0			
SVO	2-NITROPHENOL	MG/KG	-	-	44	0			
SVO	3,3'-DICHLOROBENZIDINE	MG/KG	1.2	8.2E-04	26	0			
SVO	3-NITROANILINE	MG/KG	-	-	44	0			
SVO	4,6-DINITRO-2-METHYLPHENOL	MG/KG	-	-	44	0			
SVO	4-BROMOPHENYL PHENYL ETHER	MG/KG	-	-	44	0			
SVO	4-CHLORO-3-METHYLPHENOL	MG/KG	-	-	44	0			
SVO	4-CHLOROANILINE	MG/KG	2.7	1.60E-04	44	0			
SVO	4-CHLOROPHENYL PHENYL ETHER	MG/KG	-	-	44	0			
SVO	4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5	44	1	0.33	0.33	0.33
SVO	4-NITROANILINE	MG/KG	27	0.0016	44	0			
SVO	4-NITROPHENOL	MG/KG	-	-	44	0			
SVO	ACENAPHTHENE	MG/KG	100	98	44	2	0.011	0.2	0.1055
SVO	ACENAPHTHYLENE	MG/KG	100	107	44	0			
SVO	ANTHRACENE	MG/KG	100	1000	44	2	0.029	0.057	0.043
SVO	BENZO(A)ANTHRACENE	MG/KG	1	1	44	5	0.014	0.17	0.0564
SVO	BENZO(A)PYRENE	MG/KG	1	22	44	4	0.011	0.13	0.0535
SVO	BENZO(B)FLUORANTHENE	MG/KG	1	1.7	44	6	0.021	0.16	0.0675
SVO	BENZO(G,H,I)PERYLENE	MG/KG	100	1000	44	2	0.021	0.07	0.0455
SVO	BENZO(K)FLUORANTHENE	MG/KG	1	1.7	44	2	0.028	0.11	0.069
SVO	BENZOIC ACID	MG/KG	250000	15	44	0			
SVO	BENZYL ALCOHOL	MG/KG	7800	6300	44	1	0.011	0.011	0.011
SVO	BENZYL BUTYL PHTHALATE	MG/KG	-	-	44	0			
SVO	BIS(2-CHLOROETHOXY) METHANE	MG/KG	-	-	44	0			
SVO	BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.23	3.6E-06	44	0			
SVO	BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	-	-	44	0			
SVO	BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3	44	1	0.056	0.056	0.056
SVO	CARBAZOLE	MG/KG	-	-	44	1	0.055	0.055	0.055
SVO	CHRYSENE	MG/KG	1	1	44	7	0.022	0.14	0.056
SVO	DIBENZ(A,H)ANTHRACENE	MG/KG	0.33	1000	44	0			
SVO	DIBENZOFURAN	MG/KG	73	0.15	44	1	0.047	0.047	0.047
SVO	DIETHYL PHTHALATE	MG/KG	51000	6.1	44	0			
SVO	DIMETHYL PHTHALATE	MG/KG	-	-	44	0			
SVO	DI-N-BUTYL PHTHALATE	MG/KG	6300	2.3	44	0			
SVO	DI-N-OCTYLPHTHALATE	MG/KG	630	57	44	1	0.14	0.14	0.14
SVO	FLUORANTHENE	MG/KG	100	1000	44	7	0.034	0.45	0.133
SVO	FLUORENE	MG/KG	100	386	44	2	0.015	0.14	0.0775
SVO	HEXACHLORO BENZENE	MG/KG	0.33	3.2	44	0			
SVO	HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	44	0			
SVO	HEXACHLOROCYCLOPENTADIENE	MG/KG	1.8	0.0013	9	0			
SVO	HEXACHLOROETHANE	MG/KG	1.8	2.0E-04	44	0			
SVO	INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2	44	2	0.017	0.064	0.0405
SVO	ISOPHORONE	MG/KG	570	0.026	44	0			
SVO	NAPHTHALENE	MG/KG	100	12	44	1	0.0093	0.0093	0.0093
SVO	NITROBENZENE	MG/KG	5.1	9.2E-05	44	0			
SVO	N-NITROSODIMETHYLAMINE	MG/KG	110	140	44	0			
SVO	N-NITROSODI-N-PROPYLAMINE	MG/KG	-	-	44	0			
SVO	N-NITROSODIPHENYLAMINE	MG/KG	110	0.067	44	1	0.011	0.011	0.011
SVO	PENTACHLOROPHENOL	MG/KG	2.4	0.8	44	0			
SVO	PHENANTHRENE	MG/KG	100	1000	44	8	0.0095	0.25	0.065
SVO	PHENOL	MG/KG	100	0.33	44	0			
SVO	PYRENE	MG/KG	100	1000	44	7	0.027	0.35	0.103
RN	AMERICIUM-241	PCI/G	0.0394	0.0167	47	0			
RN	CESIUM-137	PCI/G	0.06	0.408	47	31	0.082	0.682	0.275
RN	COBALT-60	PCI/G	0.0164	0.0266	47	2	0.048	0.093	0.071
RN	GROSS ALPHA	PCI/G	15.1	32.1	47	46	2.99	18.5	10.39
RN	GROSS BETA	PCI/G	19.8	33.8	47	47	4.52	27.2	13.06
RN	PLUTONIUM-238	PCI/G	0.0298	0.012	47	7	0.042	0.175	0.080
RN	PLUTONIUM-239/240	PCI/G	0.0288	0.0335	47	5	0.017	0.044	0.032
RN	POTASSIUM-40	PCI/G	15.2	11.9	47	47	8.69	27.165	13.39
RN	STRONTIUM-90	PCI/G	0.02505	0.0752	47	2	0.188	1.13	0.659
RN	URANIUM-232	PCI/G	0.0552	0.0239	47	14	0.044	0.16	0.094
RN	URANIUM-234	PCI/G	0.661	0.92	47	47	0.382	1.28	0.696
RN	URANIUM-235	PCI/G	0.0961	0.0741	47	34	0.05	0.225	0.131
RN	URANIUM-238	PCI/G	0.644	1.14	47	47	0.384	1.12	0.651
PES	ALDRIN	MG/KG	0.019	0.19	44	0			
PES	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.097	0.02	44	0			
PES	ALPHA ENDOSULFAN	MG/KG	4.8	102	44	0			
PES	ALPHA-CHLORDANE	MG/KG	0.91	2.9	44	0			

TABLE 5. Sediment Sampling Data Summary

Constituent Group	Analyte	Units	PAL ¹	PAL ²	Number of Samples	Number of Detections	Sediment Minimum	Sediment Maximum	Sediment-Wide Average ³
PES	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.072	0.09	44	0			
PES	BETA ENDOSULFAN	MG/KG	4.8	102	44	0			
PES	BETA-CHLORDANE	MG/KG	-	-	44	0			
PES	CHLORDANE	MG/KG	1.7	0.0027	44	0			
PES	DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	2.6	14	44	0			
PES	DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17	44	3	0.00064	0.0027	0.00138
PES	DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136	44	1	0.0016	0.0016	0.0016
PES	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	100	0.25	44	0			
PES	DIELDRIN	MG/KG	0.039	0.1	44	0			
PES	ENDOSULFAN SULFATE	MG/KG	4.8	1000	44	0			
PES	ENDRIN	MG/KG	2.2	0.06	44	0			
PES	ENDRIN ALDEHYDE	MG/KG	-	-	44	0			
PES	ENDRIN KETONE	MG/KG	-	-	44	0			
PES	GAMMA BHC (LINDANE)	MG/KG	0.28	0.1	44	0			
PES	HEPTACHLOR	MG/KG	0.42	0.38	44	0			
PES	HEPTACHLOR EPOXIDE	MG/KG	0.077	0.02	44	0			
PES	METHOXYCHLOR	MG/KG	100	900	44	0			
PES	TOXAPHENE	MG/KG	0.49	0.011	44	0			
PCB	PCB, TOTAL	MG/KG	1	1	44	0			
PCB	PCB-1016 (AROCHLOR 1016)	MG/KG	-	-	44	0			
PCB	PCB-1221 (AROCHLOR 1221)	MG/KG	-	-	44	0			
PCB	PCB-1232 (AROCHLOR 1232)	MG/KG	-	-	44	0			
PCB	PCB-1242 (AROCHLOR 1242)	MG/KG	-	-	44	0			
PCB	PCB-1248 (AROCHLOR 1248)	MG/KG	-	-	44	0			
PCB	PCB-1254 (AROCHLOR 1254)	MG/KG	-	-	44	0			
PCB	PCB-1260 (AROCHLOR 1260)	MG/KG	-	-	44	0			
PCB	PCB-1262 (AROCHLOR 1262)	MG/KG	-	-	44	0			
PCB	PCB-1268 (AROCHLOR 1268)	MG/KG	-	-	44	0			
MI	CYANIDE	MG/KG	27	40	44	2	1.2	3.5	2.35
MI	PERCENT MOISTURE	PERCENT	-	-	68	68	7	34	17.0
MI	TOTAL ORGANIC CARBON	MG/KG	-	-	46	46	1000	14000	5117.4
MET	ALUMINUM	MG/KG	10000	10000	44	44	3830	28000	8431.1
MET	ANTIMONY	MG/KG	2	12	44	7	4.4	12	7.21
MET	ARSENIC	MG/KG	16	16	44	44	4.5	14.6	7.19
MET	BARIUM	MG/KG	350	820	44	44	29	130	50.97
MET	BERYLLIUM	MG/KG	14	47	44	44	0.19	1.1	0.379
MET	CADMIUM	MG/KG	2.5	7.5	44	10	0.078	0.32	0.128
MET	CALCIUM	MG/KG	10000	10000	44	44	1180	26400	5367.5
MET	CHROMIUM, TOTAL	MG/KG	36	12000	44	44	5.1	34	10.527
MET	COBALT	MG/KG	50	30	44	44	3.3	15.8	6.539
MET	COPPER	MG/KG	270	1720	44	44	8.3	27.2	16.461
MET	IRON	MG/KG	2000	2000	44	44	11100	39000	18100.0
MET	LEAD	MG/KG	400	450	44	44	3.4	40.5	9.202
MET	MAGNESIUM	MG/KG	-	-	44	44	1810	8850	3542.7
MET	MANGANESE	MG/KG	2000	2000	44	44	121	709	310.8
MET	MERCURY	MG/KG	0.81	0.73	44	40	0.0016	0.031	0.009
MET	NICKEL	MG/KG	140	130	44	44	8.4	40	16.661
MET	POTASSIUM	MG/KG	-	-	44	41	536	6000	1302.7
MET	SELENIUM	MG/KG	36	4	44	6	0.15	0.6	0.332
MET	SILVER	MG/KG	36	8.3	44	10	0.065	0.81	0.308
MET	SODIUM	MG/KG	-	-	44	10	110	140	123.5
MET	THALLIUM	MG/KG	5.1	5	44	5	0.8	1.8	1.146
MET	VANADIUM	MG/KG	33	100	44	42	0.37	47	13.1
MET	ZINC	MG/KG	2200	2480	44	44	32.5	130	55.7
HER	2,4 DB	MG/KG	-	-	44	0			
HER	2,4,5-T (TRICHLOROPHENOXYACETIC ACID)	MG/KG	630	0.068	44	0			
HER	2,4-D (DICHLOROPHENOXYACETIC ACID)	MG/KG	-	-	44	0			
HER	DALAPON	MG/KG	1900	0.041	44	0			
HER	DICAMBA	MG/KG	1900	0.15	44	0			
HER	DICHLOROPROP	MG/KG	-	-	44	0			
HER	DINOSEB	MG/KG	63	0.062	44	0			
HER	MCPA	MG/KG	32	0.002	44	0			
HER	MCPP	MG/KG	63	0.0047	44	0			
HER	PENTACHLOROPHENOL	MG/KG	2.4	0.8	44	1	0.0059	0.0059	0.0059
HER	SILVEX (2,4,5-TP)	MG/KG	-	-	44	0			

Notes:

1, 2. PALs: Project Action Limits (see Table 4 notes)

3. Sediment Averages reflect detections only; non-detect data omitted from statistics

Table 6. WVDP Background Sediment and Soils Data From 1995-2004 ASERs

Primary Screening Source	WVDP Radionuclides	Primary Screening Range	Units	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005		Minimum	Maximum	Average	Sample Count	Standard Deviation	95% CL (a)	UCL	LCL
WVDP ASER 2012 (DOE 2013) Table F-2E, Bigelow Bridge 10-year Average for Cattaraugus Creek Background (Sediment last collected in 2011 on five-year periodicity.)	Potassium-40	13.7±1.5	pCi/g	13.6	17.9	10.8	12.6	13.2	15	13.5	15.3	12.7	12.3	13.7		10.800	17.90	13.69	10	1.97	1.14	14.83	12.55
	Cobalt-60	0.0002±0.0162	pCi/g	-0.0009	0.0081	0.0015	0.0054	0.014	0.00163	-0.011	-0.006	-0.0119	0.0004	0.0002		-0.012	0.01	0.00012	10	0.01	0.0047	0.0048	-0.005
	Strontium-90	0.0004±0.0497	pCi/g	-0.0152	-0.0577	0.0235	-0.0539	0.0141	0.027	-0.0088	0.0303	0.0174	0.031	0.0004		-0.058	0.03	0.0008	10	0.03	0.195	0.196	-0.194
	Cesium-137	0.0373±0.0227	pCi/g	0.0485	0.0784	0.0042	0.056	0.0204	0.0318	0.0043	0.0459	0.0586	0.0247	0.0373		0.004	0.08	0.037	10	0.02	0.014	0.051	0.023
	Uranium-232	0±0.0552	pCi/g	0.0499	0.0046	0.0096	-0.0016	0.0015	-0.021	0.0082	0.002	-0.016	0.0124	0.0325		-0.021	0.05	0.005	10	0.02	0.011	0.016	-0.006
	Uranium-233/234	0.542±0.119	pCi/g	0.858	0.0027	0.182	0.527	0.598	0.69	0.586	0.659	0.637	0.606	0.542		0.003	0.86	0.53	10	0.25	0.794	1.33	-0.26
	Uranium-235/236	0.0573±0.0388	pCi/g	0.278	0.0027	0.0113	0.0186	0.31	-0.0055	0.0322	0.0899	0.0457	0.0607	0.053		-0.006	0.31	0.084	10	0.11	0.158	0.242	-0.07
	Uranium-238	0.53±0.114	pCi/g	0.732	0.0137	0.171	0.581	0.677	0.56	0.533	0.695	0.652	0.634	0.53		0.014	0.73	0.52	10	0.24	0.329	0.854	0.20
	Plutonium-238	0.0111±0.0186	pCi/g	0.0026	-0.0417	0.112	0.0431	-0.00225	-0.0058	0.00174	0.0047	0.00124	-0.003	0.0111		-0.042	0.11	0.011	10	0.04	0.056	0.0674	-0.04
	Plutonium-239/240	0.0144±0.0144	pCi/g	0.00278	0.0106	0.0524	0.0607	0.00703	-0.0004	0.00174	0.0031	0.0063	0.0064	0.0144		0.000	0.06	0.015	10	0.02	0.031	0.0456	-0.0154
	Americium-241	0.017±0.0224	pCi/g	-0.00219	0.086	0.0025	0.00375	0.0045	0.013	0.0132	0.0086	0.0515	-0.011	0.017		-0.011	0.09	0.017	10	0.03	0.040	0.0574	-0.0234
	Gross Alpha	11.6±3.5	pCi/g	12.8	21.8	15.7	13.1	7.44	11.4	9.46	9.04	5.65	9.37	11.6		5.650	21.80	11.58	10	4.64	2.68	14.26	8.90
	Gross Beta	16.9±2.9	pCi/g	22.9	22.6	20	17.1	15.7	17.9	13.8	15.2	10.7	13.1	16.9		10.700	22.90	16.90	10	4.03	2.33	19.23	14.57
	Total U	1.91	ug/g	2.57	2.19	1.93	1.55	1.17	2.09	2.43	2.35	1.55	1.27	1.91		1.170	2.57	1.91	10	0.50	0.31	2.22	1.60
WVDP ASER 2012 (DOE 2013) Table F-2D, 10-year Average for Background Soil at Great Valley Air Monitor (Soil last collected in 2012 on five-year periodicity.)	Potassium-40	10.6±1.3	pCi/g	12.8	12.6	10.9	13.2	10.9	13.8	12.7	11.3	10.6	11.7	NS		10.600	13.80	12.05	10	1.11	0.64	12.69	11.41
	Cobalt-60	0.0005±0.0261	pCi/g	-0.0019	-0.0139	0.0212	-0.0061	0.0025	0.0039	0.0022	0.0037	-0.0023	-0.005	NS		-0.014	0.02	0.0004	10	0.01	0.01	0.006	0.00
	Strontium-90	0.0349±0.0403	pCi/g	0.289	0.0625	0.165	0.156	0.292	0.132	0.194	0.195	0.185	0.103	NS		0.063	0.29	0.18	10	0.07	0.04	0.220	0.13
	Cesium-137	0.350±0.058	pCi/g	0.386	0.985	0.693	0.77	0.919	0.52	0.798	0.781	0.647	0.621	NS		0.386	0.99	0.71	10	0.18	0.10	0.816	0.61
	Uranium-232	-0.0034±0.0273	pCi/g	0.023	0.0189	0.00471	0.011	-0.0089	0.0049	-0.0148	-0.0048	0.0231	0.0058	NS		-0.015	0.02	0.01	10	0.01	0.01	0.014	0.00
	Uranium-233/234	0.80±0.12	pCi/g	0.862	0.755	0.66	0.646	0.639	0.779	0.81	0.848	0.828	0.792	NS		0.639	0.86	0.76	10	0.08	0.05	0.811	0.71
	Uranium-235/236	0.0371±0.037	pCi/g	0.282	0.0668	0.0229	0.057	0.111	0.0687	0.0597	0.0428	0.218	0.0835	NS		0.023	0.28	0.10	10	0.08	0.08	0.178	0.02
	Uranium-238	1.01±0.13	pCi/g	0.931	0.82	0.686	0.649	0.631	0.748	0.843	0.76	0.706	0.721	NS		0.631	0.93	0.75	10	0.09	0.05	0.803	0.70
	Plutonium-238	0.00275±0.00934	pCi/g	--	--	--	--	0.00567	0.00042	0.00294	0.00316	-0.00396	0.0282	NS		-0.004	0.03	0.01	6	0.01	0.01	0.015	0.00
	Plutonium-239/240	0.0165±0.0170	pCi/g	0.0143	0.0217	0.028	0.0177	0.0274	0.0106	0.0191	0.0241	0.0138	0.0429	NS		0.011	0.04	0.02	10	0.01	0.01	0.027	0.02
	Americium-241	0.0061±0.0106	pCi/g	0.0061	0.0155	0.0298	0.0157	0.0121	0.00271	0.0257	0.0291	0.0068	0.0074	NS		0.003	0.03	0.02	10	0.01	0.01	0.021	0.01
	Gross Alpha	25.1±7.0	pCi/g	9.11	12.5	18.5	13.3	27.3	11.6	14.6	6.81	10.9	10.9	NS		6.810	27.30	13.55	10	5.76	3.34	16.89	10.21
	Gross Beta	29.3±4.5	pCi/g	17.4	29	23.1	16.6	23.3	23.2	18.9	18.1	18.6	16.1	NS		16.100	29.00	20.43	10	4.09	2.37	22.80	18.06
	Total U	1.91	ug/g	1.78	2.12	2.31	1.7	1.9	3.41	1.56	2.43	1.98	3.4	NS		1.560	3.41	2.26	10	0.66	0.41	2.67	1.85

NOTES:
(a) 95% Confidence Limit calculation derived from USEPA ProUCL software that accounts for the data distribution (e.g., normal, log-normal, gamma, nonparametric).

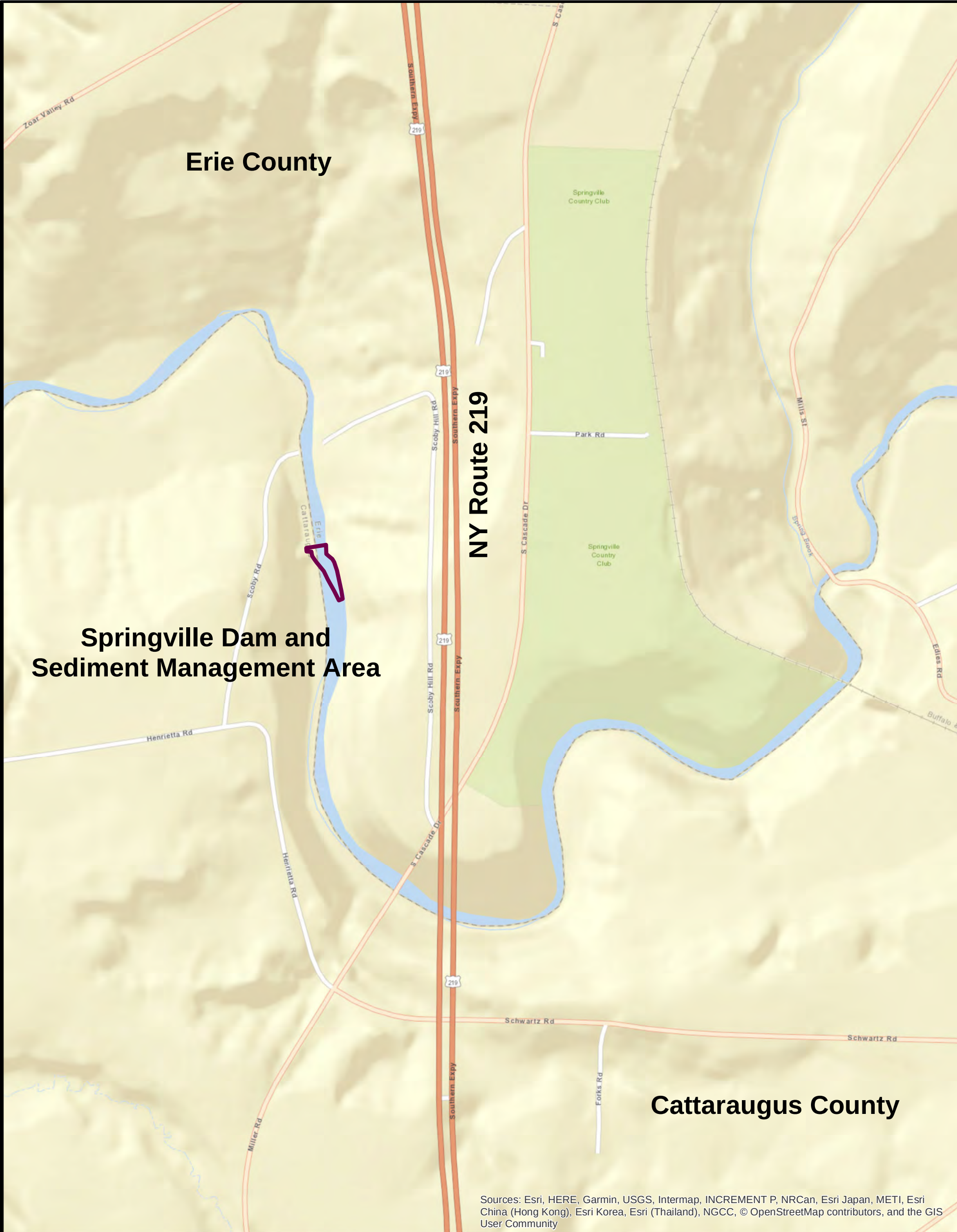
Table 7. Reported Radiologic Sampling Results Compared to Project Action Limits and Background

Sample Location	Americium-241	Cobalt-60	Cesium-137	Gross Alpha	Gross Beta	Potassium-40	Plutonium-238	Plutonium-239/240	Strontium-90	Uranium-232	Uranium-234	Uranium-235	Uranium-238	Fine-Grained Sample
SVD-SD001 (0-6)	-0.084	0.037	0.377	10.3	14.8	12.589	0.014	-0.003	-0.084	0.047	0.382	0.194	1.048	N
SVD-SD001 (12-18)	-0.139	0.007	0.392	4.99	15.5	10.424	-0.005	0.037	0.06	0.08	0.474	0.17	0.811	N
SVD-SD001 (18-23.7)	-0.257	NR	0.157	7.53	10.3	12.107	0.025	-0.016	-0.011	0.095	0.612	0.313	1.309	N
SVD-SD001 (6-12)	-0.21	NR	0.337	8.98	14.4	15.243	0.031	0.023	0.169	0.021	0.808	0.34	0.701	Y
SVD-SD002 (0-6)	-0.091	NR	0.256	14.5	8.6	12.8	0.008	0.032	0.06	0.023	0.553	0.201	0.786	N
SVD-SD002 (12-17.5)	-0.071	0.058	0.211	9.46	7.79	9.619	0.077	0.006	-0.003	0.012	0.452	0.164	0.518	N
SVD-SD002 (6-12)	-0.048	0.023	0.311	9.84	8.91	10.449	0.003	-0.005	1.13	-0.045	0.514	0.019	1.323	N
SVD-SD003 (12-16.9)	0.009	0.028	0.382	7.44	10	10.047	-0.045	-0.006	-0.006	0.104	0.387	0.153	0.732	N
SVD-SD003 (12-18)	-0.072	0.042	0.258	9.34	13.8	11.805	-0.046	0.017	-0.102	-0.035	0.624	0.124	0.384	N
SVD-SD003 (18-22)	0.105	0.019	0.082	8.5	14.6	11.984	-0.026	-0.025	-0.127	0.16	0.605	0.238	0.556	N
SVD-SD003 (2-6)	0.027	NR	0.32	11.2	13.9	12.118	-0.015	0.021	0.109	0.021	0.624	0.202	0.761	N
SVD-SD003 (6-12)	-0.075	NR	0.258	10.6	10.0	11.603	0.029	-0.006	0.145	0.011	0.465	0.112	1.266	N
SVD-SD004 (0-6)	0.02	0.031	0.283	14.7	7.0	11.114	-0.012	0.017	-0.054	0.044	0.7	0.194	0.598	N
SVD-SD004 (6-12)	0.022	0.027	0.221	9.65	11.4	8.996	-0.01	0.01	0.062	0.029	0.838	0.186	0.695	N
SVD-SD005 (0-6)	0.019	NR	0.617	16.7	13.4	14.173	0.008	0.006	0.103	0.044	0.46	0.193	0.634	Y
SVD-SD005 (12-18)	-0.188	NR	0.042	9.15	9.38	12.651	0.068	0.01	0.115	0.011	0.701	0.316	0.702	N
SVD-SD005 (6-12)	-0.03	NR	0.151	4.58	9.87	9.34	0.004	0.015	0.002	-0.022	0.689	0.031	1.1	N
SVD-SD006 (0-6)	-0.155	0.038	0.083	15.4	15.3	14.681	-0.019	0.017	-0.153	-0.022	0.756	0.166	0.972	N
SVD-SD006 (6-8)	0.076	NR	0.009	8.88	15.7	14.314	0.066	0.039	0.047	0.03	0.776	0.188	0.994	Y
SVD-SD007 (0-6)	0.035	0.012	0.213	6.31	13.3	10.662	0.02	0.003	-0.122	0.001	0.49	0.22	0.497	N
SVD-SD007 (12-18)	0.056	NR	0.055	6.32	13.4	11.711	0.063	NR	-0.054	0.05	0.669	0.389	0.642	N
SVD-SD007 (18-20.7)	0.22	NR	-0.01	-0.392	13.4	11.822	-0.03	0.03	0.002	0.066	0.55	0.144	0.776	N
SVD-SD007 (6-12)	-0.095	0.024	0.215	5.47	9.49	9.404	0.013	0.044	0.156	0.104	0.572	0.183	0.463	N
SVD-SD008 (0-6)	-0.036	NR	0.682	12.2	9.52	9.304	-0.028	0.005	-0.023	0.044	0.548	0.171	0.545	N
SVD-SD008 (12-18)	-0.068	NR	0.172	14.9	13	12.356	0.025	-0.006	-0.139	-0.013	0.654	0.183	0.818	Y
SVD-SD008 (18-20.6)	-0.013	NR	-0.031	12.8	12.4	12.622	0.175	-0.036	0.117	0.129	0.94	0.132	0.863	N
SVD-SD008 (6-12)	-0.098	0.027	0.215	11.2	9.01	10.447	0.033	0.009	0.063	0.087	0.738	0.206	0.482	N
SVD-SD009 (0-6)	-0.04	NR	0.178	7.99	8.62	14.254	NR	0.013	-0.052	-0.015	0.551	0.072	0.516	N
SVD-SD009 (12-18.5)	0.112	NR	0.026	8.61	17.0	16.218	0.066	0.002	-0.219	-0.013	0.844	0.208	1.08	Y
SVD-SD009 (12-18.5)-D	0.328	0.018	NR	13.3	15.3	15.413	0.042	0.001	0.058	0.001	1.19	0.157	1.296	Y
SVD-SD009 (8-12)	0.07	0.048	-0.004	15.7	27.2	25.357	0.102	-0.019	-0.327	0.012	1.28	0.136	1.428	Y
SVD-SD010 (0-6)	-0.019	0.093	0.344	10.2	14.2	14.167	-0.011	-0.012	-0.074	0.016	0.815	0.262	0.812	Y
SVD-SD010 (12-17.6)	0.14	NR	0.026	10.6	14.9	16.756	-0.027	0.006	-0.072	0.014	1.000	0.225	0.97	N
SVD-SD010 (12-17.6)-D	0.168	NR	0.004	11.6	18.7	17.113	0.018	0.01	0.082	-0.043	0.898	0.151	0.909	N
SVD-SD010 (6-12)	-0.008	NR	0.033	15.4	26.0	27.165	-0.018	-0.004	0.188	0.03	0.936	0.258	1.12	Y
SVD-SD011 (0-6)	0.006	NR	0.196	12.2	9.42	9.016	0.058	-0.002	-0.038	-0.056	0.616	0.05	0.666	N
SVD-SD011 (12-18)	-0.043	0.03	-0.022	8.11	17.5	15.906	0.029	-0.021	0.026	0.014	1.000	0.191	1.109	Y
SVD-SD011 (6-12)	0.005	0.022	0.283	9.64	14.1	14.687	-0.01	-0.033	-0.031	0.036	0.784	0.191	0.71	Y
SVD-SD012 (0-6)	0.071	NR	0.243	5.79	9.44	10.99	-0.018	0.022	-0.037	-0.008	0.55	0.109	0.759	N
SVD-SD012 (12-18)	NR	NR	0.005	18.1	16.7	14.766	0.009	-0.031	-0.001	0.121	1.05	0.153	0.85	Y
SVD-SD012 (18-18.8)	0.049	NR	0.004	2.99	4.52	14.573	0.092	0.02	0.011	-0.009	0.629	0.124	0.42	N
SVD-SD012 (6-12)	-0.087	NR	0.2	6.22	16.2	8.69	0.005	-0.007	-0.181	-0.006	0.538	0.137	0.882	N
SVD-SD013 (0-6)	-0.023	NR	0.313	7.42	11.6	11.765	0.021	-0.015	0.183	-0.015	0.655	0.113	0.942	N
SVD-SD013 (12-18)	-0.2	0.019	-0.048	12.3	13.0	18.609	-0.023	NR	-0.004	-0.018	0.675	0.376	1.507	Y
SVD-SD013 (18-19.6)	-0.152	0.01	0.017	10.0	8.2	14.383	0.075	-0.012	0.042	0.076	0.429	0	0.509	N
SVD-SD013 (6-12)	-0.048	0.014	0.252	8.24	9.56	11.065	-0.033	NR	0.176	-0.03	0.738	0.155	0.51	N
SVD-SD014 (0-6)	0.034	0.003	0.319	18.5	18.1	14.04	0.015	-0.022	0.033	0.029	0.807	0.512	1.023	N
SVD-SD014 (12-17.8)	-0.028	0.002	NR	12.1	15.2	16.14	-0.044	0.011	-0.096	0.092	0.739	0.163	1.316	N
SVD-SD014 (6-12)	-0.359	NR	-0.012	11.0	20.5	25.91	-0.073	-0.027	-0.091	0.101	1.15	0.055	1.459	Y
SVD-SD900	0.037	NR	0.017	15.4	13.2	14.325	-0.034	-0.035	-0.075	0.087	0.828	0.094	0.595	Blind Duplicate
Minimum	-0.359	0.002	-0.048	-0.392	4.52	8.69	-0.073	-0.036	-0.327	-0.056	0.382	0	0.384	
Maximum	0.328	0.093	0.682	18.5	27.20	27.17	0.175	0.044	1.13	0.16	1.28	0.512	1.507	
Average	-0.023	0.027	0.180	10.24	13.15	13.51	0.014	0.002	0.019	0.030	0.706	0.180	0.847	
Result Count	49	23	48	50	50	50	49	47	50	50	50	50	50	
Standard Deviation	0.119	0.020	0.166	3.89	4.37	4.01	0.046	0.020	0.194	0.050	0.208	0.095	0.299	
95% Confidence Limit (#)	0.029	0.007	0.104	0.92	1.03	0.91	0.011	0.005	0.054	0.012	0.049	0.059	0.071	
Upper Confidence Limit (UCL)	0.006	0.035	0.284	11.16	14.18	14.42	0.025	0.007	0.073	0.042	0.755	0.239	0.918	
Lower Confidence Limit (LCL)	-0.052	0.020	0.076	9.32	12.12	12.60	0.003	-0.003	-0.035	0.018	0.657	0.121	0.776	
Project Action Limit 1	0.0394	0.0164	0.06	15.1	19.8	15.2	0.0298	0.0288	0.0251	0.0552	0.661	0.0961	0.644	
Project Action Limit 2	0.0167	0.0266	0.408	32.1	33.8	11.9	0.012	0.0335	0.0752	0.0239	0.92	0.0741	1.14	
WVDP Bigelow Bridge Background Sediment UCL	0.0574	0.0048	0.051	14.26	19.23	14.83	0.0674	0.0457	0.196	0.016	1.33	0.242	0.854	
WVDP Great Valley Soil Background UCL	0.021	0.006	0.816	16.89	22.80	12.69	0.015	0.27	0.22	0.014	0.811	0.178	0.803	
WVDP Decommissioning Plan Cleanup Goals	26	4	14	--	--	--	36	24	3.7	1.4	7.6	3.1	8.9	
NUREG-1757 Decommissioning Criteria - Soil Screening Levels	21	3.8	11	--	--	--	2.5	2.3	1.7	--	13	8	14	

NOTES:
These values contain detected radionuclides, estimated radionuclides (J-flagged), and non-detect estimates based upon lab method limits (U-flagged).
The USEPA ProUCL tool was used to assess the data sets for normality and calculate the associated UCL (e.g., normal, gamma, log-normal, nonparametric).
NR Laboratory value not reported due to low tracer recovery.
-- WVDP- and NUREG-specific goals and levels are not available for these radionuclides or parameters.
All units are pCi/g (picoCuries per gram).

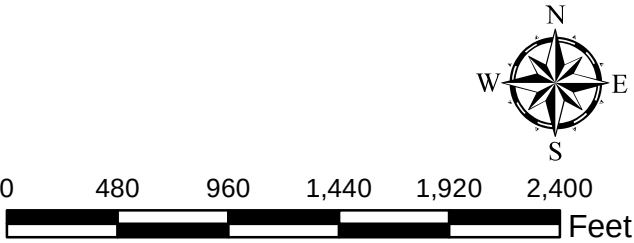
Green-shaded cells incidate the sediment-data UCL (see yellow shading) is below the WVDP-related PAL, background UCL, WVDP decommissioning values, or NUREG-1757 criteria.

FIGURES



Legend

 Sediment Management Zone



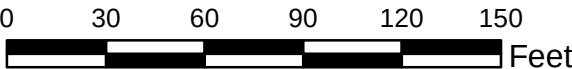
Springville Dam Locaiton



Legend

-  2018 Boring Locations
-  Sediment Management Zone

NOTE: Location B-03 is an upland geotechnical boring installed in 2014 and included to define subsurface conditions and bedrock depth.

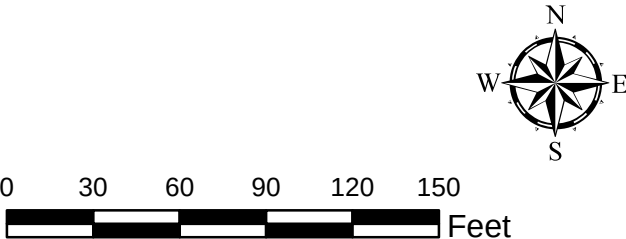


2018 BUD Sediment Sampling Locations



Legend

- 2018 Boring Locations
- Fine Sediment Location
- Bedrock Elevation Contours (ft)

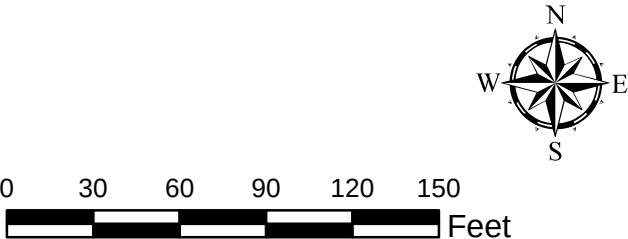


	2018 BUD Sediment Sampling Locations - Bedrock Elevation (feet)	
Document Name: 2018_SVD_BUD_Report_Figure3.mxd Drawn By: h5tdewtf Date Saved: 05 Apr 2019 Time Saved: 12:04:36 PM	Springville Dam - GLFER	FIGURE 3

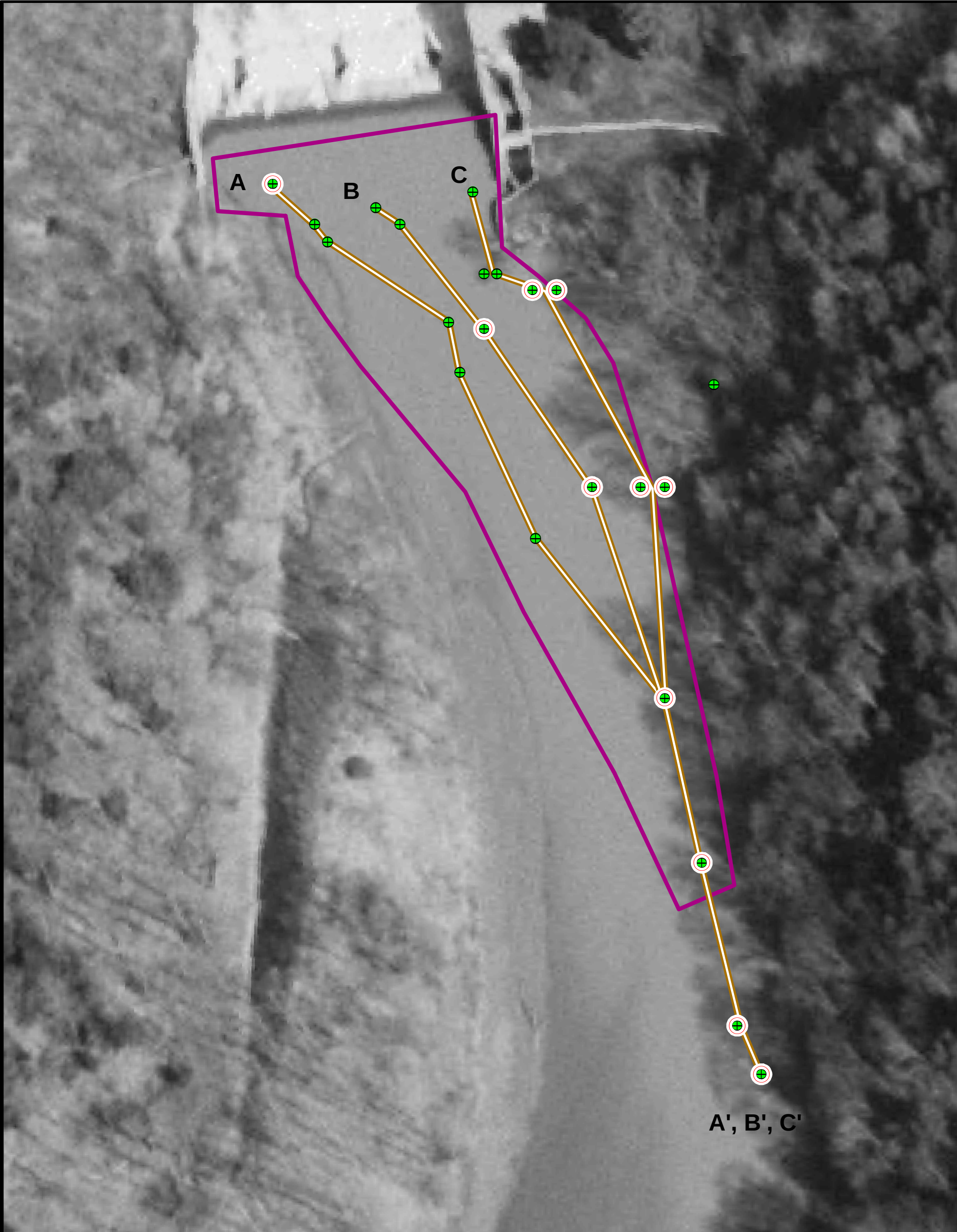


Legend

-  2018 Boring Locations with Sediment Thickness
-  Sediment Thickness (ft)
-  Sediment Management Zone



2018 BUD Sediment Sampling Locations - Sediment Thickness (feet)



Legend

- Fine Sediment Location and Depth Range (ft)
- ⊕ 2018 Boring Locations
- Geologic_Cross_Sections
- Sediment Management Zone



0 30 60 90 120 150 Feet



2018 BUD Sediment Sampling Locations - Fine-Grained Sediment Locations and Geologic Cross Sections

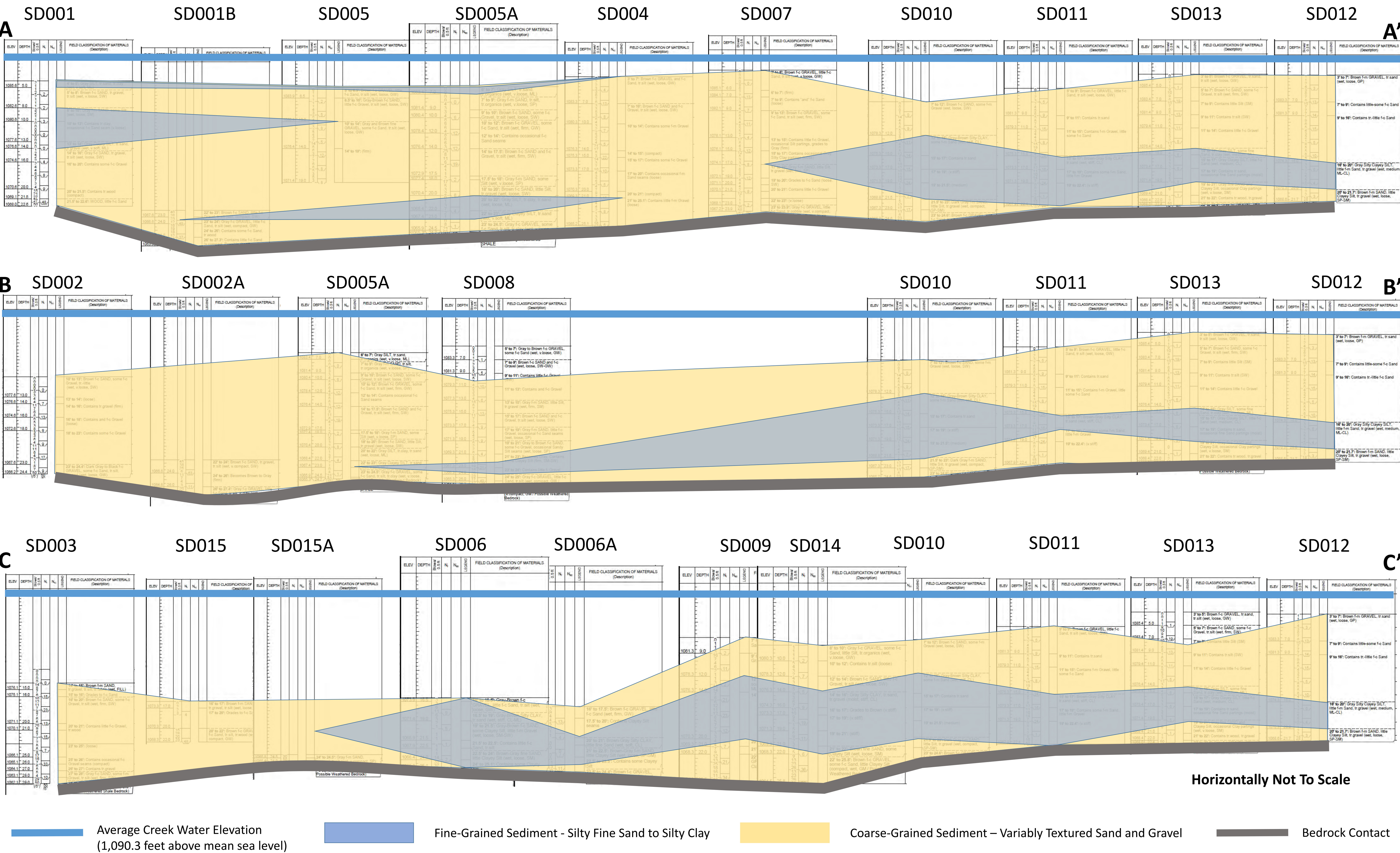
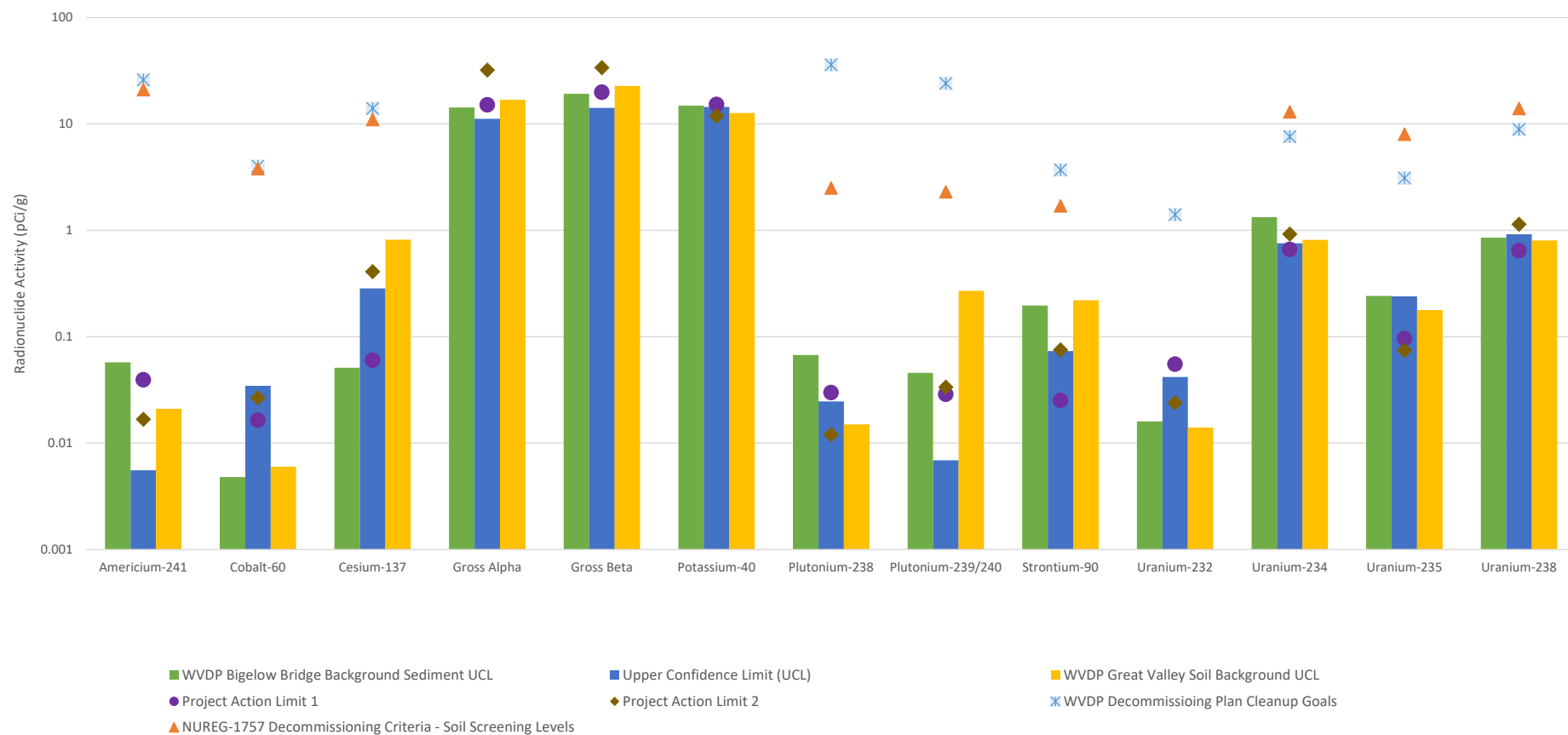


Figure 6. Generalized Geologic Cross Sections A-A', B-B', and C-C'

Figure 7. Radionuclide Comparison of Dam Sediment to WVDP-Based Background and Risk-Based Values



A P P E N D I X A

Springville Dam Field Sampling Plan and
Uniform Federal Policy - Quality Assurance Program Plan
(FSP and UFP-QAPP)



**US Army Corps
of Engineers**

Buffalo District

Design-Level Sediment Sampling Plan

Springville Dam and Cattaraugus Creek Sediment Sampling

Authorized under GLFER

**Springville Dam Ecosystem Restoration Project
Springville, NY**

**Prepared by:
U.S. Army Corps of Engineers Buffalo District
1776 Niagara Street
Buffalo, N.Y. 14207**

July 2018

EXECUTIVE SUMMARY

The United States Army Corps of Engineers (USACE) will perform pre-construction sediment sampling up-stream of the Springville Dam in the Cattaraugus Creek, which is located south of Springville, NY. The investigation is being performed under the Great Lakes Fishery and Ecosystem Restoration Program (GLFER). The project goal is to retrieve sediment samples from the channel of the Cattaraugus Creek at specific locations to determine whether sediments targeted for future removal meet the New York State criteria for a positive beneficial use determination (BUD) and thus uncontrolled re-use at an upland site.

Sediment samples will be collected to meet several Data Quality Objectives (DQOs) that include chemical and physical characterization of the sediment for decision making purposes. The Corps will sample surface and subsurface sediment behind the Springville Dam via methods solicited under separate contractual request for proposals to pre-approved drilling contractors. The field work (sediment sampling) will be scheduled for mid-2018, with consideration to seasonal water conditions in the creek. The effort will include systematic samples that meet the NYSDEC requirements for a case-specific BUD under 6 NYCRR Part 360-1.15(d).

The Corps will contract a drilling service and self-perform the field sampling, sample management, and data management; a separate contract for analytical services will be available and electronic data deliverables of the results will be processed and evaluated by USACE-Buffalo personnel. The stakeholder group will be provided access to all datasets.

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APPENDICES

Appendix A. Springville Dam Sediment Sampling Radiological Sediment Screening

ACRONYMS, FORMULAS, AND SYMBOLS

AHA	Activity Hazard Analysis
bgs	Below-ground Surface
cpm	counts per minute
CFR	Code of Federal Regulations
COC	Chain of Custody
DMP	Data Management Plan
DoD	Department of Defense
DOE	Department of Energy
DQCR	Daily Quality Control Report
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
EPA	Environmental Protection Agency
ft	Feet
GIS	Graphical Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response Regulations
HTRW	Hazardous, Toxic, Radioactive Waste
IDW	Investigation-Derived Waste
MDC	Minimum Detectable Concentration
MDL	Method Detection Limits
amsl	Above Mean sea level
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NYSDEC	New York State Department of Environmental Conservation
PID	Photoionization Detector
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
RSO	Radiation Safety Officer
SAP	Sampling and Analysis Plan
SOW	Statement of Work
SSHM	Site Safety and Health Manager
SSHP	Site Safety and Health Plan
SSHO	Site Safety and Health Officer
SVOC	Semi-Volatile Organic Compound
USACE	U.S. Army Corps of Engineers
VOCs	Volatile Organic Compound

1.0 GENERAL

The U.S. Army Corps of Engineers (USACE) shall provide all contract and Governmental labor, material, and equipment necessary to perform the professional services described in this Field Sampling Plan (FSP). The drilling Contractor shall furnish the required personnel, equipment, instruments, and transportation, as necessary to accomplish the contracted services that are scoped under a separate cover. The USACE and analytical laboratory contractor(s) shall provide all analytical services and electronic data deliverables (EDDs) per the project Unified Federal Guidance – Quality Assurance Project Plan (UFG-QAPP or QAPP) that is a companion document to this FSP. The USACE will be the overall recipient of contractor deliverables and ancillary data and supporting material. The USACE will perform contractor oversight to ensure adequate professional supervision and quality control to assure the accuracy, quality, completeness and progress of the work. The USACE will provide health physics coverage based upon the means and methods presented in Appendix A.

2.0 SITE BACKGROUND

The sediment sampling behind the Springville Dam on Cattaraugus Creek supports the construction of dam modifications that will expand fisheries in the upper Cattaraugus Creek system. The dam was an electro-power facility that went off line in 1997 due to the costs required to upgrade and relicense the facility. The costs were not an efficient expenditure for the Village of Springville, who later deeded the facility to Erie County, NY.

The USACE requires physical and chemical sediment data to petition the New York Department of Environmental Conservation (NYSDEC) for a beneficial use determination (BUD) that will allow excavation and re-use of approximately 20,000 cubic yards of excess sediment from behind the dam. The removal of this volume will also support construction (crest lowering) and the re-contouring of the creek bed to promote channel stability.

The dam is downstream of a rural watershed that also contains the Western New York Nuclear Service Center (WNYNSC), where the U.S. Department of Energy (USDOE) is conducting the West Valley Demonstration Project (WVDP). Consequently, sediment samples will be analyzed for chemical, radiologic, and physical constituents. The drilling contractor will be responsible for sediment sample retrieval, sediment logging (boring logs), sediment transfer to on-site USACE personnel, geotechnical analyses (grain-size distributions), and data associated deliverables. The USACE will perform sample selection, containerization, packaging shipping, contracted analyses, data validation, and reporting. A laboratory results report and tabular database will be generated by the USACE for stakeholder dissemination and use.

2.1 SITE LOCATION

The Springville Dam is located along the border of Erie and Cattaraugus Counties, NY, just south of Springville, NY. Figures 1 and 2 show the site location and the upstream extents and locations of the planned sediment sampling.

2.2 PREVIOUS INVESTIGATIONS

The USDOE via the WVDP environmental monitoring program and the NYS Department of Health (NYSDOH) periodically sampled the sediments behind the Springville Dam for over 25 years and 10 years, respectively. The results are summarized in the 2010 WVDP Annual Site Environmental Report (DOE 2011) and more comprehensively evaluated in the original 2012 USACE Phase 1, Environmental

Site Assessment. The Phase I study also included data from USACE sediment sampling actions performed in 2007 and 2011, which are summarized presently.

The 2007 program included 16 surface sediment locations sampled for a wide array of chemicals, radionuclides, and metals. No evidence of contamination above human-health risk levels (specifically the construction worker) were encountered. The 2011 sampling program included 22 locations behind the dam that were sampled using vibracore, hand-auger, and ponar grab techniques (USACE 2015). In addition, 13 surface sediment samples collected via ponar for grain-size analyses; these locations extended upstream from the Town of Gowanda, through the Springville Dam area, and ended at the Route 219 Bridge.

The 2011 sample locations behind the dam suffered from poor sample recovery due to coarse-grained layers (shaley gravel) that were difficult to penetrate with a vibrocore sampler. Consequently, only an 18-inch deep sample of finer grained sediment taken from core location C6 immediately upstream of the dam was analyzed. The sample was tested for organochlorine pesticides, total polychlorinated biphenyls (PCBs aroclors), chlorinated herbicides, reactivity-corrosivity-ignitability, reactivity of cyanide, metals, silver, antimony, mercury, semi-volatile organic compounds (sVOCs), percent moisture, TOC, reactivity/corrosivity/ignitability reactivity of sulfide, and radiological analysis. All constituents fell within regulatory exposure goals, with only arsenic and potassium-40 (K-40) being above certain goals, but within observed background levels.

An analysis of all the sediment sampling data and reports (USDOE, NYSDOH, and USACE) led to a determination that the dam-pool sediments are not an ecologic risk (aquatic) or human-health risk to the construction worker that would perform the dam modifications (USACE 2015).

The 2012 USACE Phase 1 document was updated in 2015 to clarify language for the Project Partnership Agreement (PPA) and included in Appendix 4 of the Detailed Project Report (DPR) (USACE 2105); this reference also presents NEPA documentation associated with the project. The updated Phase 1 report still concluded that the dam-pool sediments are not an ecologic risk (aquatic) or human-health risk to the construction worker that would perform the dam modifications. The USACE has not evaluated whether other sources for radionuclides are present in the upper Cattaraugus Creek watershed, but may assess this option per the results of the data-evaluation process discussed in Section 8.2.

The USACE and NYSDEC agree the sediment behind the dam may be partially scoured by high-volume, low-frequency flow events and replaced by new basin-derived sediment. Previous maintenance of the dam (at least through 1995) included routine flushing of accumulated sediment downstream to optimize electrical generation, thereby dispersing historic sediments throughout the lower creek system. The USACE and NYSDEC assume that the 25-year record of sediment sampling reflects sediment surface conditions at multiple points in time. Consequently, the 25-year dataset likely represents an array of sediment levels (paleo-surfaces) behind the dam and thus varying depths in the current sediment wedge (i.e., a previous channel bottom overlain by newer sediments has been sampled throughout the accumulation period). The current sampling effort is designed to verify this assumption for sediment management purposes.

3.0 PHYSICAL SETTING

The Springville Dam on Cattaraugus Creek is located in a steep-sided valley incised into shale bedrock (Upper Devonian Canadaway and Conneaut Groups [or Chadakoin]) (Tesmer 1975); the location is accessed via Scoby Hill Road (Figure 1). Upstream of the dam and bedrock valley (or above the Mill Street bridge south of Springville), floodplains become more prevalent and high-water elevations become

evident via debris lines. The Cattaraugus Creek watershed is rural and contains notable cold water fishing habitats. The expected sediment behind the dam will vary in texture (silt layers to loose silty sand and gravel with shale cobbles) and thickness (0 to 38 feet), thus the USACE will contract drilling technology that will recover such variable textures. The depth of the creek water will vary from less than one to over nine feet in the sampling area, thus the sediment sampling (drilling) contractor shall expect inundated conditions. The USACE scope for the drilling contractor shall allow flexibility in sample retrieval, although past experience indicates hollow-stem auger drilling is optimal, so a floating platform may be required. The USACE drilling contract will include a performance period that accounts for weather and high-flow delays.

4.0 SAMPLING RESPONSIBILITIES

The overall sediment sampling project organization and responsibilities are USACE and Contractor specific. The USACE Project Manager, technical field lead, sampling team (field crew), and Contractor (drilling) team will be familiar with sediment sampling in riverine systems, specifically the variable sediment textures and water-safe operations. The project QAPP (under separate cover) provides a project-personnel list with associated responsibilities.

The field activities executed during the sampling effort will follow site-specific plans that are contractual requirements in the drilling contract. The safety requirements are found in the “U. S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1” (30 NOV 2014), which is available on-line at:

http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_385-1-1_2008Sep_Consolidated_2011Aug.pdf.

The contract-related safety documents will be designed to protect on-site personnel, the environment, and potential off-site receptors from an array of hazards that could arise during the execution of this plan (e.g., all hydraulic line connections on a drill rig will be inspected for leaks to preclude discharges to the riverine environment). The documents will be reviewed by USACE Buffalo District Safety Office (DSO) for technical accuracy and compliance with USACE regulations prior to performing any field activities. Examples of the required documents are found in the USACE Safety and Health Requirements Manual ER 385-1-1, Appendix A, Paragraph 2. The drilling scope of work will list and/or provide references for the full library of guidance to be considered.

The USACE manual requires all accidents involving injuries or property damage during the execution of work to be reported to the USACE within 4 hours of injury notification by the employee. The initial USACE contact must be made personally (telephone or email messages only are not acceptable) to one of the following:

1. For Contractors: Contracting Officer Frank D’Andrea
 - a. Work Phone: (716) 879-4245
 - b. Email: Frank.J.Dandrea@usace.army.mil
2. For USACE and Contractors: Project Manager Geoffrey Hintz
 - a. Work Phone: (716) 879-4155
 - b. Blackberry: (716) 445-7722
 - c. Email: Geoffrey.K.Hintz@usace.army.mil

During the performance of work, the USACE and contractor(s) personnel shall comply with procedures prescribed for control and safety of subcontractors and/or persons visiting the site.

5.0 PROJECT SCOPE AND OBJECTIVES

This section of the FSP describes project objectives, tasks, and schedule.

5.1. PROJECT OBJECTIVES

The principal goal of the sediment sampling effort is to obtain representative samples of surface and subsurface sediment at 13 locations (Figure 2) that will be analyzed for grain size, chemical compounds, and radionuclides to define whether the sediment exceeds potential risk standards and background levels common to the Cattaraugus Creek (see Tables 1, 2, and 3). Five contingency borings are included in the contracted drilling to ensure optimal recovery of samples. The data will be used to determine whether the sediment is eligible for a case-specific BUD issued by the NYSDEC in accordance with 6 NYCRR Part 360-1.15(d).

The following data quality objectives for the sediment sampling will support the BUD process:

- Determine contaminant concentrations in sediments behind the dam;
- Determine whether sampling results compare with Cattaraugus Creek background and NYSDEC screening limits; and
- Determine whether a case-specific BUD permit is obtainable to progress with construction.

The NYSDEC Region 3 issued guidance regarding the upland disposal and management of dredged sediments; see <http://www.dec.ny.gov/chemical/8734.html>. This guidance recommends that undisturbed dredge cores (samples) be collected to represent the entire depth interval and the entire project area (i.e., throughout the construction or dredge prism). The sample requirements table within the guidance indicates that eight (8) samples should be minimally collected from a dredge prism ranging between 20,000 and 30,000 cubic yards, which is the range expected at the Springville Dam. To minimize the uncertainty associated with this project, the USACE recommends 13 locations that will yield four (4) samples each, or 52 primary samples (about 6-times the minimum), analyzed according to Tables 1 and 2. Thirteen contingency samples will be planned and only actuated should additional sediment samples be required under a Triad-like approach (e.g., indicate contamination via field screening instruments). This will create a definitive data set for project-risk definition and the beneficial use determination. Section 5.2 describes the sampling methodology that is also included in contractual documents governing the drilling contractor actions.

5.2. TASK DESCRIPTION

The following section describes the field investigation that the USACE and drilling contractor team will execute using cost-effective methods.

The sediment sampling method will include a USACE-contracted hollow-stem auger or direct penetration device (or equivalent) that will continuously sample sediment throughout the vertical profile at each boring location (i.e., to refusal or bedrock). The USACE drilling contracts include options for larger diameter split spoons to ensure the required sample volumes meet laboratory needs. Previous geotechnical sampling of fill and sediment adjacent to the dam indicates that wide-diameter split spoons (e.g., 3.25-inch diameter or alike) provide adequate sediment recovery and volumes.

The USACE will require that the drilling operation must be able to enter and maneuver in the creek channel that likely contains soft sediments. The request for proposal will allow for alternative sampling methods, such as temporary platforms atop soft sediment (e.g., timber bridging) or floating platforms.

The drill rig must have the ability to self-evacuate from the creek should flow conditions change during the work day or anticipated to change during non-work hours (e.g., overnight).

Generally, sediment samples will be targeted and collected from all locations shown in Figure 2. These locations are intended to provide representative samples of the dredge prism (interior and exterior) also outlined on Figure 2. The vertical profiling at each location will include sediment descriptions (boring logs), field-instrument screening (see Appendix A), and the vertical compositing of samples into specific 6-foot depth intervals. For example, three 24-inch long split-spoon samples (totaling 6 feet of penetration) are composited into one field container (clean stainless steel bowl), where they are homogenized and packaged into sample containers. The USACE plans to take equal mass from each sample (split spoon) interval for the total sample to minimize potential subsample bias. This technique emulates the mixing of dredge material during sediment excavation, handling, dewatering, and transportation for disposition under a BUD. The 6-foot vertical composite also ensures an adequate sediment volume to fill the respective laboratory containers (analytical and geotechnical).

The balance of the sediment cores (residual split-spoon samples) will be retained and individually containerized by the USACE in a custody controlled manner until the laboratory sample results are compared to the background or guidance values (Table 3 and QAPP). If a sample result exceeds a criteria, then the USACE may analyze the archived subsample(s) to reduce the uncertainty in the composite value and identify the vertical sub-interval of elevated constituents. Sediment will not be composited between locations (e.g., sediment from intervals at SVD-SD001 will NOT be composited with intervals from SVD-SD002).

VOC (volatile organic compound) samples will be collected differently by discretely sampling core intervals that exhibit chemical detections on field screening instruments (e.g., photo-ionizing detector - PID) or have visual indicator of impacts (e.g., sheening). The USACE intends to employ En-Core or Terra Core (or alike) methods to sample the discrete interval. If no PID detections for VOCs are evident in a sediment cores, then the VOC sample will be collected discretely using professional judgment (e.g., a segment of a core that appears discolored or organic material rich). Only after the VOC sampling are the core increments homogenized.

The planned intervals (totaling four at each of the 13 locations) are listed below and will be sampled for the chemicals and radionuclides listed in Table 1:

1. One composite sample derived from the homogenization of sediment retrieved from the top 6.0 feet of creek bed (nominally zero to 6.0 feet deep).
2. One composite sample derived from the homogenization of sediment retrieved from the subsequent 6 feet of sediment (nominally 6.0 feet to 12.0 deep).
3. One composite sample derived from the homogenization of sediment retrieved from the next 6 feet of sediment (nominally 12.0 to 18.0 feet deep).
4. One composite sample derived from the homogenization of sediment retrieved from the last 6 feet of sediment (nominally 18.0 or 24.0 feet deep).

Each 6-foot composite sample will be composed of equal volumes of each subsample to ensure consistency with standard compositing practices. The vertical composite method should retrieve enough sediment to fill all laboratory-supplied containers for each method listed in Table 2. Should extremely poor sediment recovery occur at any given depth or location (e.g., less than 50% of the sample device volume), the deficiency will be noted on the drilling log and the interval will be resampled to achieve representation in the composite. If significant refusal occurs in multiple split spoons at one location, then a nearby contingency location (nominally ± 10 feet from the original) may be selected by the on-site USACE technical representative to meet project goals. High-percentage core recovery is a priority for the sampling program, thus core recovery and sample number will be maximized via contingency

penetrations (five [5]) are included in the drilling contract). These would be actuated during the drilling period in accordance with the Triad philosophy, which is available at the following link: <http://www.itrcweb.org/Guidance/GetDocument?documentID=90>.

Geotechnical borings through upland locations east of the dam indicates that bedrock is at 1,067 ft elevation, which generally coincides with bedrock outcrop at 1,064 ft elevation downstream of the dam. However, historical design drawings show bedrock may extend to 40 feet below the crest of the dam, or about 1,050 ft in elevation. The planned channel sampling locations appear to have topographic or bathymetric elevations varying between 1,080 ft and 1,090 ft. The drilling contract will require sampling to bedrock (or refusal), which will penetrate the full sediment wedge behind the dam. However, the preliminary dam reconstruction designs (USACE 2015) indicate that only the upper 24 feet of sediment (as a maximum) will be disturbed. Consequently, the sampling program is focused on this depth range and construction prism.

Sediment samples retrieved from below the construction prism (>24 feet deep) will be field screened for chemical and radiologic signatures, which will be noted on the boring logs. All deep sediment samples will be placed individually in labelled plastic bags (no compositing) and archived in a sample refrigerator under a chain of custody at the USACE reservation until the laboratory data from shallower samples are returned and analyzed. These deep samples will be analyzed based on the balance of laboratory results and associated stakeholder discussion. The USACE may analyze a deeper core interval if field-instrument detect notable deviations from background; the laboratory contract will include 13 contingency samples for the project. These added sediment data, whether field observations and/or laboratory results, will increase site knowledge for design and construction decision making.

Field reconnaissance of the dam area and previous bathymetry were used to place the locations on Figure 2 without deference to the potential subaqueous conditions in the creek. Should a location be inaccessible (e.g., obstructed by woody debris), a nearest available location will be chosen in a manner that maximizes areal coverage of the sampling configuration within the proposed construction prism. The on-site USACE representative will assist the drilling contractor in identifying these field locations. Real-time communication with the stakeholder group will be made to ensure concurrence, especially the NYSDEC representatives.

Grain-size analyses will be performed by the drilling contractor for each vertical composite sample in accordance with ASTM D422. This testing will include hydrometer analyses for samples containing significant amounts of fine material passing the #200 sieve. These analyses are listed on Table 2.

The drilling contractor's inspector shall provide full time oversight of drilling operations, preparation of field logs, and collection and protection of grain-size samples. The drilling contractor shall combine field records into boring logs using a version of gINT software, compatible with Version 8i Professional, using a library file provided by USACE. All grain-size data shall be included in the gINT project file and made available to the stakeholder group.

5.3. SCHEDULE

The sediment sampling is based upon the following assumptions:

- The Right of Entry to the necessary properties is in place by mobilization; Erie County will secure private property entry for the duration of the project.
- Sufficient funds are available to perform the work.
- All necessary subcontracts are in place at the time of mobilization.

If all of the above items are completed, it is anticipated that the field work will occur during mid 2018.

The period of performance of the drilling contractor will be 120 calendar days, commencing on the date of award, to ensure flexibility in execution (i.e., account for potential delays due to creek flows) and geotechnical sample analyses.

5.4. Independent Technical Review

The USACE will perform an Independent Technical Review (ITR) of all key USACE deliverables before submission to the stakeholder group for review to ensure completeness and technical competence. The ITR shall not be accomplished by the same personnel that produced the product and must have different supervision than those individuals producing the product to ensure that a truly independent technical review is accomplished. The ITR team member(s) shall include:

- Anew Lenox – USACE Environmental Engineer – Sediment Subject Matter Expert (SME)
- Dr. Karen Keil – USACE Toxicologist and Risk Assessor SME

The ITR may result in the generation of comments and/or concerns that would normally be addressed during subsequent finalization of the work product. These comments and/or concerns shall nevertheless be addressed in the final deliverables to the stakeholder group.

6.0 NON-MEASUREMENT DATA ACQUISITION

Several types of non-measurement data will be reviewed by the USACE before and during the sampling event, such as historic documents, aerial photographs (orthophotos), geospatial (GIS) data, and land ownership parcels.

6.1. RECORDS REVIEW AND EVALUATION

The records that will be reviewed prior to mobilization include:

- Results from the 2015 Appendix 4, Phase 1 ESA report and
- Electronic GIS files available from the USACE project team for planning and execution support.

The information will be used to plan site access and sampling execution, as well as serve as components in the sampling report.

6.2. DATA SUMMARY AND DATA NEEDS DETERMINATION

Previous analytical data generated by a multitude of agencies for over 25 years indicate surface and near-surface sediments both upstream and downstream of the Springville Dam are not impacted with chemical or radiologic elements that pose a risk to human health or the environment. The USACE analysis of these data are found in the design package that serves as a basis for the stakeholder cost-share agreement, “Springville (Scoby) Dam Fish Passage Project – Detailed Project Report and Environmental Assessment” (USACE 2015); the Phase I Environmental Site Assessment is found in Appendix 4. This appendix presents an analysis of sediment, water, and fish data collected near the dam and determined that a Construction Worker receptor will not be exposed to hazardous or radiologic materials that would pose an unacceptable risk during construction. This conclusion is applicable also to the driller receptor.

Comparative standards for chemicals include USEPA regional screening levels for both residential and industrial environments (USEPA 2012) and NYSDEC values for soil remediation (NYSDEC 2006). For

radionuclides, the EPA's preliminary remediation goals (PRG) for both residential and outdoor workers were used (USEPA 2010). Like the chemical risk-based screening levels, these were developed to meet the lower end of the EPA's acceptable range of extra cancer risks, i.e., 1 in a million. The outdoor worker PRG assumes that a worker spends 8 hours a day, 225 days a year at the site for a total of 25 years whereas the residential soil PRG assumes that a person spends 24 hours a day, 350 days a year for a total of 30 years at the site. The construction at the Scooby Dam is not expected to last longer than 18 months, so the Construction Worker would not be exposed to unacceptable risk from sediments. This does not preclude the use of personal protective equipment (PPE) during mobilization.

The sediment sampling effort governed by this FSP will confirm that these low-risk conditions exist throughout the construction prism and sediment management areas; radiological results also will be compared to Cattaraugus Creek background ranges compiled by the USDOE (USDOE 2013), as listed in Table 3 and the QAPP. Additional geotechnical data will be collected to further identify sediment characteristics that are related to design components (i.e., slope stability, erodibility, and compaction).

The work product (data report) will be considered definitive and provide the information needed to determine path-forward actions (i.e., compile BUD documents and actuate project construction).

7.0 PRELIMINARY DATA QUALITY OBJECTIVES

This section presents preliminary data quality objectives (DQOs) for this sediment sampling event. The DQOs are structured according to EM 200-1-2 *Technical Project Planning Process* (USACE 1998), which incorporates the basic components of the seven-step DQO process described in *Guidance for the Data Quality Objective Process* (USEPA 1994).

Additionally, EM 200-1-3 *Requirements for the Preparation of Sampling and Analysis Plans* and EM 1110-2-4000 *Sedimentation Investigations of Rivers and Reservoirs* (e.g., Form ENG 1787) will be employed to guide the sampling effort.

This event will employ a subset of the DQO process for the sediment screening for potential contaminants and design data needs; these processes include:

- Identify the current project;
- Determine project data needs;
- Develop data collection options; and
- Finalize the data collection program.

The following sections summarize these four phases.

7.1. IDENTIFY THE CURRENT PROJECT

Summaries of site-specific operational and environmental information gathered during fact-finding meetings and local environmental experience indicate the following:

- The dam was operated by the Village of Springville until 1998, when it was deeded to Erie County;
- Previous sediment sampling results did not indicate risks from contamination;
- The sediment behind the dam was routinely flushed and replaced with new basin sediment; and
- Environmental artifacts of historic discharges from basin sources may exist in the sediments, which, if discovered, may require follow-on action (e.g., more targeted sampling or remedial actions by a responsible party).

This sampling effort is designed to obtain analytical data to confirm that sediment chemical and radiologic contaminant concentrations are suitable for beneficial use in the upland or riparian environment, along with characterization of physical parameters to support the design and construction.

7.2. DETERMINE DATA NEEDS

The project-specific data will be collected for and by the USACE to confirm that chemical and radiologic contamination does not exist above risk-based and/or background levels for sediment in the Cattaraugus Creek system, as outlined in Table 3. The vertical sampling data will be used to determine whether project-related sediment can be beneficially re-used under a case-specific BUD issued by the NYSDEC in accordance with 6 NYCRR Part 360-1.15(d). The use of risk-based and watershed-background criteria are requested by NYSDEC to support the 6 NYCRR Part 360 determination and assess appropriate compliance with 6 NYCRR Part 380 criteria (radiologic materials handling and disposition).

7.3. DEVELOP DATA COLLECTION OPTIONS

General sediment sampling and analysis employs industry-standard practices and USACE guidance. Subsequent sections describe the following components:

- Data collection methods
- Sample location reasoning
- Number of samples needed to meet project objectives
- Analytes and characteristics of interest
- Analytical methods employed
- Method detection limits and quantitation limits
- Data report with tabular database

Data collection options may be modified by the on-site USACE representative if site conditions or project data warrant change during the course of the sediment sampling. Project stakeholders will be informed of such modifications in a timely manner to discuss potential concerns and options (e.g., a storm event requires sample-point movement, access to a sample point becomes impossible due to geomorphic or structural reasons, a sample-point location poses unsafe conditions, etc.).

7.4. FINALIZE DATA COLLECTION PROGRAM

Project data needs required by the USACE are listed in Table 2, detailed in the project QAPP, and include the following elements:

- Rationale
- Radiologic parameters
- Sample location map reference
- Number of sample locations
- Total number of samples

Where possible, proposed sample locations were chosen to provide data that will satisfy project needs and minimize, to the extent possible, field and laboratory analytical costs. In general, these sediment sampling locations can be considered observational, as opposed to targeted or confirmatory, which assumes contamination was identified previously. The field sampling and analytical laboratory methods used for the Springville Dam project must meet USACE standards and, in general, CERCLA requirements for risk assessments and site characterization reports. The data will be considered definitive and useable in decision making (BUD permitting).

Numerous field photographs will be generated during the sampling activities. Digital cameras will be utilized to allow for regular downloading and backup. Field photographs will be logged for future use and routinely transferred to the USACE servers for storage.

8.0 SITE INVESTIGATION FIELD PROCEDURES

The following sections present specific procedures and detailed information associated with the sediment investigation. All samples will be analyzed by a NELAP accredited lab with hazardous and radiologic materials licenses and samples will have a 21-day turn-around period. The USACE Buffalo District has a standing task-order contract with RTI Labs of Livonia, MI (chemicals) and Pace Analytical of Greensburg, PA (radiologic). The Uniform Federal Policy - Quality Assurance Project Plan (QAPP) that addresses laboratory protocols, analysis methods, sample quantitation limits, and sample quality-assurance (QA) requirements is presented under separate cover. QA and quality control (QC) samples will accompany the primary samples to the laboratories for coincident analyses and subsequent data validation. These are included in Table 2.

Tables 1 and 2 present the analytical methods to be used and subsequent sections detail the analysis needs. Details of the analytical reporting requirements to achieve the screening limits listed in Table 3 are also enumerated in the QAPP.

8.1. FIELD SCANNING AND SAMPLE COLLECTION

Sediment obtained from the subsurface intervals (e.g., individual split spoons) will be screened with field instruments prior to homogenizing into a clean stainless steel bowl, as discussed in Section 5.2. The field detectors that will be available in the field will consist of the following:

- Ludlum Model 44-9 Pancake GM w/ Ludlum Model 2241
- Ludlum Model 43-93 Alpha/Beta Scintillator w/ Ludlum Model 2360
- Ludlum Model 2929 Swipe Counter
- Eberline Model SPA-3 Sodium Iodide Detector w/ Ludlum 2241-2
- Thermo Fisher Dose Rate Meter
- Canberra Inspector Model 1000 (sodium iodide – gamma spectroscopy, if needed)
- Photo-ionizing Detector (PID)
 - Detects volatile organic compounds (VOCs) or alike chlorinated chemicals (e.g., a MiniRAE portable handheld VOC monitor)

The intent of the chemical and radiological scanning is three-fold:

1. Provides on-site health and safety monitoring of working conditions that may affect site operations and sampling (e.g., should personally protective equipment be upgraded),
2. Indicates where discrete VOC sampling may occur (see Section 5.2), and
3. Indicates where contingency subsamples may be analyzed for radiologic constituents in addition to the composite.

The greater details on the chemical and radiological scanning equipment and project application are found in Appendix A.

Upon completion of field scanning and sediment compositing, sample jars/containers will be filled with the homogenized sediment in the order of most volatile to least:

1. Volatile Organic Compounds (VOCs) – See Section 5.2 for discrete sampling discussion
2. Semi-volatile Organic Compounds (SVOCs)
3. PCB (Aroclors)
4. Pesticides
5. Radionuclides
6. TAL metals
7. Mercury
8. Cyanide
9. Total Organic Carbon

The sample for grain-size analyses, as discussed in Section 4.2, will be packaged from the balance of the homogenized sediment that remains after analytical samples are taken.

The trowels and bowls will be cleaned after completion of each location in accordance with industry protocols (e.g., an Alconox wash and thorough rinse with de-ionized water, then paper towel dry).

8.2. DATA QUALITY CONTROL

Analytical (laboratory) data quality controls will be used during sediment sampling and subsequent data-quality analyses, as outlined in Table 2 and detailed in the QAPP. General quality assurance and controls include the following:

- A minimum of ten percent field duplicate samples, six total, will be collected for field quality control purposes (only for analytical laboratory samples).
- A minimum of five percent matrix-spike and matrix-spike duplicates (MS/MSD) will be collected for laboratory quality control purposes (only for analytical laboratory samples); six samples will be collected from three locations (3 MS and 3 MSD samples).
- Laboratory precision and accuracy will be determined using field duplicates and MS/MSD values; the QAPP details the criterion and activities that govern laboratory quality assurance measures.
- The percentage of data acceptable for use is expected to be 90-percent or higher.

The total number of primary sediment samples planned for collection is 65 for each analytical test and 65 for physical (grain-size) tests. Table 2 presents the number of QA/QC samples to be collected to meet the minimum data quality control measures commonly required under CERCLA guidance (a relevant guidance for this project). The QAPP also presents information regarding the analytical protocols and desired detection limits; the USACE may vary analytical methods listed in Table 1 to achieve the lowest detection limits possible for radionuclides (i.e., achieve background-level detections listed in Table 3). The stakeholder group will be notified of the change prior to field mobilization.

8.3. PROJECT INVESTIGATION LEVELS/SCREENING LEVELS

The exposure risk and radiologic background criteria for screening the analytical results are summarized in Table 3 and detailed in the QAPP. The USACE will use both guidance-based chemical criteria and background criteria for radionuclides, which were derived for the WVDP in the 2012 Annual Site Environmental Report (ASER Tables F-2D and F-2E) (USDOE 2013). The primary screening ranges for radionuclides reflect Cattaraugus Creek sediment background (10-year averages) at the Bigelow Bridge location (SFBISED), whereas the secondary screening criteria reflects background soils near a distal air monitoring station (SFGRVAL).

The radiologic sampling results will include the entire gamma-spectroscopy library noted on Table 1, although only the radionuclides listed in Table 3 will be assessed for the BUD. This narrower list focuses on available comparative data (2012 WVDP ASER) that are signature contaminants at the WVDP. Gross alpha and gross beta radiation will be compared to the summary of individual alpha and beta emitting radionuclides to assess whether other radionuclides are present at unusual concentrations in the sediment samples. This unlikely condition may require some re-testing of sediment for an expanded list of radionuclides (e.g., full gamma spectroscopy library noted below Table 1), which is accounted for in the volume of sediment sent to the laboratory and available sediment archived with USACE.

For chemicals and radiologic results, two comparisons will be made to the guidance criteria and radiologic background ranges listed in Table 3:

1. The individual chemical and radionuclide results from each sample will be compared to the corresponding criteria (i.e., a one to one comparison); and
2. The average and 95% confidence interval of the chemical and radionuclide results in the site-wide dataset will be compared to the corresponding criteria (i.e., bulk sediment characteristics).

Since radiological sampling results will include uncertainties, this reporting range will be compared to the background ranges provided in Table 3 to support decision making (e.g., average K-40 background is 13.7 ± 1.5 pCi/g, so a sediment result and its uncertainty range overlapping a value of 14.2 pCi/g reflects background). This is important for the BUD application since NYSDEC requires beneficially re-used material to reflect background ranges for radionuclides, rather than site-specific or use-specific risk-based analyses.

These screen methods will determine if both the individual results and bulk sediment characteristics meet the criteria for a BUD permit.

If chemical and/or radionuclide results exceed the screening criteria, then the NYSDEC (and secondarily other stakeholders) will be notified, which would lead to discussions with USACE management, who may re-evaluate project risk and act accordingly (e.g., suspend project work and communicate USACE options with the land owner or other responsible parties).

The USACE laboratories (RTI and Pace) will be contracted to meet detection levels for all analytes to ensure the results can 1) meet DQOs, 2) be compared to referenced standards & guidance, and 3) be used in screening-level risk assessments (human and ecological). These requirements are presented in the QAPP. Should the radiologic laboratory be unable to meet a detection criteria, than an alternate method will be assessed to achieve desired results (e.g., should alpha spectroscopy not achieve a radiologic background value, then ICP-MS may be assessed and the mass-based results would be converted to activity results via radionuclide specific activity [activity per mass]). The analytical methods will be fully reported in the project database via laboratory deliverable.

9.0 FIELD MEASUREMENTS

Field measurements to be performed during the sampling effort include the screening of sediment cores and sediment-contact materials (split spoons) with chemical and radiation detectors that are discussed in Section 8.1 and Appendix A. This step will allow the USACE to bias the VOC samples and plan for the disposal of unsampled sediment, which will be containerized as investigation derived waste (IDW) until the analytical (laboratory) data provide a profile for either controlled or uncontrolled disposal (see Section 13.0).

All sampling locations will be surveyed via GPS to sub-meter levels and the coordinates shall be provided in New York State Plane, NAD1983, FIP 3103. The sampling log book or collection record/form shall contain these coordinates; the coordinates will be included in the database deliverable and report.

9.1. SAMPLE COLLECTION, CONTAINERIZATION AND PRESERVATION

Sediment sampling (retrieval), sample homogenization, sample containers, chemical preservation techniques, and holding times for sediment samples are described herein. The specific number of preserved and unpreserved containers required for this study will be estimated and supplied by RTI and Pace Laboratories upon contractual agreement in coordination with the QAPP. All filled sample containers will be preserved, if applicable, according to standard laboratory protocols (and standard methods) to ensure sample integrity. In the event that sample integrity, such as holding times, cooler temperatures, etc., is compromised, re-sampling will occur as directed by the on-site USACE representative or Project Manager (i.e., the risk of data loss or lower quality data will be assessed).

Sediment coring and geologic logging are the responsibility of the drilling contractor, whereas sample preparation, packaging, and shipping to the laboratory are the USACE responsibility. The drilling contractor will assume responsibility of the grain-size analysis samples and generate the deliverables discussed at the end of Section 4.2, in coordination with the USACE. The drilling contractor will work with the on-site USACE representative to ensure sufficient retrieval of the sampling interval in the field.

Tables 1 and 2 summarize the sampling program requirements and laboratory protocols that are detailed in the QAPP.

9.2. SAMPLE PACKAGING AND SHIPPING REQUIREMENTS

The following section briefly describes the sediment sample packaging and shipping requirements for this projects, in coordination with the QAPP details.

9.2.1. Sample Packaging

Sediment sample containers will be packaged in thermally insulated coolers that are sealed with evidence tape and shipped in accordance with applicable DOT and USACE specifications (e.g., EM 200-1-3). Packaging and shipping procedures should minimally include the following:

- All individual sample containers will be properly labelled and sealed with screw tops; samples placed in plastic bags will have secondary (or doubled) bags with zip-lock type seals.
- Each sample container will be wrapped in or placed inside a bubble-wrap or similar protective wrap.
- Each sample container, or small groups of containers, will be placed into a plastic bag that will then be devoid of excess air and sealed.
- Trip blanks are required when shipping VOC containers; temperature blanks will be included in all cooler shipments.
- Each sample container will be placed upright in the shipping cooler along with wet ice sealed in double plastic bags that will be placed around, among, and on top of the sample containers.
- Inert packing material (such as bubble wrap) will be placed into the cooler to prevent shifting of the sample containers during transport.
- All required laboratory paperwork, including the Laboratory Chain of Custody (COC) form(s), will be placed inside a plastic bag and taped to the inside of the cooler lid. If a laboratory provided courier is used, the paperwork will be attached to the outside of the cooler to facilitate exchange of sample custody.

- Upon completion of the packing process, the cooler lid will be sealed with strapping tape and two signed & dated custody seals, one across the front and one across the side.
- The air bill for the shipment (when applicable) will be completed and attached to the top or handle of the cooler, which will be transferred to the courier for laboratory delivery.

9.2.2. Sample Shipping

Sediment samples collected during the project will be shipped as soon as possible, normally the same day as sample collection. Samples may be held in a secure area for a longer period of time, provided that analyte-specific holding times are not jeopardized, especially for VOCs. During the time period between collection and shipment, all samples will be stored in ice-packed coolers and maintained in a secure area to control the chain of custody. All coolers will be shipped overnight to the laboratory by commercial or laboratory courier. Chains of custody (USACE copy) shall be maintained by the USACE field team during mobilization (this team will include a Project Chemist).

10.0 CHEMICAL QUALITY CONTROL

This FSP section summarizes the chemical quality control program that will be implemented for the sediment sampling program. A detailed description of components in this summary is found in the QAPP.

10.1. QUALITY CONTROL PROGRAM

The Quality Control (QC) Program should consist of three phases: 1) the preparatory phase, 2) the initial phase, and 3) the follow-up phase, as discussed below.

10.1.1. Preparatory Phase

The preparatory phase of the QC program will be conducted by the USACE prior to beginning each definable feature of work. A summary of all activities performed during each preparatory phase meeting will be documented and address the following:

- Compilation of a QAPP under separate cover to define sample analyses, quantitation limits, and QA/QC protocols.
- Review of all pertinent sections of the FSP and other work plans to ensure that all field personnel are cognizant of the data quality objectives, specific project activities to be accomplished, and specific sampling and analysis requirements.
- Review of calibration procedures for all instruments to be used for measurement of field parameters, where applicable.
- Physical examination of all materials and equipment required to accomplish the specific project activities.
- Review of equipment decontamination procedures in accordance with CERCLA-level protocols.
- Review of how each sample is to be collected, containerized, documented and packaged.
- Review of proper IDW management and documentation.
- Review of the procedure for completing all required information to be recorded on sample custody forms, and discussion of the project sample numbering system.
- Review/discussion of any other activities to be performed as necessary by the USACE-QC representative or project team (normally Team Chemist).
- Examination of the work area(s) to ascertain if all preliminary work is complete.

- Review of preparatory phase field equipment and support materials checklists.

10.1.2. Initial Phase

The initial phase of the USACE-led QC program will include the following:

- Inspection of sampling equipment for cleanliness and adequate supply.
- Inspection of individual sample labels and COC forms for accuracy, completeness, and consistency.
- Inspection of sample packaging and shipping activities.
- Observation, verification, and documentation of initial and ongoing field instrument calibration.
- Routine review of field logbooks/forms and other field records/sketches to assure that all pertinent data are recorded in accordance with project requirements.
- Inspection of the QA sample match-up table to ensure that all samples collected during each day are properly documented.

10.1.3. Follow-up Phase

The follow-up phase of the QC program will include USACE/drilling contractor meetings to fine tune the performance of the various field activities until all work components are completed.

11.0 FIELD OPERATIONS DOCUMENTATION

This section of the sampling plan describes the field documentation that will be maintained during the sediment sampling field work; some components are also discussed in the QAPP.

11.1. DAILY LOGBOOK AND QUALITY CONTROL REPORTS

The USACE field team will maintain a daily logbook and/or binder of field forms of field investigation activities that will be available for QC inspection.

When a sample is collected or a measurement is made, a detailed description of the location will be recorded. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume, and number of containers. A sample identification number will be assigned before sample collection. Field duplicate samples and QA split samples, which will receive an entirely separate sample identification number, will be noted under sample description. Equipment employed to make field measurements will be identified along with their calibration dates and daily background readings (see Appendix A).

This logbook will be the basis for the preparation of a Daily Quality Assurance Report (DQAR) for the USACE Project Manager upon request; this report also may be a simple email from the USACE field team leader and/or drilling contractor, if requested. The DQAR will include a summary of activities performed at the project site, weather information, results of the team activities, departures from the approved FSP, problems encountered during field activities, and any instructions received from USACE project-team representatives.

11.1.1. Photographs

All sample locations will be documented with a digital camera. For each photograph taken, the following items will be noted in the field logbook and/or on the sampling or geologic logging form:

- Date
- Time
- Sample location ID
- General description of the subject
- Sequential number of the photograph.

After the pictures are downloaded, the photographer will review the photographs and compare them with the photographic log to confirm that the log and photographs match.

11.2. SAMPLE DOCUMENTATION

This section describes the sample documentation requirements that will be followed during the field sampling activities associated with sediment sampling.

11.2.1. Sample Numbering System

A sample numbering system will be used to enable the efficient tracking and management of all samples and the resulting laboratory and/or field analytical data. Each sample will be assigned a unique alpha-numeric sample number and a sample station location. Each sample number will include a matrix-specific code and a unique numeric code. Numeric codes will run consecutively through the entire course of the project and will never be re-used for the same sample matrix. Separate groups of numeric codes will be used for regular field samples, USACE QA split samples, and field duplicate samples for ease of identification and tracking in the field.

Sample station locations will include a project code in addition to matrix and numeric codes. As with sample numbers, each sample location station will be unique and will not be repeated throughout the course of the sampling. The following sections describe all of the components of the sample numbering system and provide examples of sample numbers and sample station locations (see Figure 2); these are considered guidance.

11.2.1.1. Sample and Location Numbers

The database will include both sample location indicators and associated unique sample identifiers for the samples from each location.

- Project ID Code: SVD (for Springville Dam)
- Sample Matrix Codes: SD - Sediment
- Sample Numbers: 001 - 799 Regular field samples
- 800 - 899 Field QA split samples
- 900 - 999 Field duplicate samples
- Depth: 0-6.0 (representing zero to six-foot depth)
- Example: Second sediment sample location, 0 to 6 feet deep: SVD-SD002-0.0-6.0

Should a location and depth require a twinned boring at a specific depth to achieve sample volume requirements, the combined media shall have the same identifiers, although the twinning will be recorded on field logs and/or forms.

11.2.2. Sample Labels

Labels will be affixed to all sample containers during sampling activities. Some information may be preprinted on each sample container label. Information that is not pre-printed will be recorded on each sample container label at the time of sample collection. The information to be recorded on the labels will be as follows:

- USACE name (customer)
- Site and sample identification number (as previously discussed)
- Analysis to be performed (commonly pre-printed on lab containers)
- Type of chemical preservative present in container (commonly pre-printed on lab containers)
- Date and time of sample collection
- Sampler's name or initials

11.2.3. Chain-of-Custody (COC) Records

The USACE follows EPA policy regarding sample custody and COC protocols as described in *NEIC Policies and Procedures* (EPA 1985). This custody is in three parts: sample collection, laboratory analysis, and final evidence files. Final evidence files, including originals of laboratory reports and electronic files, are maintained under document control in a secure area (i.e., project file). A sample or evidence file is under an individual's custody when it is:

- In your possession,
- In your view, after being in your possession,
- In your possession and you place them in a secured location, or
- In a designated secure area.

In addition to the COC record, there is also a COC (custody) seal. The COC seal is an adhesive seal placed in areas such that if a sealed cooler is opened, the seal would be broken. The COC seal ensures that no sample tampering occurred between the field collection and laboratory analysis. This information is also detailed in the QAPP.

Deep sediment samples (greater than 24-feet deep) temporarily retained by the USACE will be placed in custody sealed containers (coolers) and stored on the USACE reservation until laboratory results are reviewed, as noted in Section 5.2.

12.0 DATA MANAGEMENT

The data management activities performed by the USACE will include the planning, collection, tracking, verification, validation, analysis, presentation, and storage of site characterization data to ensure high-quality laboratory-data reporting. The characterization data will be a manageable amount of information that will provide the foundation for determining the presence of contamination in site sediments and the constructability of the dam project.

All electronic data stored solely on field instruments or computers will be downloaded and backed-up on removable storage media (such as a compact disc or DVD) or uploaded to the USACE network system on a daily basis during work periods. This will ensure that computer loss or failure will not destroy or corrupt project data.

12.1. INVESTIGATION DATA

Any locational data (e.g., GPS locations of sampling points) will be illustrated on site maps to identify the sediment sampling locations and other data as appropriate. The base coordinate system for the characterization work is New York State Plane in feet (FIPS 3103) and topographic data will be reported in North American Vertical Datum (NAVD 1983) in feet. A project geodatabase will be created and managed through ArcGIS (version 10.4 or later).

The sediment data (analytical) will be delivered under hardcopy and electronic format (laboratory electronic data deliverable or EDD). The number of samples and resulting parameter records will be handled via spreadsheet analyses software, such as Microsoft Excel, for the data validation process. The final validated data will then be imported into the overall project database (likely Microsoft Access based), which will be the basis for data reporting and GIS interfacing.

Chemical and radiological screening data, including PID and field radiologic metering of the sediment cores, will be recorded in appropriate field logbooks/boring-log forms, all of which will be submitted to the stakeholder group at project completion (via project data report).

12.2. CRITICAL PROJECT RECORDS

Critical project records such as survey reports, COC forms, laboratory data packages, and verification results will be maintained by the USACE. The final project geodatabase and analytical database will be shared with the project stakeholders. To meet this requirement, a data management process will be followed throughout the collection, management, storage, analysis, and presentation of the site environmental characterization data.

12.3. SAMPLING AND ANALYSIS PLANNING

The USACE field personnel shall have all the required training to execute the project and maintain records. These activities ensure that standard procedures will be followed when using boring log forms, sample collection field logbooks/sample forms, COC forms, labels, and custody seals.

The master field investigation record will include the site field logbook/sample forms that will record each day's field activities, personnel on each sampling team, and any administrative occurrences, conditions, or activities that may have affected the field work or data quality of any sediment samples for any given day.

As samples are collected in the field, sampling team members will complete the logbooks/forms with sample collection data and required field measurements.

Completed logbooks and appropriate field forms will be electronically scanned and submitted to the project file upon completion of the project. The digital files will be stored on a USACE network and become part of the electronic deliverable to the project stakeholders (i.e., project report).

12.4. CHAIN-OF-CUSTODY (COC) DOCUMENTATION

Sample containers will be tracked from the field collection activities to the analytical laboratory following proper COC protocols and using standardized COC forms (normally lab-specific).

The USACE contracts with RTI and Pace Laboratories require full sample tracking:

1. Samples are received at the laboratory
2. The laboratory receiving staff will check and document the condition of the samples upon arrival.
3. The lab will check that the sample identification numbers on containers and chain of custody forms match.
4. The lab will assign laboratory sample identification numbers traceable back to the field identification numbers.

Within 24 hours of receipt of the sample containers, the laboratory will send a letter of receipt (or email) to the USACE contract representative (normally project chemist). This letter provides the following information:

- Sample receipt date
- Problems noted at the time of receipt (if any)
- List of sample identification number and corresponding laboratory identification numbers for all samples received
- Analysis requested for each sample received
- Completed cooler receipt checklists for each cooler received

The letter/email of receipt will be accompanied by the completed and signed COC form(s) for the samples (scanned attachments with an email), and both documents will be submitted to the project file. This process allows the tracking of samples from the time of collection through analysis and verification.

Deeper sediment samples that may be retained temporarily by the USACE will be stored in an access-controlled area on the USACE reservation.

12.5. ANALYTICAL LABORATORY DOCUMENT AND DATA SUBMISSION

The USACE shall ensure data quality by reviewing data packages for precision, accuracy, and completeness and will attest that it meets all data analysis and reporting requirements for the specific method used, including detection limits and practical quantitation limits. The QAPP details the various quality assurance and control measures that USACE requires under contract.

Laboratories shall prepare and submit analytical and QC data reports, where applicable. All electronic copy of data (EDDs) shall be provided as a hierarchical text file consisting of the required data elements, usually in XML format. The USACE is responsible for data formatting for reporting and later use.

12.6. DATA VERIFICATION AND REVIEW

Data verification and validation will be performed on all sample data. Data packages received from the analytical laboratory will be validated per CERCLA guidance. A full EPA Level II validation will be performed by the USACE project chemist and the analytical data will be flagged accordingly in the project database.

12.7. DATA CENTRALIZATION AND STORAGE

The USACE shall cross check all sample data with logbooks and other field records to ensure analytical data packages are complete and accurate in the digital database.

12.7.1. Data Summarization and Reporting

Project data will be screened for potential data errors and corrected to facilitate data interpretation (e.g., ensure location identifiers are properly linked to associated analytical data). Data reduction and summation will be accomplished using quality-controlled and documented reporting software programs (e.g., Microsoft Excel or Access).

12.7.2. Records Management and Document Control

Hard copies of all original site and field logbooks, COC forms, data packages with analytical results and associated QA/QC information, data verification forms, and other project-related information will be indexed, catalogued into appropriate file groups and series, and retained by the USACE in a project record. A sample tracking database or spreadsheet will be created to ensure laboratory delivery, analysis, and results are fully accounted for during the post-sampling phase.

Sufficient documentation will accompany the archived data to fully describe the source, contents, and structure of the data to ensure future usability. Noncommercial computer programs used to manipulate or report the archived data will also be included in the data archive information package to ensure future usability.

13.0 INVESTIGATION-DERIVED WASTE MANAGEMENT

The drilling contractor and USACE are responsible to control and dispose of any investigation derived waste (IDW), including materials generated during performance of an investigation that cannot be effectively reused, recycled, or decontaminated in the field. IDW consists of materials that could potentially pose a risk to human health and the environment (e.g., sampling and decontamination wastes), as well as materials that have little potential to pose risk to human health and the environment (e.g., sanitary solid wastes). Although existing data do not indicate sediment contamination exists at concerning levels, IDW (mainly sampling residuals) will be containerized and sample-specific analytical data will be used to disposition sediment IDW in concurrence with NYSDEC (e.g., licensed commercial disposal or spread in the project area). The IDW handling process is detailed in a contractual agreement between the drilling contractor and USACE, who will ensure compliance with applicable regulations and guidelines.

14.0 DELIVERABLES

The sediment sampling for the Springville Dam project will require a final data report and electronic database of results. The sampling results, both analytical and physical, shall be delivered in a format that allows the USACE and project stakeholders to efficiently evaluate sediment quality and characteristics.

The USACE will compile and maintain a critical path method (CPM) schedule (via Oracle Primavera or Microsoft Project) to best forecast project-component start and completion dates, critical activities, and milestones.

The drilling contractor and the USACE shall maintain daily quality control and safety logs for each field day. These records shall identify the current activities, any unanticipated delays or occurrences, and any needed corrective actions.

15.0 SUBMITTALS

All reports presenting methods and data shall be prepared in the following standard format.

- All site drawings shall be of engineering quality with sufficient detail to show interrelations of major features on the site map (i.e., north arrows, keys, scales, etc.)
- When drawings are required, data shall consist of 8-1/2-inch by 11-inch pages, with larger drawings folded to this size.
- A decimal paragraphing system shall be used. The reports will be available in three-ring hardcover binders and electronic format. A report title page shall identify the report title, the USACE, Buffalo District, and the date.

Report hard copies will be accompanied by electronic submittals in Adobe Acrobat Portable Document Format (PDF). All original (native software) files, including, but not limited to, documents and databases, shall be provided to the stakeholder group by the USACE. Original files shall include working copies of any documents/data in the appropriate Microsoft format (i.e. Word, Excel, Access, etc.). Documents shall be screened for potential violation of the 1974 Privacy Act prior to submittal (e.g., redaction of signatures, personally identifiable information, purchase records, etc.).

16.0 PROJECT PROGRESS REPORTING

16.1. Progress Reporting / Meetings

The USACE shall initiate and conduct a biweekly telephone conference calls with the stakeholder group to discuss work status and progress during the field mobilization. The USACE shall summarize the meetings and distribute to all involved parties not more than five working days later.

17.0 PUBLIC AFFAIRS

The USACE Project Manager shall be the project voice for the news media or publicly disclose any data generated or reviewed under this plan.

18.0 REFERENCES

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T A B L E S

TABLE 1. SPRINGVILLE DAM ANALYTICAL REQUIREMENTS FOR SEDIMENT

Analytical Group	Analytical Method
Gamma Spectroscopy Suite @ (Cs-137 Primary Analyte)	HASL 300 Gamma Spectral Method GA-01-R (EPA 901.1 Equivalent)
Strontium-90 *	ASTM C1507-07e1 or EPA 905.0
Isotopic Plutonium (Pu-238, Pu-239/240) *	Alpha-particle Spectroscopy DOE EML HASL 300 Series
Uranium-232, -234, -235, -238 *	Alpha-particle Spectroscopy DOE EML HASL 300 Series
Gross Alpha	EPA 900.0/9310
Gross Beta	EPA 900.0/9310
TAL Metals (23 Analytes), Hg, Zn	6010 (B)
Volatile Organic Compounds (VOCs)	EPA 8260 (B)
Semi-volatile Organic Compounds (SVOCs)	EPA 8270 (C)
Pesticides	EPA 8081A
Herbicides	EPA 8151A
PCBs (Aroclors)	EPA 8082
Total Cyanide	EPA 9012A
Total Organic Carbon (TOC)	EPA 9060

NOTES:

@ Gamma spectroscopy report will include the following library of radionuclides:

Actinium-228	Lead-210
Americium-241 *	Lead-212
Antimony-124	Lead-214
Antimony-125	Manganese-54
Barium-133	Mercury-203
Barium-140	Neodymium-147
Beryllium-7	Neptunium-239
Bismuth-212	Niobium-94
Bismuth-214	Niobium-95
Cerium-139	Potassium-40 *
Cerium-141	Promethium-144
Cerium-144	Promethium-146
Cesium-134	Radium-228
Cesium-136	Ruthenium-106
Cesium-137 *	Silver-110m
Chromium-51	Sodium-22
Cobalt-56	Thallium-208
Cobalt-57	Thorium-230
Cobalt-58	Thorium-234
Cobalt-60 *	Tin-113
Europium-152	Uranium-235 *
Europium-154	Uranium-238 *
Europium-155	Yttrium-88
Iridium-192	Zinc-65
Iron-59	Zirconium-95

* WVDP-related Radionuclide (per 2012 ASER) that will be assessed for the BUD.

Uranium isotopes will be analyzed by both alpha and gamma spectroscopy.

TABLE 2. SPRINGVILLE DAM SEDIMENT DATA QUALITY OBJECTIVES AND SAMPLING SUMMARY

Project Objective	Target Media	Rationale	Analytical Parameter/Suite	Sample Locations Map	Sediment Sample Locations	Samples per Location	Total Number of Samples
Field Sample Collection Summary							
Contaminant Presence	Sediment	Primary Screening	Gamma Spectroscopy Suite	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Strontium-90	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Isotopic Plutonium (Pu-238, Pu-239/240)	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Uranium-232, -234, -235, -238	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Gross Alpha	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Gross Beta	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	TAL Metals (23 Elements), Hg, Zn	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Volatile Organic Compounds (VOCs)	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Semi-volatile Organic Compounds (SVOCs)	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Pesticides	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Herbicides	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	PCBs (Aroclors)	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Total Cyanide	Figure 2	13	4	52
Contaminant Presence	Sediment	Primary Screening	Total Organic Carbon (TOC)	Figure 2	13	4	52
Physical Characteristics	Sediment	Primary Screening	Particle Size Analysis - ASTM D422	Figure 2	13	4	52
Contingency Sample Summary							
Contaminant Presence	Sediment	Contingency	Gamma Spectroscopy Suite	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Strontium-90	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Isotopic Plutonium (Pu-238, Pu-239/240)	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Uranium-232, -234, -235, -238	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Gross Alpha	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Gross Beta	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	TAL Metals (23 Elements), Hg, Zn	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Volatile Organic Compounds (VOCs)	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Semi-volatile Organic Compounds (SVOCs)	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Pesticides	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Herbicides	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	PCBs (Aroclors)	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Total Cyanide	Field Decision	5	1	5
Contaminant Presence	Sediment	Contingency	Total Organic Carbon (TOC)	Field Decision	5	1	5
Physical Characteristics	Sediment	Contingency	Particle Size Analysis - ASTM D422	Field Decision	5	1	5
Total Primary Samples:							855
QA/QC Sample Detail *							
Reproducibility	Sediment	Field Duplicate Sample (10%)	See Analytes Above (sans Particle Size Analysis)	N/A	6	1	6
Reproducibility	Sediment	MS/MSD Samples (5%)	See Analytes Above (sans Particle Size Analysis)	N/A	3 MS and MSD	1	6
Total Contingency and Laboratory QA/QC Samples:							12
Total Laboratory Samples:							867

NOTES: * UFG-QAPP presents detailed QA/QC information under a separate cover.

TABLE 3. SPRINGVILLE DAM SEDIMENT SCREENING VALUES FOR BENEFICIAL USE DETERMINATION

Constituent	Primary Screening Source				Secondary Screening Source		
Cyanide, Total	6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a)				6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a)		
TAL Metals (23 Elements), Hg, Zn							
Individual Polycyclic Aromatic Hydrocarbons (Semi-volatile PAHs)							
Volatile Organic Compounds (VOCs)							
Pesticides							
Total PCBs							
Aluminum	For TAL Metals not listed in 6 NYCRR Part 375, use CP-51, Soil Cleanup Guidance Policy (2010) Residential for Co, Fe, V (b)				For TAL Metals not listed in 6 NYCRR Part 375, use CP-51, Soil Cleanup Guidance Policy (2010) Ecologic for Al, An, Ca, Mo, Th (b)		
Antimony							
Calcium							
Cobalt							
Iron							
Molybdenum							
Thallium							
Vanadium							
Magnesium	Nutrient Metals No Comparative Goals Available				Nutrient Metals No Comparative Goals Available		
Potassium							
Sodium							
WVDP Radionuclides	Symbol	Primary Screening Range [c]	Units	Primary Screening Source	Secondary Screening Range [c]	Units	Secondary Screening Source
Potassium-40	K-40	13.7±1.5	pCi/g	WVDP ASER 2012 (DOE 2013) Table F-2E, Bigelow Bridge 10-year Average for Cattaraugus Creek Background (Sediment last collected in 2012 on five- year periodicity.)	10.6±1.3	pCi/g	WVDP ASER 2012 (DOE 2013) Table F-2D, 10-year Average for Background Soil at Great Valley Air Monitor (Soil last collected in 2012 on five-year periodicity.)
Cobalt-60	Co-60	0.0002±0.0162	pCi/g		0.0005±0.0261	pCi/g	
Strontium-90	Sr-90	0.0004±0.0497	pCi/g		0.0349±0.0403	pCi/g	
Cesium-137	Cs-137	0.0373±0.0227	pCi/g		0.350±0.058	pCi/g	
Uranium-232	U-232	0±0.0552	pCi/g		-0.0034±0.0273	pCi/g	
Uranium-233/234	U-233/234	0.542±0.119	pCi/g		0.80±0.12	pCi/g	
Uranium-235/236	U-235/236	0.0573±0.0388	pCi/g		0.0371±0.037	pCi/g	
Uranium-238	U-238	0.53±0.114	pCi/g		1.01±0.13	pCi/g	
Plutonium-238	Pu-238	0.0111±0.0186	pCi/g		0.00275±0.00934	pCi/g	
Plutonium-239/240	Pu-239/240	0.0144±0.0144	pCi/g		0.0165±0.0170	pCi/g	
Americium-241	Am-241	0.017±0.0224	pCi/g		0.0061±0.0106	pCi/g	
Gross Alpha Activity	Gross Alpha	11.6±3.5	pCi/g		25.1±7.0	pCi/g	
Gross Beta Activity	Gross Beta	16.9±2.9	pCi/g		29.3±4.5	pCi/g	

NOTES:

a - Reference at:

<https://govt.westlaw.com/nycrr/Document/I4eadfca8cd1711dda432a117e6e0f345?viewType=FullText&originationContext=documentt>

b - Reference at:

http://www.dec.ny.gov/docs/remediation_hudson_pdf/cpsoil.pdf

DOE 2013 Reference at: <http://www.wv.doe.gov/>

c - The project action limit in the QAPP is the upper bound of the Screening Range (e.g., K-40 ranges from 12.2 to 15.2 pCi/g, so 15.2 is the background limit).

FIGURES

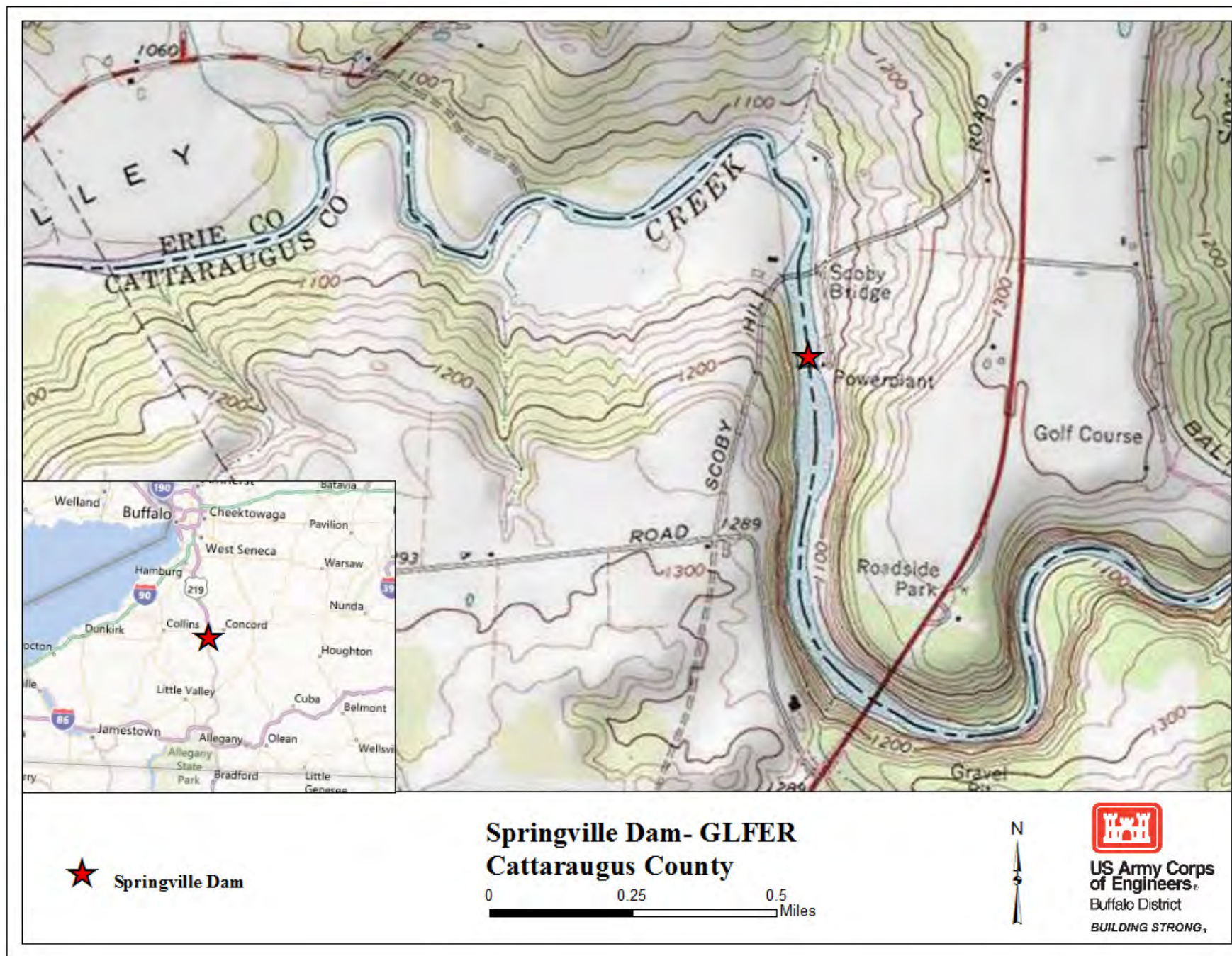


Figure 1. Springville Dam Location Map (USGS Ashford Hollow, NY Quadrangle)



Legend

 Proposed BUD Sediment Sampling Locations

SVD Design Thalweg



SVD Sediment Management Zone



Proposed BUD Sediment Sampling Locations

A P P E N D I X A

Springville Dam Sediment Sampling
Radiological Sediment Screening

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1.0 – Overview

The U.S. Army Corps of Engineers (USACE) will sample sediment behind the Springville Dam on Cattaraugus Creek to support the construction of dam modifications that will expand fisheries in the upper Cattaraugus Creek System. The USACE requires physical and chemical sediment data to petition the New York Department of Environmental Conservation (NYSDEC) for a case-specific beneficial use determination (BUD) that will allow excavation and re-use of approximately 20,000 cubic yards of excess sediment from behind the dam. The dam is downstream of a rural watershed that also contains the Western New York Nuclear Service Center, where the U.S. Department of Energy is conducting the West Valley Demonstration Project (WVDP). Consequently, sediment samples will be analyzed for chemical, radiologic, and physical constituents.

This activity will consist of field personnel orientation, equipment mobilization, and demobilization. Each field operations team member will attend an on-site orientation meeting to become familiar with the history of the site and field procedures. Health and safety requirements will also be discussed during the orientation.

1.1 - Mobilization

Equipment mobilization will entail securing all field screening equipment needed for the field investigation. Equipment not available will be leased or purchased if necessary with approval by the USACE project manager.

For most of the tasks listed below, certain equipment will be needed for every task, including expendable (e.g., garbage bags, plastic sheeting, disposable gloves, etc.) and non-expendable equipment (e.g., cameras, GPS survey devices, office supplies, etc.). These types of equipment are not listed in the equipment lists. When first mobilizing to the site, the field crew will be responsible to ensure the equipment is available at every sampling location.

Currently, field investigations are planned for all accessible areas. If an area is determined to be unsafe to enter, a stakeholder discussion will be initiated to determine the appropriate course of action.

1.2 - Demobilization

Equipment will be decontaminated and demobilized at the completion of all field activities or during the course of the field investigations, as deemed necessary. Personnel, investigation equipment (e.g., detectors/meters, global positioning system, field laptops, sediment homogenization bowls), and large equipment (e.g., instrumentation, large equipment, vehicles) that require decontamination will be decontaminated in the on-site contamination reduction zone or alike buffer area.

1.3 – Surface Scanning and Radiation Measurements

1.3.1 – Objective

Radiological scanning will be utilized to assess environmental media (sediment) for potential radioactive contamination at the Springville Dam project. This information will be used to help confirm or deny the presence of radiological contamination, identify appropriate personal protective equipment, and support the beneficial use determination of the sediment.

1.3.2 – Equipment

The following equipment will be required to perform the environmental scanning.

- Ludlum Model 44-9 Pancake GM w/ Ludlum Model 2241
- Ludlum Model 43-93 Alpha/Beta Scintillator w/ Ludlum Model 2360
- Ludlum Model 2929 Swipe Counter
- Eberline Model SPA-3 Sodium Iodide Detector w/ Ludlum 2241-2
- Thermo Fisher Dose Rate Meter
- Canberra Inspector Model 1000 (sodium iodide – gamma spectroscopy, if needed)

1.3.3 – Procedures

Sediment will be measured for alpha, beta and gamma activity using surface scan and integrated measurement techniques.

Only fully functional instruments which have been calibrated and certified for use will be used for these surveys. A copy of the calibration certification for each instrument will be maintained with each instrument and readily available in the field.

Gross alpha, beta, and gamma activity scans will be performed using a Ludlum Model 44-9 Pancake Geiger-Muller detector coupled to a Ludlum 2241-2 data logger, or equivalent. This GM detector will be used to scan the surface of split spoon sediment samples after extraction.

Alpha and beta activity scan and integrated measurements will be performed using a Ludlum Model 43-93 detector coupled to a Ludlum 2360 Alpha-Beta Data Logger, or equivalent data logger. The 43-93 will be calibrated to measure both alpha and beta surface activity (i.e., dual channel analysis). These detectors are not sensitive to relatively low-energy alpha/beta activity due to their Mylar[®] entrance windows. Beta emitters with maximum energies less than approximately 40 kilo-electron volts (keV) will likely not be detectable. This alpha/beta scintillator will be used to collect a one-minute integrated count at two foot intervals for the entire length of the split spoons collected at each location.

Gamma activity scan and integrated measurements will be performed using an Eberline Model SPA-3 detector coupled to a Ludlum 2241 Data Logger, or equivalent data logger. The SPA-3 sodium iodide (NaI) gamma scintillator is used for detecting low levels of gamma radiation in the range of 20 keV – 1.5 MeV. This NaI detector will be used to scan the entire length of the split spoon (similar to the GM detector) and to collect integrated one-minute counts at two-foot intervals along the entire length of the split spoons collected at each location (similar to the alpha/beta scintillator).

1.3.3.1 Environmental Media Scans

Environmental media (e.g. sediments) will be surveyed for alpha/beta/gamma activity using surface scan measurement techniques. Surface scan measurements will be accomplished using the Ludlum 44-9 GM detector coupled with a Ludlum 2241-2 data logger, or equivalent instruments. The purpose of the scans is to identify elevated surface radiological activity and additional bias sampling, as required. These surveys will provide gross count rate data from each one foot interval of the split spoon, a range of values will be recorded in the logbook (i.e. 40-60 counts per minute). Figure 1 shows a disassembled split spoon and Figure 2 is an illustration of how a two-foot section of split spoon will be scanned and recorded using a GM detector.



Figure 1 – Split Spoon Disassembled

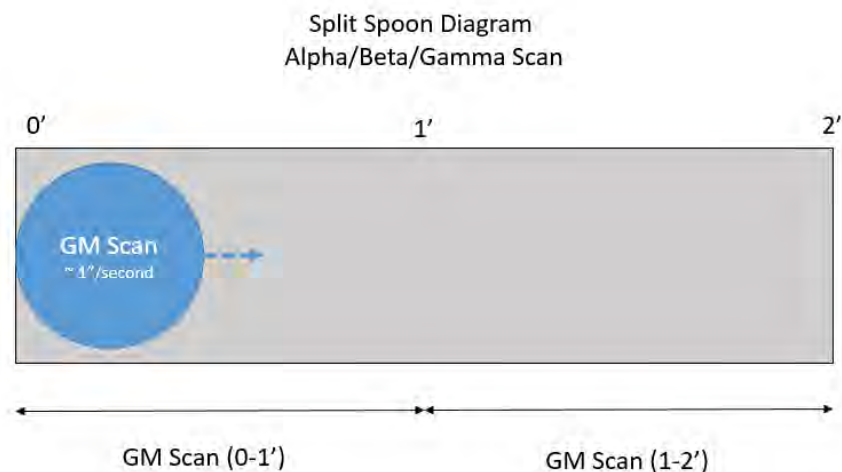


Figure 2 – GM Scanning of Split Spoon

1.3.3.2 Integrated Surface Radioactivity Measurements

For integrated measurements, an instrument is held in a stationary position for a set period of time to obtain either (1) a general area dose rate or (2) an integrated measurement at a systematic or biased location.

Ambient background measurements will also be performed and recorded prior to conducting the survey. This result will be recorded and subtracted from the integrated measurement results. The

primary purpose of the background measurements is to correct the instrument for ambient dose that can result in additional counts. Alpha and beta backgrounds will also be recorded so that it may be subtracted from integrated measurement results, if appropriate.

To identify “site background” radiation levels, USACE normally selects an uncontaminated site reference area that is scanned daily to provide a statistical mean for observed background (alpha, beta, gamma) and associated standard deviations. The USACE will coordinate with the NYSDEC to delineate a reference area for background determination (e.g., an area near the dam that appears underlain by native sediments).

The USACE commonly defines an above-background detection as the average of the reference area plus two or three standard deviations of the gross counts ($\bar{X} \pm 2\sigma$ or $\bar{X} \pm 3\sigma$), depending on the reference-area variability. Past experience also indicates this value may be represented as a multiple of the average counts during field execution. For example, field scanning of construction and soil-like materials at project sites under the Formerly Utilized Sites Remedial Action Program (FUSRAP) have used up to three-times (3x) the reference average for alpha particles and the mean plus two standard deviations ($\bar{X} \pm 2\sigma$) for gross counts to define background-level radiation for material disposition.

Alpha/Beta Radiation - Integrated Counts

Environmental media (e.g. sediments) will be surveyed for alpha/beta activity using integrated surface measurement techniques. Surface measurements will be accomplished using the Ludlum 43-93 detectors coupled with a Ludlum 2360 data logger or equivalent instruments. The 2360 data logger allows for recording of both alpha and beta channels simultaneously at 1-second intervals allowing for a high density of data points. Alpha and beta measurement results will be recorded separately. The purpose of the measurements is to identify elevated surface radiological activity and additional bias sampling, as required. These surveys will provide position-correlated gross count rate data from each interval of the split spoon. The following scenarios will determine where the one-minute integrated count will be collected on each two foot split spoon:

Scenario 1 – Alpha/Beta Scintillator

Based on field scanning with the GM detector (Section 1.3.3.1) if there is no discernable elevated readings found then this alpha/beta scintillator will be used to collect a one-minute integrated count at the center of each two-foot section of each split spoon. Figure 3 is an illustration of where a one-minute integrated count would be collected on each 2’ split spoon if the GM scans show no discernable elevated readings.

Diagram illustrating the scanning regions for a GM tube. The tube is divided into two equal sections, each 1' long, spanning from 0' to 2'.

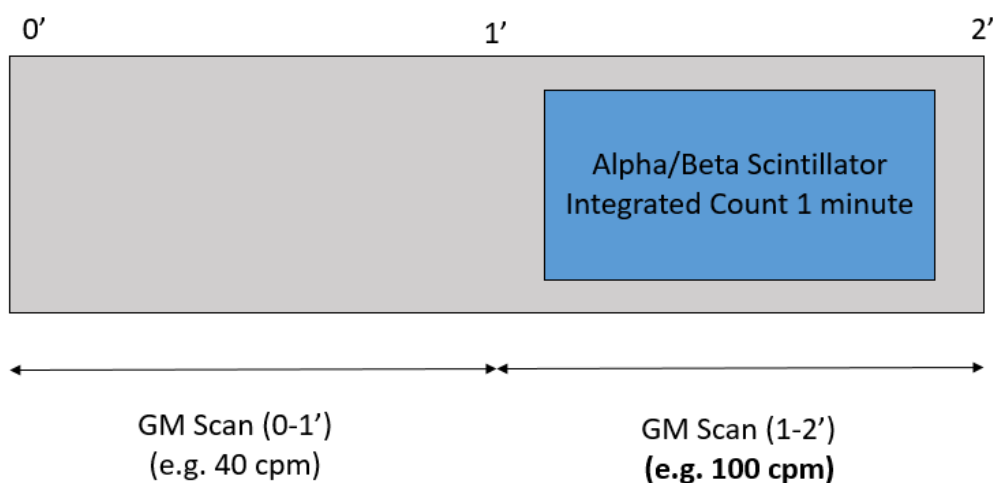
The central region is labeled: Alpha/Beta Scintillator Integrated Count 1 minute.

The scanning regions are defined by the following ranges and typical counts:

- GM Scan (0-1') (e.g. 40 cpm)
- GM Scan (1-2') (e.g. 40 cpm)

Scenario 2 – Alpha/Beta Scintillator

Split Spoon Diagram
Alpha/Beta Integrated Count



Gamma Radiation - Integrated Counts

Springville Dam Sediment Sampling – Appendix A – Radiological Sediment Screening

performed using an Eberline Model SPA-3 detector coupled to a Ludlum 2241 Data Logger, or equivalent data logger. The measurements will be performed ½” contact with the sediment at a location within each two-foot split spoon determined by one of the following two scenarios. The NaI detector will be used to collect integrated one-minute counts at a location of each split spoons collected at each location (similar to the alpha/beta scintillator). The purpose of the measurements is to identify elevated surface radiological activity and additional bias sampling, as required. The following scenarios will determine where the one-minute integrated count will be collected on each two foot split spoon:

Scenario 1 – NaI

Based on field scanning with the GM detector (Section 1.3.3.1) if there is no discernable elevated readings found then this alpha/beta scintillator will be used to collect a one-minute integrated count at the center of each two-foot section of each split spoon. Figure 5 is an illustration of where a one-minute integrated count would be collected on each 2’ split spoon if the GM scans show no discernable elevated readings.

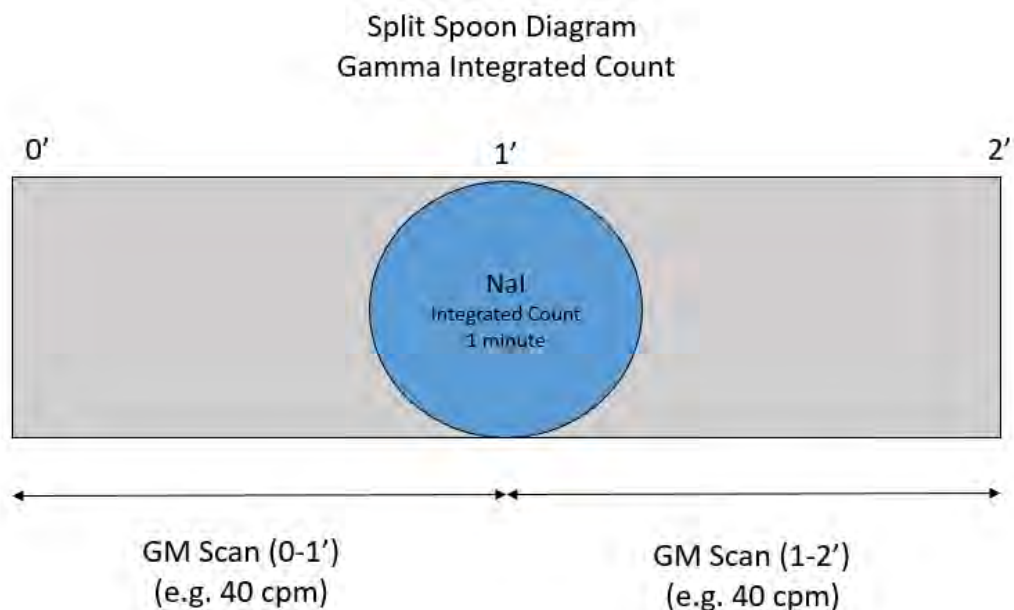


Figure 5 – Scenario 1 (NaI)

Scenario 2 – NaI

Based on field scanning with the GM detector (Section 1.3.3.1) if one interval showed elevated readings then the alpha/beta scintillator will be used to collect a one-minute integrated count centered on the location where the elevated GM scan was found. Figure 6 is an illustration of where a one-minute integrated count would be collected on each 2’ split spoon if the GM scans show discernable elevated readings.

The diagram shows a horizontal rectangular tube labeled 0', 1', and 2' at the top. A blue circle representing a NaI crystal is positioned between the 1' and 2' marks. Below the tube, two double-headed arrows indicate the scan regions: one from 0' to 1' labeled 'GM Scan (0-1') (e.g. 40 cpm)' and another from 1' to 2' labeled 'GM Scan (1-2') (e.g. 100 cpm)'.

Figure 6 – Scenario 2 (NaI)

Note that alpha, beta and gamma results will be collected at each two-foot interval along the split spoons, however the count time should be based on whether the scan is specifically intended for alpha or beta activity measurements.

Count times for integrated alpha/beta measurements are as follows:

- Alpha integrated count times will be 1 minute
- Alpha background count times will be 1 minutes
- Beta integrated count times will be 1 minute
- Beta background count times will be 1 minute
- Sodium Iodide integrated count times will be 1 minute
- Sodium iodide background count times will be 1 minute.

After completion of all systematic integrated measurements, additional bias measurement locations may be required. Bias measurements of surface alpha and beta radioactivity may be performed at the following locations:

- Location of the highest GM scan reading
- Location of the highest NaI scan reading
- Location of based on field conditions (e.g. dis-coloration, elevated PID reading, or professional judgment).

Integrated measurements will be performed by following procedures for operation of contamination survey meters, alpha-beta counting instrumentation, and the use of radiation instrumentation alpha/beta counting and smear worksheet templates.

The net count rate will be determined as the difference between the measurement count rate and the background count rate measured prior to use.

Figure 7, on the following page, is an illustration of the type of radiological screening data that will be collected at each location, based on the methodology outlined in this section. For illustrative purposes, if one location has a split spoon terminate at 24 feet the following data would be collected:

GM Detector – 100% scan coverage – 24 scanning ranges recorded onto a logbook (every 1’).

Alpha/Beta Scintillator – one 1-minute count per split spoon – 12 one-minute counts total.

NaI Detector – one 1-minute count per split spoon – 12 one-minute counts total.

One sample will be collected every 6’ – 4 samples collected in total.

Additional information on sample collection can be found in the Field Sampling Plan.

Split Spoon Number	Composite Sample Number	Split Spoon Sample Depths		GM Scanning	Alpha/Beta Scintillator - Integrated Counts			Sodium Iodide (NaI) - Integrated Counts		Comments/Observations
		Starting Depth (ft)	Ending Depth (ft)	Gross Range (cpm)	Gross Alpha (cpm)	Gross Beta (cpm)	Measurement Location (Ft)	Gross Gamma (cpm)	Measurement Location (Ft)	
1	1	0	1	e.g. 40 - 60	e.g. 1	e.g. 280	1	e.g. 7,000	1	
		1	2	e.g. 40 - 60						
2		2	3				3		3	
		3	4							
3		4	5				5		5	
	2	5	6							
4		6	7				7		7	
		7	8							
5		8	9				9		9	
		9	10							
6	3	10	11				11		11	
		11	12							
7		12	13				13		13	
		13	14							
8		14	15				15		15	
	4	15	16							
9		16	17				17		17	
		17	18							
10		18	19				19		19	
		19	20							
11	4	20	21				21		21	
		21	22							
12		22	23				23		23	
		23	24							
13		24	25				25		25	
	Bag Sediment Not Sent to Laboratory	25	26							
14	Bag Sediment Not Sent to Laboratory	26	27				27		27	
		27	28							
15	Bag Sediment Not Sent to Laboratory	28	29				29		29	
		29	30							
16	Bag Sediment Not Sent to Laboratory	30	31				31		31	
		31	32							
17	Bag Sediment Not Sent to Laboratory	32	33				33		33	
		33	34							
18	Bag Sediment Not Sent to Laboratory	34	35				35		35	
		35	36							
19	Bag Sediment Not Sent to Laboratory	36	37				37		37	
		37	38							
20	Bag Sediment Not Sent to Laboratory	38	39				39		39	
		39	40							
21	Bag Sediment Not Sent to Laboratory	40	41				40		40	
		41	42							

Figure 7 – Example radiological data collection table for each location

1.4 Project Action Levels

For this survey, the investigation level, that is, the instrument response that will trigger further investigation of the surveyed area through additional scanning, static measurements, and biased sampling, will be set at two sigma of the ambient background for the instrument ($\pm 2\sigma$). The instrument minimum detectable count rate (MDCR) will also be calculated to ensure that the selected instruments are capable of detecting contamination with the required sensitivity. The MDCR is dependent on the type of contamination being measured, the type of instrument selected, the scan speed, and the ambient background conditions. Because of the variation in ambient background a scan measurement above the instrument MDCR does not necessarily mean that there is contamination present. Scanning will be used to characterize the sediment and direct readings will be used for comparison against the action levels.

It is generally not practical to directly measure specific radionuclide on sediments. Typically, either gross alpha or gross beta measurements (or both) are performed and concentrations are inferred from the observed gross activity. Gross alpha, beta, and gamma measurements with reference area comparison will serve as the primary basis for determining compliance with the release criteria.

If anomalous results are encountered which are not easily explained or clearly represent contamination, a field portable gamma spectrum multi-channel analyzer (Canberra Inspector 1000) may be used to assist in determining whether or not contamination is indeed present.

1.5 – Survey Methodology

Surface material will be measured for alpha-beta activity using thin window detectors by holding the detector face within ½ inch of the surface to be measured. The scanning speed will be around 1 inch per second.

Static measurements will be taken by performing one minute integrated counts in a fixed location. The probe will be placed within ½ inch above the surface and allowed to accumulate counts for one minute. This method will provide better sensitivity and less error than scanning surveys

For rigor, the instrument MDCR will also be calculated for each instrument. The MDCR is dependent on the type of contamination being measured, the type of instrument selected, the scan speed, and the ambient background conditions.

If activity is encountered above the investigation level, the surveyor will perform additional investigation of the suspect area. This investigation should include additional scanning surveys to determine if the elevated reading is an anomaly the collection of static count data in the immediate area, determination of the size and extent of the suspect area, and the collection of swipe samples and volumetric samples as appropriate. These results will be recorded on the field logbook, if encountered.

1.5.1 – Scan MDC

NUREG-1507 (USNRC, 1998) provides a rigorous derivation of the expression for instrument sensitivity, typically stated as the Minimum Detectable Concentration (MDC). The MDC equations and example values for both scan and static measurements and swipe analysis are presented in this section. The following is an *a priori* analysis; actual MDCs will be determined with background and calibration data for instruments to be used.

1.5.1.1 Ludlum 43-93 Scan MDC

For alpha scanning, the time interval (*i*) over an area is typically one to two seconds. Two seconds will be used in these calculations. The following equation is developed from and NUREG-1507:

$$\frac{1.38 \times \sqrt{b_i} \times \frac{60}{i}}{\sqrt{0.5} \times \varepsilon_s \times \varepsilon_i \times \frac{a}{100}}$$

For alpha/beta probes, alpha background is typically less between 0 and 3 cpm. 2 cpm will be used in this Scan MDC estimate. Actual Scan MDC calculations will be performed once reference area results have been gathered. b_i is then 0.07 (i.e. 2 cpm / 60 seconds * 2 second scan interval).

Instrument alpha efficiency (ε_i) is typically 0.2. The surface efficiency (ε_s) for the project will be 0.25.

The probe area (*a*) for the Ludlum 43-93 is 100 cm².

Plugging these values into the above equation yields:

$$\text{Scan MDC} = \frac{1.38 \times \sqrt{0.07} \times \frac{60}{2}}{\sqrt{0.5} \times 0.2 \times 0.25 \times \frac{100}{100}} = \frac{310 \text{ dpm}}{100 \text{ cm}^2}$$

For the Ludlum 43-93 probe, beta background is typically 300 cpm or less. 150 cpm will be used in this Scan MDC estimate. Actual Scan MDC calculations will be performed once reference area results have been gathered. b_i is then 5 (i.e. 150 cpm / 60 seconds * 2 second scan interval).

For the Ludlum 43-93 probe, the instrument beta efficiency (ε_i) is typically 0.2. The surface efficiency (ε_s) for the project will be 0.5.

The probe area (*a*) for the Ludlum 43-93 is 100 cm².

Plugging these values into the above equation yields:

$$Scan\ MDC = \frac{1.38 \times \sqrt{5} \times \frac{60}{2}}{\sqrt{0.5} \times 0.2 \times 0.5 \times \frac{100}{100}} = \frac{1,310\ dpm}{100\ cm^2}$$

Note: These calculations show the capabilities of the selected alpha/beta scintillators. Investigation levels will be set at two sigma above ambient background and are not necessarily based on specific activity limits of a radionuclide (i.e. 1,000 dpm/100cm²).

1.5.2 Static Measurement MDC

NUREG-1507 (USNRC, 1998) provides a rigorous derivation of the expression for instrument sensitivity, typically stated as the MDC. The MDC equations and example values for both static measurements and swipe analysis are presented in this section. The following is an *a priori* analysis; actual MDCs will be determined with background and calibration data for instruments to be used.

1.5.2.1 Ludlum 43-93 Static MDC

For the Ludlum 43-93 probe, alpha background is typically less than 3 cpm. 2 cpm will be used in this static MDC estimate. Actual static MDC calculations will be performed once reference area results have been gathered.

For the Ludlum 43-93 probe, the instrument alpha efficiency (ϵ_i) is typically 0.2. The assumed alpha surface efficiency (ϵ_s) for the project will be 0.25.

The probe area (a) for the Ludlum 43-93 is 100 cm².

Plugging these values into the above equation yields:

$$Static\ MDC = \frac{3 + 4.65 \times \sqrt{2}}{0.25 \times 0.2 \times 1 \times \frac{100}{100}} = \frac{192\ dpm}{100\ cm^2}$$

For the Ludlum 43-93 probe, beta background is typically 300 cpm or less. 150 cpm will be used in this Scan MDC estimate. Actual MDC calculations will be performed once reference area results have been gathered.

For the Ludlum 43-93 probe, the instrument beta efficiency (ϵ_i) is typically 0.2. The assumed beta surface efficiency (ϵ_s) for the project will be 0.5. The probe area (a) for the Ludlum 43-37 is 100 cm².

Plugging these values into the above equation yields:

$$\text{Static MDC} = \frac{3 + 4.65 \times \sqrt{150}}{0.2 \times 0.5 \times 1 \times \frac{100}{100}} = \frac{600 \text{ dpm}}{100 \text{ cm}^2}$$

Determining the MDC in counts per minute (cpm) requires knowledge of the survey instrument efficiency, the material source efficiency and the background rates.

Note: These calculations show the capabilities of the selected alpha/beta scintillators. Investigation levels will be set at two sigma above ambient background and are not necessarily based on specific activity limits of a radionuclide (i.e. 1,000 dpm/100cm²).

2.0 – Quality Assurance/Quality Control

The QC program will be maintained throughout field and laboratory work by means of the three phase control process. The QC process encompasses review of project activities by an assigned QA officer at three distinct phases (preparatory, initial, and follow-up). The health physicist (HP) can summarize this process within the DQCRs. The frequency of implementation is specified by each definable feature of work. A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. For this project the following activities are definable features of work:

- Sample location surveys
- Radiological surveys

In addition, the QC process ensures that minimum data reporting requirements are achieved and are implemented according to project requirements.

The preparatory phase consists of an inspection by the HP prior to the start of a definable feature of work. This inspection includes review of all work requirements, physical examination of all required materials and equipment, examination of work areas, and demonstration of all field activities.

2.1 – Objectives

The objective of a QA / QC Plan is to provide guidance during the radiological survey process and to ensure procedures and techniques provide usable and reliable data.

2.1.1 – Data Quality Indicators

The data quality indicators for precision, accuracy, representativeness, completeness, and comparability are established. For this investigation these were established for the field analytes.

- Precision is determined by comparison of replicate values from repeated measurements. The objective is a value of not less than or greater than three standard deviations ($\pm 3\sigma$) from the mean comparison value, which will be derived by making repeated measurements utilizing a check source. The control charts for each instrument will be used to ensure adequate precision is maintained for the field instruments.
- Accuracy is the degree of agreement with the true or known value. The objective is a value of not less than or greater than three standard deviations from the mean comparison value, which will be derived by making repeated measurements utilizing a check source. The control charts for each instrument will be used to ensure adequate accuracy is maintained for the field instruments.

- Representativeness and comparability do not have numeric values. Performance for these indicators was ensured through the selection and proper implementation of systematic sampling and measurement techniques.
- Completeness refers to the portion of the data that meet acceptance criteria and are, therefore, useable for statistical testing. The objective is 90% for this project.

2.2 – Sample Collection

To ensure data of adequate precision is being collected, static measurements will be repeated for 10% of static count measurements performed. Locations for duplicate measurements will be determined during sample collection at locations identified by the Field Team Leader. For example, if a location collects samples down to a depth of 40 feet, there will be 20 two-foot split spoons. There would have been a one-minute integrated count within each of these split spoons so to meet the project precision requirements at least two duplicate counts should be collected per location. NOTE: Not all locations will terminate at the same depth. To be conservative, two duplicate integrated counts should be collected per location.

2.2.1 – Laboratory Quality Assurance

Standard laboratory quality control procedures will be followed for analysis of samples collected during this effort. The identified offsite laboratories (RTI and Pace) will have its own set of QA/QC procedures.

2.2.2 – Chain of Custody

Samples will be recorded on a chain of custody form as soon as collected. The samples will remain in possession of the collector until sealed in a container and shipped to the lab. The container will be sealed using chain of custody seals and tape if not in control of the sampler or the lab. The chain of custody form will be sealed inside the container and will be stored and tracked with the samples until sample disposal.

2.2.3 – Cross Contamination Control

Disposable gloves and other protective apparel as appropriate will be worn. Gloves will be changed after each sample is collected. Personnel will be monitored for contamination using field instruments. Sampling equipment will be one time use or decontaminated with water and wiped dry between samples.

2.3 – Field Measurements

2.3.1 – Instrument Calibration

Current calibration/maintenance records will be kept onsite for review and inspection for all instruments used during the survey.

The records will include, at a minimum, the following:

- Name of the equipment
- Equipment identification (model and serial number)
- Manufacturer
- Data of Calibration
- Calibration Due Date

Instrumentation shall be maintained and calibrated to manufacturer specifications to ensure that required traceability, sensitivity, accuracy and precision of the equipment/instruments is maintained.

2.3.2 – Instrument Checks

Prior to beginning any survey, the operator will perform a pre-operational check that will include background and check source checks (see below).

The following routine checks will be performed on any instruments prior to use:

- Perform battery check.
- Check for broken or frayed cables.
- Take background reading and ensure it is within chart parameters.
- Perform quality control check on meters utilizing a source that emits the same radiation and approximate energy as that of the primary isotope of interest.

2.3.3 – Quality Control Tracking

Prior to the survey, all survey meters will be calibrated and have valid calibration certificates, and if possible, operability checks noted in the instrumentation section. A QC chart will be started.

The QC chart is created by obtaining 20 to 30 data readings with an appropriate check source. The mean and standard deviations for the instrument response will be calculated and plotted. The mean is assumed to be the "true" value. The values for the warning limits (2 sigma) and control limits (3 sigma) are then calculated. The graph will be used to plot the daily operability checks for survey meters operated in the integrate mode. The same procedure will be employed for analog meters. For some analog meters, warning limits may be set at 15% and control limits at 20% of the mean value.

If daily operability checks fall outside the warning limits (but inside the control limits), the operability check should be repeated. If the check falls outside the control limits again, the instrument will be removed from service until it is either repaired, recalibrated, or the cause for the faulty reading is identified. Instruments will also be removed from service and recalibrated whenever a malfunction is suspected. A new QC chart will be started when a meter is recalibrated or repaired.

All daily operability checks (including any outside the warning or control limits) will be recorded in the instrument QA/QC files.

2.3.4 – Instrument Contamination

While performing surveys, the probe may be contaminated, causing the background count rate to increase. If this is suspected, the surveyor will repeatedly clean the detector and repeat the background until the counts fall back within the predetermined rate.

2.4 – Decontamination

Disposable gloves and other protective apparel as appropriate will be worn. Gloves will be changed after each blank sample is collected for wipes samples.

Field equipment will be wiped free of all visible dust, then wiped with a moist cloth, and finally rinsed with distilled or de-ionized water and dried between samples. Sampling equipment will be washed with a non-surfactant soap (e.g., Alconox) and rinsed thoroughly with deionized water after each sample collection.

After work is completed equipment will be monitored with field instruments. Equipment found to be free of detectable contamination will be wipe-tested and analyzed on-site with a swipe counter (Ludlum 2929) to clear the equipment for reuse. During the analysis time equipment will be held in the custody of the HP.

2.5 – Daily Quality Control Reports

DQCRs will be prepared for each day of field work. These DQCRs will be prepared in an electronic format so that they can be transferred by email more to project personnel. Copies of the DQCRs will be sent to the USACE PM on a weekly basis.

DQCRs will serve to document the daily activities occurring on the project. Environmental conditions or observations pertinent to field activities will be documented. In work is performed in a level greater than modified level D, the level of PPE worn at the site for that day will be recorded. A list of team members present and their role on the project as well as visitors to the immediate investigation area will be included. Any meetings or briefings will be summarized. Significant issues will be discussed. Work completed for the day and project will be discussed. Any changes or delays in the project will also be discussed, along with any safety issues that may arise.

2.6 – Corrective Actions

Nonconformance and the subsequent corrective actions allow for the resolution of problems within the project. Any member of the project team may identify nonconformance items. The important step is identifying the nonconformance item and initiating the corrective action procedures that will correct the nonconformance item. The first step is identifying the problem. The next step is to notify the appropriate project team member in the chain of command.

For example, for field activities the HP or field team leader should be contacted immediately. If the HP is able to correct the problem, and the documentation has been completed and the proper procedures have been put in place to prevent a similar problem in the future, the notification of additional project team members is not necessary. However, if the HP cannot resolve the problem, the HP would contact the USACE PM. The USACE PM and HP will discuss alternatives for correcting the noncompliance item or notify other team member to help identify the corrective action. The problem and corrective action will be documented and included in the DQCR. Team members will also be informed of the problem and the corrective actions. These steps will serve to prevent similar problems in future activities.

Attachment 1 – Radiation Survey Standard Operating Procedures

Selection, Calibration, and Use of Survey Instruments

1 PURPOSE

This Radiation Safety Procedure (RSP) describes the requirements for calibration and use of radiation survey instruments and for performing radiological surveillance during the radiological survey.

2 SCOPE

This procedure applies to all instrumentation and detectors used to support the Project.

3 REFERENCES

- American National Standard Institute, "Radiation Protection Instrumentation Test and Calibration," N323A-1997.
- Instrument instruction manuals published by the instrument manufacturers.

4 EQUIPMENT

- Ludlum Model 44-9 Pancake GM w/ Ludlum Model 2241
- Ludlum Model 43-93 Alpha/Beta Scintillator w/ Ludlum Model 2360
- Ludlum Model 2929 Swipe Counter
- Eberline Model SPA-3 Sodium Iodide Detector w/ Ludlum 2241-2
- Thermo Fisher Dose Rate Meter
- Canberra Inspector Model 1000 (sodium iodide – gamma spectroscopy, if needed)
- Quality control (QC) check sources
- Laptop computer

5 PROCEDURE

5.1 Responsibilities

The Project Manager (PM) shall supply adequate resources to ensure compliance with this procedure.

The Lead Health Physicist (Lead HP) shall:

- Assure the adequacy of the radiation survey instrumentation program.
- Ensure current and proper calibration of all radiation detection instruments in the active inventory.

- o Maintain instrument calibration certificates on file for all radiation detection instruments in the active inventory.
- o Assure that all HPs are properly trained in the provisions of this procedure.
- o Verify compliance with this procedure during planned and periodic audits of the radiation protection program.

Health Physicists (HPs) shall:

- o Verify that only calibrated radiation detection instruments are used.
- o Follow this procedure when performing radiological surveillance activities.
- o Periodically review this procedure at least annually.

5.2 Radiation Survey Instruments

Instrumentation used to support the Project radiation protection program shall:

- o Be of sufficient type, sensitivity and accuracy to assess the radiation exposure rates from radioactive materials which may be found at the work location;
- o Detect the presence of radioactive materials on tools, equipment, clothing, and personnel at all levels which may be found at the site; and
- o Be of sufficient quantity to support on-going or planned operations.

NUREG/CR-5849 and MARSSIM describe different methods for determining instrument sensitivity.

The basis for selection of instruments shall include:

- o Type of radiation and energies to be measured or screened.
- o Sensitivity required.
- o Purpose of the survey.

Instruments maintained in the active inventory should be evaluated, tested, and documentation obtained, as appropriate, for the following:

- o Physical construction
- o Effect of shock, sound, vibration, electric transients, RF energy, magnetic fields and high humidity

- o Extent of switching transients, capacitance effects, geotropism and static charge effects
- o Power supply, including stability and battery life
- o Range, sensitivity, linearity, detection limit, and response to overload conditions
- o Accuracy and reproducibility precision
- o Energy dependence
- o Angular dependence
- o Response to ionizing radiation other than those being measured
- o Temperature and pressure dependence on measurements

These tests are normally performed by the manufacturer and credit may be taken for the manufacturer's evaluation and testing. If credit is taken for manufacturer's testing, a copy of the test results, in the form of instrumentation manuals or specification sheets, should be maintained along with instrument records. These results should be requested in the purchase order for each new instrument.

5.3 Instrument Calibration

Instruments shall be calibrated at least once per year or more frequently if so recommended by the instrument manufacturer, and following significant repairs to the ratemeter and/or detector.

Cable and battery changes may not necessitate re-calibration, depending upon whether such action induces response changes.

Each scaler/ratemeter should be calibrated with a specific detector, designated by the detector serial number. The use of a ratemeter with a different detector may constitute the use of an un-calibrated meter. Detectors and ratemeters may be interchanged after verification that instrument settings are compatible, subject to the approval of the Lead HP.

Instruments shall be calibrated according to the guidelines of ANSI-N323A-1997.

All calibration services using radiation sources should be performed with sources that are traceable to the National Institute of Standards and Technology (NIST). A calibration services vendor is not pre-qualified until a copy of all applicable calibration procedures, or a sufficiently detailed summary of procedures has been received and approved.

A Request for Instrument Calibration form, or equivalent form, should be used to schedule calibration services.

A calibration sticker with relevant calibration information should be affixed to the detector for easy reference.

5.4 Reference Source Response

The response of each instrument to a reference source placed in a repeatable position shall be determined and recorded on the calibration label before the instrument is placed into active use and after each calibration.

With the instrument switch position noted, the reference source and detector shall be placed in the reference position and the instrument shall be allowed to stabilize.

A minimum of 20-30 data points shall be acquired and documented on an Instrument Response Check form or equivalent.

Reference sources should be reasonably representative of the radiations expected to be encountered and/or measured during instrument use. For instruments with both a scaler and rate meter mode, data shall be acquired for both modes.

Control levels for meters with digital displays shall be determined as follows:

- The arithmetic mean, standard deviation, and the population range values from the data points shall be determined.
- The mean measurement and the ± 2 standard deviation and ± 3 standard deviation values should be recorded on a label affixed to the instrument, if space is available.

Control levels for meters with analog displays shall be determined as follows:

- The arithmetic mean, the $\pm 10\%$, and the $\pm 20\%$ values from the data points shall be determined.
- The mean measurement, $\pm 10\%$, and the $\pm 20\%$ values should be recorded on a label affixed to the instrument, if space is available.

5.5 Pre-operational Checks

Each instrument shall be labeled with a unique identifier (e.g., serial number of detector and rate meter) to enable traceability to surveys and records.

Prior to each use, or daily when kept in use, each instrument shall be checked for the following, as applicable:

- Ensure battery function is within manufacturer specified tolerance

- To ensure proper operation of the instrument between calibrations, each instrument shall be checked with a source during operation at least daily or prior to each intermittent use, whichever is less frequent.
- If any response of an analog scaler/ratemeter exceeds the mean measurement ± 3 standard deviations of the identified reference value the instrument shall be removed from service.
- If any response of an analog scaler/ratemeter exceeds the mean measurement $\pm 20\%$ of the identified reference value the instrument shall be removed from service.
- Reset Button function.
- Audible response function.
- Physical damage.
- Current calibration sticker
- Response to background radiation.

If it is expected that background readings will vary significantly by location, then response to background radiation should be determined at that location, but not near known radiation sources or radiation-producing machines.

The results of the daily check shall be recorded on the Exposure Rate Survey Instrument Data Sheet or a Contamination Survey Instrument Data Sheet, or equivalent. Examples forms are provided as Attachment 1 and Attachment 2.

Instruments failing any pre-operational check shall be taken out of service, segregated from other instruments, tagged as "out of service", and repaired prior to use. If a documented investigation indicates the instrument is responding appropriately, the Lead health physicist may return it to service.

The detectors shall be verified prior to and periodically during use based on manufacturer requirements.

6 EXEMPTION PROVISIONS

Minor changes to this RSP shall be permitted pursuant to the written authorization of the lead HP.

Procedure to Conduct Surface Alpha/Beta Scans and Fixed Alpha/Beta Measurements

1 PURPOSE

The purpose of this procedure is to provide reference information on surface alpha/beta scans and fixed measurements to be conducted.

2 SCOPE

This procedure applies to all material measurements collected via instrumentation and detectors used to support the Project.

3 REFERENCES

- Ludlum Model 2241 Scaler/Ratemeter Data Logger, October, 2015, Ludlum Measurements, Inc., Sweetwater, TX.
- Ludlum Model 2929 Dual-Channel Scaler, May, 2011, Ludlum Measurements, Inc., Sweetwater, TX.
- Ludlum Model 2360 Scaler/Ratemeter Data Logger Manual, September 2006, Ludlum Measurements, Inc., Sweetwater, TX.

4 DEFINITIONS

- dpm – Disintegration per minute

5 EQUIPMENT

- Ludlum Model 43-93 Alpha/Beta Scintillator w/ Ludlum Model 2360
- Ludlum Model 2929 Swipe Counter
- Ludlum Model 44-9 Pancake GM w/ Ludlum Model 2241
- Eberline Model SPA-3 NaI w/ Ludlum Model 2241

6 PROCEDURE

6.1 General Guidelines and Requirements

A source and background check will be performed on a daily basis prior to, and after, each use. The results of these checks will be documented in the QC section of the field application.

A field source check will also be performed if instrument readings appear to be suspected. The results of these checks will be documented in the field notes.

The sediment will be carefully scanned such that free debris do not become attached to the detector surface.

6.2 Alpha/Beta/Gamma Quality Control Check

The following steps will be performed on a daily basis at the Field Office. This check must be performed at the beginning of each day, prior to use, and at the end of the each day after field activities are completed. Alpha source: Th-230, Beta source: Sr-90, Gamma source: Cs-137.

- Perform a 1-minute QC source check on each instrument and record the readings on the QC Log Sheet in that instrument's section of the QC Log Book (the log book sheets for this detectors should be with the detectors). Note that background will be determined for each building material to be scanned. For the alpha/beta scintillator both alpha and beta readings will be recorded (using Th-230/Sr-90 source). For the bench top alpha/beta counter both the alpha and beta readings will be recorded (using Th-230/Sr-90 source). For the GM detector gross counts will be recorded (using Th-230 or Sr-90 source). For the NaI detector gross counts will be recorded (using Cs-137 source).
- Verify that the alpha/beta or gross readings of the QC source check are within the range QC Limits determined by the Lead HP. Notify the Lead HP if the QC source check readings are outside the QC limits and do not use the instrument until the problem is resolved. If the QC Source check readings are within the QC limits, verify the background check.
- The background check and background determination will be made in accordance with established SOPs.
- Complete the QC check section in the field logbook/laptop.

6.3 Sediment Scanning Survey

Connect the probe and scaler/ratemeter to the data logger and check to assure the system is operating and logging the detector. Turn the instrument on but do not record readings.

Enter the information required to begin scanning, such as the boring location name, number, time, etc. into a project log book and begin scanning.

Scan the sediment identified in the Plan using the GM probe coupled to the scaler/ratemeter and data logger. Scan the sediment surfaces by passing the detector at a rate of approximately 1 inch/second. HPs should note the digital readout on the meter to determine areas with elevated activities (*i.e.*, > investigation level or release criterion, as appropriate).

Delineate the extent of each location with readings > investigation level or release criterion, as appropriate. This is achieved by scanning outward from each of the areas with elevated readings in both directions until a count rate approximately equivalent to the investigation level or release criterion is encountered. When the investigation level or release criterion is encountered the HP shall take a sufficient number of one minute count readings to adequately delineate. This information will be recorded in an Excel file after field work is complete.

6.3 Sediment Integrated Counts

Connect the probe and scaler/ratemeter to the data logger and check to assure the system is operating and logging the detector. Turn the instrument on but do not record readings.

Enter the information required to begin the integrated count, such as the boring location name, number, time, etc. into a project log book and begin scanning.

Place the alpha/beta scintillator and NaI detector close to the sediment at the locations identified in the Plan (determined based on GM scan results). HPs should note the digital readout on the meter and record their values in a logbook. Gross alpha and gross beta readings will be recorded separately for the alpha/beta scintillator and gross gamma counts will be recorded from the integrated count with the NaI detector.

7 EXEMPTION PROVISIONS

Minor changes to this standard operating procedure shall be permitted pursuant to the written authorization of the Lead HP.



**US Army Corps
of Engineers**
Buffalo District

Final Quality Assurance Project Plan

Springville Dam Restoration Project

Sediment Sampling

**Authorized under the
Great Lakes Fishery and Ecosystem Restoration Program
(GLFER)**

**Springville (Scoby) Dam
Springville, New York**

**Prepared by:
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LIST OF ACRONYMS AND ABBREVIATIONS

amsl	Above mean sea level
ASTM	American Society for Testing and Materials
BUD	Beneficial Use Determination
CELRB-PM-PM	Corps of Engineers, Great Lakes and Ohio Rivers Division -Buffalo District- Project Management Division-Project Management Team
CELRB-TD-DC	Corps of Engineers, Great Lakes and Ohio River Division-Buffalo District- Coastal/Geotechnical Team
CELRB-TD-EE	Corps of Engineers, Great Lakes and Ohio Rivers Division-Buffalo District- Technical Services Division-Environmental Engineering Team
CELRB-TD-EH	Corps of Engineers, Great Lakes and Ohio Rivers Division -Buffalo District- Technical Services Division-Environmental Health Team
CELRB-TD-HD	Corps of Engineers, Great Lakes and Ohio Rivers Division -Buffalo District- Technical Services Division-H&H Engineering Team
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Chain-of-custody
COI	Constituent of interest
CSM	Conceptual Site Model
DL	Detection limit
DoD	Department of Defense
DOE	Department of Energy
DQCR	Daily Quality Control Report
DQI	Data Quality Indicator
DQO	Data Quality Objective
DUSR	Data Usability Summary Report
EDD	Electronic Data Deliverable
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FSP	Field Sampling Plan
ft	Feet
GIS	Graphical Information System
GLFER	Great Lakes Fishery and Ecosystem Restoration
GLRI	Great Lakes Restoration Initiative
HAZWOPER	Hazardous Waste Operations and Emergency Response
HTRW	Hazardous, Toxic, Radioactive Waste
IDW	Investigation-Derived Waste
in	inches
LCS	Laboratory control sample (also called a “blank spike”)
LCSD	Laboratory control sample duplicate

LOD	Limit of detection
LOQ	Limit of quantitation
kg	kilogram
MCL	Maximum Contaminant Level
MDA	Minimum Detected Activity
MDC	Minimum Detectable Concentration
MDL	Method Detection Limit
MPC	Method performance criteria
MQO	Measurement quality objective
MS/MSD	Matrix spike/matrix spike duplicate
NA	Not Applicable
NaI	Sodium iodide
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSERDA	New York State Energy Research and Development Authority
PAHs	Polycyclic Aromatic Hydrocarbons
PAL	Project action limit
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity
PCB(s)	Polychlorinated biphenyl(s)
PDF	Portable document format
pH	Potential of Hydrogen
PID	Photoionization detector
PM	Project Manager
PPE	Personal Protective Equipment
PQL	Practical quantitation limit
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual for Environmental Laboratories
RER	Relative Error Ratio
RPD	Relative percent difference
SAP	Sampling and Analysis Plan
SOP	Standard operating procedure
SVOC(s)	Semi-Volatile Organic Compound(s)
TAL	Target Analyte List
TAT	Turn around time
TBD	To be determined
TOC	Total organic carbon
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
ug	microgram

USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOA	Volatile organic analysis
VOC(s)	Volatile Organic Compound(s)
WNYNSC	Western New York Nuclear Service Center
WRDA	Water Resources Development Act
WS	Worksheet
WVDP	West Valley Demonstration Project

INTRODUCTION

This Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) has been prepared by the United States Army Corps of Engineers (USACE) Buffalo District for the field investigation of Springville Dam Ecosystem Restoration Project located south of Springville, NY. The Field Sampling Plan (FSP) and this UFP-QAPP, which is attached as Appendix A to FSP, comprise the Sampling and Analysis Plan (SAP) for this project. Together, these documents define investigation objectives, procedures, and quality assurance and quality control (QA/QC) for this project. The objective of this remedial investigation is to collect, evaluate and characterize dredged material samples from the channel of the Cattaraugus Creek at specific locations of sufficient quality and quantity to determine whether sediments targeted for future removal meet the New York State (NYS) criteria for a positive beneficial use determination (BUD) and thus permitted re-use at an upland or riparian site. The investigation work will be conducted based on the “*Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*” (USEPA, 1988). The investigation is being conducted by the USACE, Buffalo District, in compliance with the “*DoD Environmental Sampling Handbook, Revision 1.0*” (DoD Environmental Quality Workgroup (EDQW), 2013), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Oil and Hazardous Substances Contingency Plan (NCP), and United States Environmental Protection Agency (USEPA) guidance.

Table 1. Crosswalk: UFP-QAPP Workbook to 2106-g-05 QAPP (USEPA 2012)

Optimized UFP-QAPP Worksheets		2106-G-05 QAPP Guidance Section	
1 & 2	Title and Approval Page	2.2.1	Title, Version, and Approval/Sign-Off
3 & 5	Project Organization and QAPP Distribution	2.2.3	Distribution List
		2.2.4	Project Organization and Schedule
4 , 7 & 8	Personnel Qualifications and Sign-off Sheet	2.2.1	Title, Version, and Approval/Sign-Off
		2.2.7	Special Training Requirements and Certification
6	Communication Pathways	2.2.4	Project Organization and Schedule
9	Project Planning Session Summary	2.2.5	Project Background, Overview, and Intended Use of Data
10	Conceptual Site Model	2.2.5	Project Background, Overview, and Intended Use of Data
11	Project/Data Quality Objectives	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
12	Measurement Performance Criteria	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
13	Secondary Data Uses and Limitations	Chapter 3	QAPP ELEMENTS FOR EVALUATING EXISTING DATA
14 & 16	Project Tasks & Schedule	2.2.4	Project Organization and Schedule
15	Project Action Limits and Laboratory-Specific Detection / Quantitation Limits	2.2.6	Data/Project Quality Objectives and Measurement Performance Criteria
17	Sampling Design and Rationale	2.3.1	Sample Collection Procedure, Experimental Design, and Sampling Tasks
18	Sampling Locations and Methods	2.3.1	Sample Collection Procedure , Experimental Design, and Sampling Tasks
		2.3.2	Sampling Procedures and Requirements
19 & 30	Sample Containers, Preservation, and Hold Times	2.3.2	Sampling Procedures and Requirements
20	Field QC	2.3.5	Quality Control Requirements
21	Field Standard Operating Procedures (SOPs)	2.3.2	Sampling Procedures and Requirements
22	Field Equipment Calibration, Maintenance, Testing, and Inspection	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables
23	Analytical SOPs	2.3.4	Analytical Methods Requirements and Task Description
24	Analytical Instrument Calibration	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables

Optimized UFP-QAPP Worksheets		2106-G-05 QAPP Guidance Section	
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection	2.3.6	Instrument/Equipment Testing, Calibration and Maintenance Requirements, Supplies and Consumables
26 & 27	Sample Handling, Custody, and Disposal	2.3.3	Sample Handling, Custody Procedures, and Documentation
28	Analytical Quality Control and Corrective Action	2.3.5	Quality Control Requirements
29	Project Documents and Records	2.2.8	Documentation and Records Requirements
31, 32 & 33	Assessments and Corrective Action	2.4	ASSESSMENTS AND DATA REVIEW (CHECK)
		2.5.5	Reports to Management
34	Data Verification and Validation Inputs	2.5.1	Data Verification and Validation Targets and Methods
35	Data Verification Procedures	2.5.1	Data Verification and Validation Targets and Methods
36	Data Validation Procedures	2.5.1	Data Verification and Validation Targets and Methods
37	Data Usability Assessment	2.5.2	Quantitative and Qualitative Evaluations of Usability
		2.5.3	Potential Limitations on Data Interpretation
		2.5.4	Reconciliation with Project Requirements

QAPP Worksheet #1 & 2: Title and Approval Page
(UFP-QAPP Manual Section 2.1)
(EPA 2106-G-05 Section 2.2.1)

1. Project Identifying Information
 - a. Site name/project name: Remedial Investigation of the Springville Dam Restoration Project
 - b. Site location: Springville, NY
2. Lead Organization - United States Army Corps of Engineers (USACE)
 - a. Project Manager:

Geoffrey Hintz – Buffalo District

- b. Project Hydrogeologist:

William Frederick – Buffalo District

- c. Project Health Physicist

Marc Graham – Buffalo District

- d. Project Environmental Engineer

Scott McCabe – Buffalo District

QAPP Worksheet #3 & 5: Project Organization and QAPP Distribution
(UFP-QAPP Manual Section 2.3 and 2.4)
(EPA 2106-G-05 Section 2.2.3 and 2.2.4)

This project is being conducted by USACE personnel. Subcontractors will be utilized for drilling and laboratory analysis.

A physical copy or electronic version of the Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) will be made available to all field personnel, including subcontractors and other stakeholders.

QAPP Recipients	Title	Organization	Telephone Number	E-mail Address
Geoffrey Hintz	Project Manager	CELRB-PM-PM	716-879-4155	Geoffrey.K.Hintz@usace.army.mil
William Frederick	Hydrogeologist	CELRB-TD-HD	716-879-4243	William.T.Frederick@usace.army.mil
Peter Lorey	Project Chemist	CELRB-TD-EH	716-879-4158	Peter.M.Lorey@usace.army.mil
Karen Keil	Project Risk Assessor	CELRB-TD-EH	716-879-4227	Karen.G.Keil@usace.army.mil
Marc Graham	Project Health Physicist	CELRB-TD-EH	716-879-4362	Marc.S.Graham@usace.army.mil
Scott McCabe	Project Environmental Engineer	CELRB-TD-EE	716-879-4190	Scott.C.McCabe@usace.army.mil
Reed Vetovitz	Geotechnical Engineer	CELRB-TD-DC	716-879-4103	Reed.W.Vetovitz@usace.army.mil
Andrew Lenox	Environmental Engineer	CELRB-TD-EE	716-879-4378	Andrew.M.Lenox@usace.army.mil
Kirsten Scherrer	Environmental Engineer	CELRB-TD-EE	716-879-4281	Kirsten.R.Scherrer@usace.army.mil

QAPP Worksheet #4, 7 & 8: Personnel Qualifications and Sign-off Sheet
(UFP-QAPP Manual Sections 2.3.2 – 2.3.4)
(EPA 2106-G-05 Section 2.2.1 and 2.2.7)

ORGANIZATION: U.S. Army Corps of Engineers (USACE)

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Geoffrey Hintz	Project Manager (PM)	Project Manager	Project Management Professional (PMP)	
Peter Lorey	Project Chemist	Ph.D., chemistry	40-Hour HAZWOPER w/annual refresher, National Registry of Certified Chemists – Environmental Analytical	
Karen Keil	Human Health and Ecological Risk Assessment Lead	Ph.D., environmental toxicology	40-Hour HAZWOPER w/annual refresher	
William Frederick	Hydrogeologist	M.S., Geology	40-Hour HAZWOPER w/ annual refresher, Professional Geologist (P.G.)	
Marc Graham	Project Health Physicist	Health Physicist	40-Hour HAZWOPER w/ annual refresher	
Scott McCabe	Project Environmental Engineer	B.S., Geology	40-Hour HAZWOPER w/ annual refresher, Professional Geologist (P.G.)	
Reed Vetovitz	Geotechnical Engineer	B.S., Geotechnical	Professional Engineer (P.E.)	
Andrew Lenox	Environmental Engineer	B.S., Environmental Engineering	40-Hour HAZWOPER w/ annual refresher	
Kirsten Scherrer	Environmental Engineer	B.S., Environmental Engineering	40-Hour HAZWOPER w/ annual refresher	

ORGANIZATION: Laboratory(ies)

Name	Project Title/Role	Education/Experience	Specialized Training/Certifications	Signature/Date
Chino Ortiz	Chemical Laboratory PM	NA	NA	
Carin Ferris	Radiological Laboratory PM	NA	NA	
TBD (Geotechnical)	Geotechnical Laboratory PM	NA	NA	

*Signatures indicate personnel have read and agree to implement this QAPP as written

QAPP Worksheet #6: Communication Pathways
(UFP-QAPP Manual Section 2.4.2)
(EPA 2106-G-05 Section 2.2.4)

This worksheet (WS) should be used to document specific issues (communication drivers) that will trigger the need to communicate with other project personnel or stakeholders. Its purpose is to ensure there are procedures in place for providing the appropriate notifications and generating the appropriate documentation when handling important communications, including those involving regulatory interfaces, unexpected events, emergencies, non-conformances, and stop-work orders. Examples are provided below; additional drivers may be added as needed.

Communication Driver	Organization	Name	Contact Information	Procedure (Timing, Pathway, Documentation, etc.)
Contractual updates including milestones and schedule	CELRB-PM-PM	USACE PM Geoffrey Hintz	716-879-4155 Geoffrey.K.Hintz@usace.army.mil	Monthly reports, including schedule updates, are subject to PM review. PM for USACE will coordinate all project correspondence with the contractors.
Communication of new USACE directives	CELRB-TD-HD	William Frederick	716-879-4243 William.T.Frederick@usace.army.mil	USACE guidance and interaction for project team.
Contractor project management needs; field progress reports	CELRB-PM-PM	USACE PM Geoffrey Hintz	716-879-4155 Geoffrey.K.Hintz@usace.army.mil	Overall project management actions coordinated with the PM. The PM will maintain lines of communication among USACE, regulatory, stakeholders, and contractors.
Stop work due to safety issues	USACE	See Field Sampling Plan (FSP)	See FSP	All employees on site have stop-work authority. The Designated Site Safety Representative has overall authority for safety on site, and is responsible for ensuring all employees and subcontractors follow applicable safety plans.
QAPP changes prior to fieldwork and during project execution	CELRB-TD-EH	Peter Lorey	716-879-4158 Peter.M.Lorey@usace.army.mil	QAPP changes following QAPP approval will be documented and reasons for the change will be clearly communicated to the client by the PM within 24 hours of receipt of information justifying the change.
Field corrective actions	CELRB-TD-EH	Marc Graham	716-879-4362 Marc.S.Graham@usace.army.mil	The field lead will determine the need for field corrective actions. Any corrective actions will be communicated to the USACE PM within 24 hours.

Communication Driver	Organization	Name	Contact Information	Procedure (Timing, Pathway, Documentation, etc.)
Field implementation	CELRB-TD-EE	Scott McCabe	716-879-4190 Scott.C.McCabe@usace.army.mil	Prepare Quality Control Reports, implement Final UFP-QAPP in the field, identify field discrepancies, and prepare field documentation.
Sample receipt variances / Laboratory quality control variances	Laboratory	Chino Ortiz	734-422-8000, ext. 303 cortiz@rtlab.com	The laboratory PM will communicate any sample receipt issues immediately via phone or e-mail to the Project Chemist. If the issue requires action, the Project Chemist will consult with the PM, who will work with the Technical Manager to address any related field issues. Quality assurance (QA) /quality control (QC) issues will be reported to the Project Chemist. The Project Chemist will work with the laboratory to identify the issue and possible solutions; this information will be communicated immediately to the PM and Technical Manager.
Analytical corrective actions	Laboratory	Chino Ortiz	734-422-8000, ext. 303 cortiz@rtlab.com	Analytical corrective actions will be made by laboratory personnel. Any action affecting data quality, turnaround-time, or data reporting will be communicated by the laboratory analysts to the laboratory PM, who will in turn communicate will the Project Chemist via e-mail or phone immediately upon identification of the issue. All issues will be documented and communicated by the Project Chemist to the Technical Manager and PM immediately.
Data verification or validation issues (e.g., incomplete records)	CELRB-TD-EH	Peter Lorey	716-879-4158 Peter.M.Lorey@usace.army.mil	Under the direction of the Project Chemist, data will be verified in as close to real time as possible. The Project Chemist will coordinate between the subcontract laboratory and project team to resolve any discrepancies. The Project Chemist will immediately contact the laboratory PM upon identification of noncompliant laboratory actions. The Technical Manager will be notified of any laboratory noncompliance and the impact on project objectives within 24 hours.

QAPP Worksheet #9: Project Planning Session Summary
(UFP-QAPP Manual Section 2.5.1 and Figures 9-12)
(EPA 2106-G-05 Section 2.2.5)

Date of planning session: various conference calls and follow-up email communications/various dates

Location: Buffalo District & additional phone conferences/emails

Purpose: project planning/ related activity discussions

Participants:

Name	Organization	Title/Role	Email/Phone
Geoffrey Hintz	CELRB-PM-PM	Project Manager	See WS#3&5
Peter Lorey	CELRB-TD-EH	Project Chemist	See WS#3&5
Karen Keil	CELRB-TD-EH	Project Risk Assessor	See WS#3&5
William Frederick	CELRB-TD-HD	Hydrogeologist	See WS#3&5
Marc Graham	CELRB-TD-EH	Project Health Physicist	See WS#3&5
Scott McCabe	CELRB-TD-EE	Project Environmental	See WS#3&5
Reed Vetovitz	CELRB-TD-DC	Geotechnical Engineer	See WS#3&5
Andrew Lenox	CELRB-TD-EE	Environmental Engineer	See WS#3&5
Kirsten Scherrer	CELRB-TD-EE	Environmental Engineer	See WS#3&5

QAPP Worksheet #10: Conceptual Site Model
(UFP-QAPP Manual Section 2.5.2)
(EPA 2106-G-05 Section 2.2.5)

10.1 Site History

Construction of the Springville Dam began in 1921. The dam began producing power in 1926, and continued until it was decommissioned in 1997 due to the costs required to upgrade and relicense the facility.

Since the cessation of power generation, significant sediment has accumulated behind the dam, which is located 5.9 miles downstream from the West Valley Demonstration Project (WVDP), which is operated by the United States Department of Energy (DOE) within the greater Western New York Nuclear Service Center (WNYNSC) owned by New York State Energy Research and Development Authority (NYSERDA). The federal government licensed facility reprocessed nuclear fuel from 1966 to 1972. In 1982, a plume was discovered from a leak within the main process building that dated to approximately 1969. The dam pool area was sampled by numerous federal and state agencies over a 25-year period after the WVDP began. The WVDP has undergone significant environmental remediation and operational improvements since 1982 and thus is not a large-scale contributor of radiochemical contaminants to the environment.

10.2 Overview of Regulatory Framework

The USACE is the lead Federal agency for the Springville Dam Ecosystem Restoration Project, and chose to investigate sediment quality using means and methods from the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300). The New York State Department of Environmental Conservation (NYSDEC) BUD permit process is the driving guidance to define the reusability of sediment behind the dam.

10.3 Previous Investigations

The USDOE-sponsored environmental monitoring program for the West Valley Demonstration Project (WVDP) and the NYS Department of Health (NYSDOH) periodically sampled the sediments behind the Springville Dam for over 25 years and 10 years, respectively. The results are summarized in the 2010 WVDP Annual Site Environmental Report (DOE 2011) and more comprehensively evaluated in the 2012 USACE Phase I Environmental Site Assessment that can be found in Appendix 4 of the Detailed Project Report (USACE 2015). In addition to the routine WVDP-centric sampling, sixteen (16) surface-sediment locations were sampled by USACE in 2007 for a wide array of chemical constituents, radionuclides, and metals. No evidence of contamination above human-health risk levels was encountered (USACE 2015 included these data).

The USACE collected 22 sediment samples during 2011 in the Cattaraugus Creek using a vibracore, hand-auger, and ponar grab. Thirteen (13) surface sediment samples collected via ponar for grain-size analyses included locations that extended from the Town of Gowanda up-stream through the Springville Dam area and up to the Route 219 Bridge. Sample locations for chemical and radiological constituents suffered from poor sample recovery using vertical vibracore drilling due to coarse-grained textures, so only one finer-grained sample was analyzed for organochlorine pesticides, PCBs, chlorinated herbicides, corrosivity, ignitability, reactivity of sulfide and cyanide, metals, semi-volatile organic compounds (SVOCs), percent moisture, TOC, and radiological analyses. The resulting reports concluded that the dam sediments are not an

ecologic or human-health risk to the construction worker that would perform the dam modifications.

10.4 Sources of Known or Suspected Hazardous Wastes

The dam is downstream of a rural watershed that also contains the WNYNSC, where the USDOE is conducting the WVDP. Consequently, sediment samples will be analyzed for chemical, radiological, and physical parameters. No other large-scale institutional complexes exist in the upper watershed, which is mainly small commercial facilities and agriculture.

10.5 Known or Suspected Contaminants or Classes of Contaminants

The resulting reports concluded that the dam sediments are not an ecologic or human-health risk to the construction worker that would perform the dam modifications. Based on historical information and geomorphic dynamics, the USACE does not believe chemical or radiological impacts exist in the sediments.

10.6 Primary Release Mechanism

Sediment was identified as a medium of concern in Cattaraugus Creek behind the Springville Dam. USACE requires physical and chemical sediment data to petition the NYSDEC for a BUD that will allow excavation and re-use of approximately 20,000 cubic yards of excess sediment.

10.7 Fate and Transport Considerations

Potential sediment contamination behind the Springville Dam migrated from the WNYNSC downstream via Cattaraugus Creek to the Springville Dam.

10.8 Potential Receptors and Exposure Pathways

The sediment is planned to be excavated and re-used for Springville dam modifications after the BUD. Receptors would be the construction worker and recreational user where sediment may be located.

10.9 Land-Use Considerations

The construction worker was selected to be the critical group since they were the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

10.10 Site Characteristics

Structure

The dam is constructed of an earth embankment with a concrete core wall and a concrete ogee spillway. There is an intake flume, forebay, powerhouse, and a tail race located at the east end of the spillway. The overall length of the dam is approximately 388 ft.

An earth embankment with a 1.5-foot ([or feet] ft) thick concrete core wall extends from the forebay to the east abutment and from the west end wall to the west abutment. The core wall is approximately 2.5 ft higher than the top of the earth fill. According to the design information, the core wall is founded in rock, and existing embankments from a previous dam were used as berms. The east embankment and core wall extends 118.5 ft at elevation 1105.6 ft above mean sea level (amsl) and include is a 17.8 ft opening to permit vehicle passage. The opening can be covered with flashboards to an elevation of 1103.8 ft amsl. The side slope of the valley at the east abatement is 1V:1.5H. The west embankment and core wall extends 44.5 ft at elevation 1107.4 ft amsl. A level section of embankment extends another 15.0 ft before intersecting the 1V:1.5H valley side slope.

The intake flume, forebay, powerhouse, and tailrace are located at the east end of the spillway. The intake flume is 11.0 ft wide, contains a trash rack at the upstream end, and a stop log at the downstream end where it connects to the forebay. The forebay is 43.5 ft long, 13 ft wide at the upstream end, and 15 ft wide at the downstream end. The 12.2 ft long by 31.5 ft wide distribution chamber feeds two 6.0 ft diameter tubes that fed two turbines. These tubes are equipped with butterfly valves. The tailrace is 28.8 ft wide at the downstream end of the powerhouse and tapers to 15.0 ft a point 40.0 ft downstream.

The concrete ogee spillway section is 182.0 ft long and 15 ft high. There are three 5.0 ft by 6.0 ft wide openings in the spillway at the apron elevation of 1069.4 ft amsl. These openings were originally covered by wood beams/gates. Once a year, during summer months, the reservoir was drained, and the sediment was washed downstream by setting off a charge of dynamite in each of the sluices. Around 1984, the three sluice openings were altered to include two mechanical steel gates, while the eastern-most gate remained an original wooden gate. During the summer months when the yearly sediment washout occurred, flashboards were also placed across the crest of the spillway to increase the operating head in the reservoir by 33 inches (in). The flashboards were attached to pipes that were designed to bend when presented with debris, ice, etc.

Geology

Geologic information indicates that the stratigraphy in Southern Erie County consists of relatively undeformed flat-lying sedimentary rocks of Upper Devonian Age (375-345 million years ago). The bedrock formations are interbedded shales and limestones of the Canadaway Group, Gowanda Shale Member. The bedrock is an interbedded gray to black silty shale, and thin to thick bedded light gray siltstone forming a homocline, which dips southward to southwestward approximately 40 feet per mile. Small terraces and low folds locally modify this dip to essentially flat-lying over short distances. Only minor folding and faulting are found in the region with no major or active faults known to exist in the area. The Village of Springville and the Springville Dam are in the region classified as Zone 1 seismicity, where ground acceleration is rated as 0.075g.

Glaciation of the area was extensive. During the glacial period (Pleistocene Epoch), spanning about 1.5 million years, the area was over-ridden many times by a thick continental ice sheet moving southward over the region, from Quebec and Ontario, eroding the rock by streams flowing from the former ice sheets. Coarse alluvium is deposited in coalescent aprons near the ice sheet, and/or as valley trains, where streams drain freely from the glacier margin. In recent times, these glacial deposits are infiltrating the valleys with alluvial material eroded from the uplands.

Bedrock at the site consists of a mixture of siltstones and silty shales. The rock is medium hard, thinly to very thinly bedded, fine grained, medium gray to gray-green, highly fissile shale/siltstone mixture with abundant zones of argillaceous rock. At the powerhouse, there is a horizontal seam approximately 3 ft above the water surface. The seam is open and moderately weathered with rust precipitation staining the rock. Minor weeps exit the seam in isolated areas.

Hydrology, Hydraulics, and Fluvial Geomorphology

The dam is situated within the Cattaraugus Creek watershed area, an area that is located primarily within Cattaraugus, Erie, Wyoming, Alleghany, and Chautauqua counties and encompasses an area of approximately 558 square miles; the sub-drainage area upstream of the dam is 280 square miles. The stream flow at the dam runs from south to north and ultimately drains into Lake Erie to the west. The topography of the watershed is rolling plateau with woods and pastures; tributaries commonly drain upland plateaus via incised stream networks, this sediment delivery to the lower tributaries and main stem is common.

Although over half the watershed is occupied by natural land cover, the large portion of agricultural land within watershed (~35%) has altered the flow dynamics of Cattaraugus Creek. This, coupled with the high erodibility of soils in the watershed, contributes to a high degree of erosion and sedimentation that can cause

problems in the developed parts of the watershed. While likely intensified by agricultural land, Cattaraugus Creek naturally carries a high sediment load and has a channel that frequently reorients itself. The Springville Dam alters the natural sediment dynamics of Cattaraugus Creek by blocking and trapping sediment at its dam pool. The presence of the dam has resulted in conversion of lotic riverine system upstream of the dam into a lentic dam pool by significantly reducing flow for some distance upstream. This has resulted in the accumulation of bedload material in the stream channel and in the dam pool. As a result, the creek immediately downstream of the dam is sediment starved, a factor that may contribute to bank erosion and scour downstream of the dam. Until the mid-1980's, dam operators opened sluice gates periodically to allow accumulated sediments to pass downstream. This has not been done since 1995 and it appears that the dam pool may be reaching capacity, causing sediment to pass over the dam as it overtops.

10.11 Nature and Extent of Contaminations

Although the USACE sampling had limited vertical extent (0 to 18 inches), the 25 years of sediment sampling by the USDOE and NYSDOH brackets a wide array of depositional conditions that occurred after sediments were sluiced routinely from the dam pool by the Village of Springville. The sediment data reflect post-sluicing conditions and span nearly 25 years of differing depths of new sediments (i.e., temporal data reflect different depths or provide a surrogate for depths). In addition, the sluicing observations indicate that deeper sediments are intertwined with historical dam structures (wooden cribbing) and historical aerial photos indicate the sediments behind the dam were established within 20 years after installation (by 1950s). Consequently, the sediments behind the dam reflect very recent deposition (since 1996) or older deposition (pre-1950s and pre-WDVP) that reflect an agricultural basin. This is supported by geotechnical borings installed in 2014, which showed sediment-texture variability and no un-natural (above background) radioactivity using alpha-beta and beta-gamma detectors. The locations of sediment sampling completed by USACE, NYDOH, and USDOE ranged from approximately 0.75 miles downstream to approximately 2 miles upstream of the Springville Dam. The compendium of sampling data do not indicate sediments behind the dam are a risk to the construction worker or recreational user (USACE 2015).

10.12 Corrective Measures

This project will include sediment sampling from behind the Springville with care taken to ensure that activities do not increase contamination in the surrounding environment.

10.13 Data Gaps and Uncertainties

During the USACE Phase I environmental site assessment sampling event, site conditions did not allow sample collection below 18 inches of sediment surface in the dam pool due to vibro-core refusal. The lack of deeper sediment samples was not considered a data gap in the ESA because sediments upstream of the dam are also more recently deposited as a result of the yearly opening of the dam sluices that occurred until the mid-1980's (and once in 1995), allowing accumulated sediments to pass downstream. As the dam is in a rural (unindustrialized) watershed, the risk of hazardous contamination below 18 inches is considered to be negligible and does not warrant further investigation. However, to comply with the need for a case-specific NYSDEC BUD, the USACE will sample sediments behind the dam to bedrock.

QAPP Worksheet #11: Project/Data Quality Objectives
(UFP-QAPP Manual Section 2.6.1)
(EPA 2106-G-05 Section 2.2.6)

11.1 State the Problem

The Great Lakes Fishery and Ecosystem Restoration (GLFER) program enables USACE to utilize its planning, design, and construction expertise for projects to restore the Great Lakes fishery and ecosystems. The U.S. Army Corps of Engineers also participates in the USEPA Great Lakes Restoration Initiative (GLRI), both of which support the restoration of riverine access for migratory fish species at fish-passage barriers. The approximately 34 mile reach of Cattaraugus Creek between Springville Dam and Lake Erie has limited spawning habitat in the main stem of the creek. Approximately 27 miles of suitable fish spawning habitat in the tributaries to this section of Cattaraugus Creek currently provide important spawning habitat for a number of Lake Erie fish species, including a number of native and high value naturalized fish species. Due to the presence of the 40-foot high, 338-foot long Springville Dam, fish species are blocked from gaining access to an additional 70 miles of high quality spawning waters upstream of the dam. Populations of native and high value naturalized fish species are anticipated to develop and/or improve in areas upstream of the dam if connectivity is restored. Other negative effects of this impoundment include altered sediment transport dynamics and loss of riverine hydraulics. These disturbances have resulted in a decline of fish, mussel, and macroinvertebrate species richness and abundance as inferred from a comparison of above vs. below dam conditions. The NYSDEC has requested assistance under Section 506 of the Water Resources Development Act (WRDA) of 2000 from USACE for improving environmental quality and fisheries restoration in Cattaraugus Creek and Lake Erie.

Construction of the Springville Dam began in 1921. The dam was utilized as a power producing facility starting in 1926 until it was decommissioned in 1997 due to the costs required to upgrade and relicense the facility. USACE requires sediment data to perform a BUD that will allow targeted excavation and re-use of approximately 20,000 cubic yards of sediment from behind the dam. The sediment sampling behind the Springville Dam on Cattaraugus Creek will support the construction of dam modifications that will expand fisheries in the upper Cattaraugus Creek system.

Due to lack of maintenance, significant sediment has accumulated behind the dam which is located 5.9 miles downstream from the WVDP. Surface water flows to Buttermilk Creek and then to Cattaraugus Creek. Historical discharges from the WVDP (1966-1972) may have impacted sediment in the creeks. This concern is the primary reason for sampling dam sediments. The WVDP has undergone significant environmental remediation and operational improvements since 1982 and thus is not a large-scale contributor of radiochemical contaminants to the environment.

11.2 Identify the Goals of the Study

The purpose of the sediment sampling is to characterize sediment from behind the dam and in the channel of the Cattaraugus Creek. This is necessary in order to determine whether the approximately 20,000 cubic yards of sediment targeted for removal meet the NYS criteria for a positive BUD and thus re-use at a nearby site. This action supports the construction of dam modifications that will expand fisheries in the upper Cattaraugus Creek system. This UFP-QAPP has been prepared primarily to develop data quality objectives (DQOs) in support of the sediment characterization.

11.3 Identify Information Inputs

Information inputs for this project include on-site assessment and screening by experienced personnel during field activities, results of the analysis of sediment concentrations and removal of sediment debris to determine appropriate disposal.

11.4 Define the Boundaries of the Study

The boundaries of this project are defined within the footprints of the sediment accumulation in the Cattaraugus Creek. No resource constraints (boundaries) are anticipated for implementation of this UFP-QAPP. The temporal boundaries of this project are identified in WS #14/16.

11.5 Develop the Analytic Approach

Sampling results will be compared to risk-based criteria developed to protect human health and the environment, which are identified in WS #15.

11.6 Specify Performance or Acceptance Criteria

Hypothesis testing will not be used. Data quality will be determined through the use of the Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity (PARCCS) parameters.

The purpose of establishing decision-error tolerances is to set a limit (i.e., control) on the degree of uncertainty with which the decision is made and avoid, to the extent possible, the consequences of making an incorrect decision. To determine decision-error tolerances, potential sources of error must be identified and evaluated for the likelihood that an incorrect decision may result. Decision error can be minimized and controlled, but never totally eliminated. That is, decisions are made based on known, reliable, and reproducible data in which the opportunities for introducing unpredicted error are minimized to the degree possible. Establishing acceptable decision-error tolerances minimizes the three types of error listed below:

- **Sampling design error** occurs when the sampling design does not account for the natural variability in the true state of the environment (i.e., does not produce representative data).
- **Measurement error** occurs as a result of random and systematic errors that are inherent in each step of the data production process, including sample collection, preparation and analysis, and data reduction, handling, and reporting.
- **Total study error** is a function of both sampling design and measurement error combined.

Measurement Quality Objectives (MQOs) are project-specific, analytical parameters derived from project-specific Data Quality Objectives (DQOs). MQOs include the Quality Assurance (QA) activities that will be conducted during the project, and Quality Control (QC) acceptance criteria for the data quality indicators (DQIs). MQOs establish the minimum for analytical performance parameters (i.e., serve to specify how good data must be) derived from the level of performance needed to achieve the project goals (as expressed in the DQOs). Project MQOs are not intended to be technology- or method-specific, and generally will not specify the methods by which the data are generated. MQOs consist of QA activities (i.e., calibration, data assessment and reporting, preventive maintenance, and corrective action), DQIs, and QC acceptance criteria. MQOs are presented in WS #s 12 and 28.

Measurement Performance Criteria (MPC) may be general or specific criteria (such as QC method acceptance limits) that are used by a project to judge whether a laboratory can perform a specified activity to the defined standard. Establishing QC acceptance criteria for the MPCs sets quantitative goals for the quality of data generated in the analytical measurement process or measurement systems (USEPA 2006). MPC for this project are based upon DoD Quality Systems Manual for

Environmental Laboratories (QSM), Version 5.0 limits. Specific MPC are presented in WS #s 12 and 28. Calculations to determine if MPC have been achieved are as follows:

Relative percent difference (RPD) for duplicate samples will be calculated as shown below:

$$RPD = \frac{(|X1 - X2|)}{\left(\frac{X1 + X2}{2}\right)} * 100$$

Where:

X1 and X2 = the two replicate values

If the RPD criteria for field duplicate samples are not achieved, field sampling procedures will be reviewed with sampling personnel. If these values are not achieved for laboratory duplicates, laboratory corrective action may be needed. Sample data will be qualified, as appropriate for outlier values.

In general, accuracy will be measured in terms of percent recovery as shown below:

$$\%R = \frac{(|SSR - SR|)}{SA} * 100$$

Where:

SSR = measured value of the spiked sample

SR = measured value of the unspiked sample

SA = known amount of the spike in the sample

Completeness, as defined in WS # 34 will be calculated as shown below:

$$\%C = \frac{V}{N} * 100$$

Where:

V = number of measurements judged value

N = total number of sample results

QC Acceptance Criteria are method-specific and technology-specific protocols and specifications that demonstrate that data of known and sufficient quality are generated. QC acceptance criteria include specific limits for sensitivity, recovery, memory effects, limit of quantitation (LOQs), repeatability, and reproducibility. These are designed such that if they are consistently met, the project MQOs will be achieved, and the resulting data will be sufficient to meet the project DQOs and support the project decisions.

Laboratory detection limits (DLs), Limits of Detection (LOD), and LOQs are to be compared to project action limits (PALs) and determined to be usable for project purposes; relevant details are presented in WS# 15. Applicable DoD QSM criteria were assessed and determined to be acceptable for controlling bias; relevant details are presented in WS#s 12 and 28.

If a data validator applies professional judgment to determine that any of the described criteria do not apply, reasoning will be clearly and concisely documented in the validation report.

11.7 Develop the Detailed Plan for Obtaining Data

The FSP, Sections 4.0 and 8.0, and Appendix B, provide the details on the sampling design and rationale. See also **WS #17**.

QAPP Worksheet #12: Measurement Performance Criteria
(UFP-QAPP Manual Section 2.6.2)
(EPA 2106-G-05 Section 2.2.6)

Measurement performance criteria (MPC) are established for each of the data quality indicators (DQIs) to ensure that the data satisfy project specific DQOs.

Laboratory QC includes method blanks, and may include instrument blanks. As appropriate to the methodologies, laboratory QC may also include laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), laboratory duplicates, LOD and LOQ verification samples, and chemical surrogates.

Field Duplicates

Field duplicates will be collected for all parameters at a rate of 1 per 10 field samples, if possible, as determined by the field crew. Field duplicates are submitted “blind” to the laboratory. Field duplicates are collected for all analyses except geotechnical.

MS/MSDs

Triplicate volume for matrix spike and matrix spike duplicate (MS/MSD) analysis may be collected at a rate of 1 per 20 field samples at the discretion of the field crew. Samples selected for MS/MSD analyses will be indicated on the comment line of the Chain-of-Custody (COC).

Equipment Blanks

If disposable equipment is used, no equipment blanks are needed. If equipment blanks are required, they will be collected by running clean rinse water over clean, decontaminated equipment.

Matrix: Sediment

Analytical Group or Method: Gamma Spectroscopy Suite by HASL 300 Gamma Spectral Method GA-01-R (EPA 901.1 Equivalent)

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (laboratory)	LCS	Percent Recovery – use laboratory default limits
Analytical Precision (laboratory)	LCS Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ minimum detected activity (MDA)
Sensitivity	LOQ Verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Strontium-90 by ASTM C1507-07e1 or EPA 905.0

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (laboratory)	LCS	Percent Recovery – use laboratory default limits
Analytical Precision (laboratory)	LCS Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ LOQ
Sensitivity	LOQ Verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Isotopic Plutonium (Pu-238, Pu-239/240) and Uranium (U-232, -234, -235, -238) by HASL 300 Alpha Spec

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (laboratory)	LCS	Percent Recovery – use laboratory default limits
Analytical Precision (laboratory)	LCS Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ MDA
Sensitivity	LOQ Verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Gross Alpha and Gross Beta by EPA 900.0/9310

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (laboratory)	LCS	Percent Recovery – use laboratory default limits
Analytical Precision (laboratory)	LCS Duplicates	$RER \leq 1$ (2σ)
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ LOQ
Sensitivity	LOQ Verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: TAL Metals (23 Analytes), by 6010, 7471

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 20%
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery- see DoD QSM Appendix C, Tables 3 and 11
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 20%
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: VOCs by 8260C

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 30%
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – see DoD QSM Appendix C, Table 23
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 20%
Analytical Accuracy/Bias (matrix interference)	MS	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: SVOCs by 8270D

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RPD \leq 25\%$
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – see DoD QSM Appendix C, Table 25
Analytical Precision (laboratory)	LCSD	$RPD \leq 20\%$
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Pesticides by 8081B

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	$RPD \leq 30\%$
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – see DoD QSM Appendix C, Table 15
Analytical Precision (laboratory)	LCS Duplicates	$RPD \leq 30\%$
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq \frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Herbicides by 8151A

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 30%
Analytical Accuracy/Bias (laboratory)	LCS	Percent Recovery – see DoD QSM Appendix C, Table 21
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 30%
Analytical Accuracy/Bias (matrix interference)	MS	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: PCBs (Aroclors) by 8082

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 30%
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – see DoD QSM Appendix C, Table 17
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 30%
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Total Cyanide by 9012

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 20%
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – see DoD QSM Appendix C, Table 38
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 20%
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

Matrix: Sediment

Analytical Group or Method: Total Organic Carbon (TOC) by 9060

Concentration Level: Low-Medium

Data Quality Indicator (DQI)	QC Sample or Measurement Performance Activity	Measurement Performance Criteria (MPC)
Overall Precision	Field Duplicates	RPD $\leq$ 30%
Analytical Accuracy/Bias (laboratory)	LCS/LCSD	Percent Recovery – use laboratory default limits
Analytical Precision (laboratory)	LCSD	RPD $\leq$ 30%
Analytical Accuracy/Bias (matrix interference)	MS/MSD	Same as LCS
Overall Accuracy/Bias (contamination)	Method/Field Blanks	No target analyte concentrations $\geq$ $\frac{1}{2}$ LOQ
Sensitivity	LOQ verification sample	75-125%
Completeness	See Worksheet #37	90%

QAPP Worksheet #13: Secondary Data Uses and Limitations
(UFP-QAPP Manual Section 2.7)
(EPA 2106-G-05 Chapter 3: QAPP Elements for Evaluating Existing Data)

Data type	Source	Data uses relative to current project	Factors affecting the reliability of data and limitations on data use
Previous sampling locations	Phase I Environmental Site Assessment of the Springville (Scoby) Dam (USACE, 2015)	Sampling locations of all USACE, NYDOH, and USDOE sampling sites at Springville Dam to determine future delineation sampling points and site risks.	None
2007 Sediment Sampling	Phase I Environmental Site Assessment of the Springville (Scoby) Dam (USACE, 2015)	Use historical sampling data to determine future delineation sampling points.	None
September 2011 Sediment sampling	Field Sampling and Data Report (SOMAT, 2012)	Sediment data and sampling locations to determine future delineation sampling points.	None
1983-2007 Biological Sampling	Phase I Environmental Site Assessment of the Springville (Scoby) Dam (USACE, 2015)	Presence of radiological constituents in historical fish fillet samples.	Biological sample data, not sediment
Meteorological	National Weather Service	Estimations of seasonal fluctuations in storm runoff.	Published data available. No known limitations.
Topographic	United States Geological Society (USGS)	Surface water drainage pathways.	No known limitations.

QAPP Worksheet #14/16: Project Tasks & Schedule
(UFP-QAPP Manual Section 2.8.2)
(EPA 2106-G-05 Section 2.2.4)

USACE is conducting sediment sampling for the Springville Dam Project. Project tasks are described below.

Prepare site-specific Field Sampling Plan for review and acceptance as follows:

- Sampling Plan including all details for performing the sampling and data analysis
- Attachments including a Field Sampling Plan (FSP), UFP-QAPP, a radiologic scanning plan, and a drilling contractor Safety and Health Plan (SHP)

Mobilize to the site. Confirm/correct initial assumptions as practicable.

Perform fieldwork as follows:

- Drilling and continuous sampling of 13 to 18 borings in either submerged or saturated conditions and provide sediment samples for analytical processing
- Geologically log the retrieved sediment
- Provide and stage storage containers (RC drums or alike) for sediment IDW during the lab analysis period
- Record a daily activity log and coordinate for concurrences
- Radiologically and chemically field scan the sediment cores
- Composite the sediment samples per the SAP
- Provide the drilling contractor an aliquot for grain-size analyses
- Ship to the laboratory under chain of custody protocols

Draft Schedule:

A proposed project schedule is presented in the 2018 Project Management Plan (PMP).

QAPP Worksheet #15: Project Action Limits and Laboratory-Specific Detection/Quantitation Limits
(UFP-QAPP Manual Section 2.6.2.3 and Figure 15)
(EPA 2106-G-05 Section 2.2.6)

The laboratories to be used for this project are RTI Laboratories (Livonia, MI) and Pace Analytical (Greensburg, PA). Preliminary data will be reviewed to confirm that laboratory practical quantitation limits (PQLs) are less than PALs.

PALs for this project are:

- Sediment: Promulgated or guidance-based Concentrations or Site-Specific Background Levels (See Table 3 in the FSP for the applicable criteria)

If necessary, dilutions due to sample matrix issues or analytes present at high concentrations are such that PQLs are not less than PALs, nondetect results for the affected analytes will be reported to the lowest possible value and noted in the validation report. For detected analytes, this is not applicable. Laboratory-specific quantitation limits are usually determined in reagent water and clean sand; therefore, the Project Quantitation Limit Goal (matrix-specific quantitation limit) will usually be higher. Explanations will be provided in cases where the quantitation limit is greater than either the project quantitation limit goal or the PAL. The laboratory-specific quantitation limit cannot be lower than the lowest calibration standard for any given method and analyte.

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
8260C	VOCs	1,1,1,2-Tetrachloroethane	630-20-6				0.6	1	ug/kg	RTI
8260C	VOCs	1,1,1-Trichloroethane	71-55-6	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,1,2,2-Tetrachloroethane	79-34-5				0.6	1	ug/kg	RTI
8260C	VOCs	1,1,2-Trichloroethane	79-00-5				0.6	1	ug/kg	RTI
8260C	VOCs	1,1-Dichloroethane	75-34-3	19	10	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,1-Dichloroethene	75-35-4	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,1-Dichloropropene	563-58-6				0.6	1	ug/kg	RTI
8260C	VOCs	1,2,3-Trichlorobenzene	87-61-6				0.6	1	ug/kg	RTI
8260C	VOCs	1,2,3-Trichloropropane	96-18-4				0.6	2	ug/kg	RTI
8260C	VOCs	1,2,4-Trichlorobenzene	120-82-1				0.6	2	ug/kg	RTI
8260C	VOCs	1,2,4-Trimethylbenzene	95-63-6				0.6	1	ug/kg	RTI
8260C	VOCs	1,2-Dibromo-3-Chloropropane	96-12-8				1	2	ug/kg	RTI
8260C	VOCs	1,2-Dibromoethane	106-93-4				0.6	1	ug/kg	RTI
8260C	VOCs	1,2-Dichlorobenzene	95-50-1	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,2-Dichloroethane	107-06-2	2.3	1.15	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,2-Dichloropropane	78-87-5				0.6	1	ug/kg	RTI
8260C	VOCs	1,3,5-Trimethylbenzene	108-67-8				0.6	1	ug/kg	RTI
8260C	VOCs	1,3-Dichlorobenzene	541-73-1	17	8.5	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	1,3-Dichloropropane	142-28-9				0.6	1	ug/kg	RTI
8260C	VOCs	1,4-Dichlorobenzene	106-46-7	9.8	5	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	2,2-Dichloropropane	594-20-7				0.6	1	ug/kg	RTI
8260C	VOCs	2-Butanone (MEK)	78-93-3				5	10	ug/kg	RTI
8260C	VOCs	2-Chlorotoluene	95-49-8				0.6	1	ug/kg	RTI
8260C	VOCs	2-Hexanone	591-78-6				0.6	5	ug/kg	RTI
8260C	VOCs	4-Chlorotoluene	106-43-4				0.6	1	ug/kg	RTI
8260C	VOCs	4-Methyl-2-pentanone (MIBK)	108-10-1				0.6	5	ug/kg	RTI
8260C	VOCs	Acetone	67-64-1	100	50	mg/kg	4	5	ug/kg	RTI
8260C	VOCs	Benzene	71-43-2	2.9	1.5	mg/kg	0.6	0.6	ug/kg	RTI
8260C	VOCs	Bromobenzene	108-86-1				0.6	1	ug/kg	RTI
8260C	VOCs	Bromochloromethane	74-97-5				0.6	1	ug/kg	RTI
8260C	VOCs	Bromodichloromethane	75-27-4				0.6	1	ug/kg	RTI
8260C	VOCs	Bromoform	75-25-2				0.6	1	ug/kg	RTI
8260C	VOCs	Bromomethane	74-83-9				4	4	ug/kg	RTI
8260C	VOCs	Carbon disulfide	75-15-0				0.6	2	ug/kg	RTI
8260C	VOCs	Carbon tetrachloride	56-23-5	1.4	0.7	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Chlorobenzene	108-90-7	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Chloroethane	75-00-3				4	5	ug/kg	RTI
8260C	VOCs	Chloroform	67-66-3	10	5	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Chloromethane	74-87-3				0.6	1	ug/kg	RTI
8260C	VOCs	cis-1,2-Dichloroethene	156-59-2	59	30	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	cis-1,3-Dichloropropene	10061-01-5				0.6	1	ug/kg	RTI

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
8260C	VOCs	Dibromochloromethane	124-48-1				0.6	1	ug/kg	RTI
8260C	VOCs	Dibromomethane	74-95-3				0.6	1	ug/kg	RTI
8260C	VOCs	Dichlorodifluoromethane	75-71-8				0.6	2	ug/kg	RTI
8260C	VOCs	Ethyl methacrylate	97-63-2				0.6	1	ug/kg	RTI
8260C	VOCs	Ethylbenzene	100-41-4	30	15	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Hexachlorobutadiene	87-68-3				0.6	1	ug/kg	RTI
8260C	VOCs	Isopropylbenzene	98-82-8				0.6	1	ug/kg	RTI
8260C	VOCs	m-Xylene & p-Xylene	179601-23-1				1.2	2	ug/kg	RTI
8260C	VOCs	Methyl tert-butyl ether	1634-04-4	62	31	mg/kg	0.6	2	ug/kg	RTI
8260C	VOCs	Methylene Chloride	75-09-2	51	25.5	mg/kg	0.6	2	ug/kg	RTI
8260C	VOCs	n-Butylbenzene	104-51-8				0.6	1	ug/kg	RTI
8260C	VOCs	N-Propylbenzene	103-65-1	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Naphthalene	91-20-3				0.6	5	ug/kg	RTI
8260C	VOCs	o-Xylene	95-47-6				0.6	1	ug/kg	RTI
8260C	VOCs	p-Isopropyltoluene	99-87-6				0.6	1	ug/kg	RTI
8260C	VOCs	sec-Butylbenzene	135-98-8	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Styrene	100-42-5				0.6	1	ug/kg	RTI
8260C	VOCs	tert-Butylbenzene	98-06-6	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Tetrachloroethene	127-18-4	5.5	2.25	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Toluene	108-88-3	100	50	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	trans-1,2-Dichloroethene	156-60-5				0.6	1	ug/kg	RTI
8260C	VOCs	trans-1,3-Dichloropropene	10061-02-6				0.6	1	ug/kg	RTI
8260C	VOCs	Trichloroethene	79-01-6	10	5	mg/kg	0.6	1	ug/kg	RTI
8260C	VOCs	Trichlorofluoromethane	75-69-4				0.6	1	ug/kg	RTI
8260C	VOCs	Vinyl chloride	75-01-4	0.21	0.105	mg/kg	0.6	0.8	ug/kg	RTI
8260C	VOCs	1,2-Dichloroethene (total)	540-59-0				1.2	2	ug/kg	RTI
8260C	VOCs	Xylenes, Total	1330-20-7	100	50	mg/kg	1.5	3	ug/kg	RTI
8270D	SVOCs	1,2,4-Trichlorobenzene	120-82-1				16.67	160	ug/kg	RTI
8270D	SVOCs	1,2-Dichlorobenzene	95-50-1				0.6	1	ug/kg	RTI
8270D	SVOCs	1,3-Dichlorobenzene	541-73-1				0.6	1	ug/kg	RTI
8270D	SVOCs	1,4-Dichlorobenzene	106-46-7				0.6	1	ug/kg	RTI
8270D	SVOCs	2,2'-oxybis[1-chloropropane]	108-60-1				16.67	160	ug/kg	RTI
8270D	SVOCs	2,4,5-Trichlorophenol	95-95-4				33.33	160	ug/kg	RTI
8270D	SVOCs	2,4,6-Trichlorophenol	88-06-2				33.33	160	ug/kg	RTI
8270D	SVOCs	2,4-Dichlorophenol	120-83-2				83.33	160	ug/kg	RTI
8270D	SVOCs	2,4-Dimethylphenol	105-67-9				83.33	160	ug/kg	RTI
8270D	SVOCs	2,4-Dinitrophenol	51-28-5				166.67	830	ug/kg	RTI
8270D	SVOCs	2,4-Dinitrotoluene	121-14-2				16.67	160	ug/kg	RTI
8270D	SVOCs	2,6-Dinitrotoluene	606-20-2				16.67	160	ug/kg	RTI
8270D	SVOCs	2-Chloronaphthalene	91-58-7				16.67	160	ug/kg	RTI

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
8270D	SVOCs	2-Chlorophenol	95-57-8				83.33	160	ug/kg	RTI
8270D	SVOCs	2-Methylnaphthalene	91-57-6				16.67	160	ug/kg	RTI
8270D	SVOCs	2-Methylphenol	95-48-7				83.33	160	ug/kg	RTI
8270D	SVOCs	4-Methylphenol	106-44-5				83.33	320	ug/kg	RTI
8270D	SVOCs	2-Nitroaniline	88-74-4				16.67	320	ug/kg	RTI
8270D	SVOCs	2-Nitrophenol	88-75-5				83.33	160	ug/kg	RTI
8270D	SVOCs	3,3'-Dichlorobenzidine	91-94-1				666.67	1000	ug/kg	RTI
8270D	SVOCs	3-Nitroaniline	99-09-2				16.67	320	ug/kg	RTI
8270D	SVOCs	4,6-Dinitro-2-methylphenol	534-52-1				83.325	320	ug/kg	RTI
8270D	SVOCs	4-Bromophenyl phenyl ether	101-55-3				83.325	200	ug/kg	RTI
8270D	SVOCs	4-Chloro-3-methylphenol	59-50-7				33.33	160	ug/kg	RTI
8270D	SVOCs	4-Chloroaniline	106-47-8				83.325	160	ug/kg	RTI
8270D	SVOCs	4-Chlorophenyl phenyl ether	7005-72-3				16.67	160	ug/kg	RTI
8270D	SVOCs	4-Nitroaniline	100-01-6				83.325	160	ug/kg	RTI
8270D	SVOCs	4-Nitrophenol	100-02-7				333.33	160	ug/kg	RTI
8270D	SVOCs	Acenaphthene	83-32-9	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Acenaphthylene	208-96-8	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Anthracene	120-12-7	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Benzo[a]anthracene	56-55-3	1	0.5	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Benzo[a]pyrene	50-32-8	1	0.5	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Benzo[b]fluoranthene	205-99-2	1	0.5	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Benzo[g,h,i]perylene	191-24-2	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Benzo[k]fluoranthene	207-08-9	1	0.5	mg/kg	33.33	160	ug/kg	RTI
8270D	SVOCs	Benzyl alcohol	100-51-6				16.67	660	ug/kg	RTI
8270D	SVOCs	Benzoic acid	65-85-0				333.33	1000	ug/kg	RTI
8270D	SVOCs	Bis(2-chloroethoxy)methane	111-91-1				16.67	160	ug/kg	RTI
8270D	SVOCs	Bis(2-chloroethyl)ether	111-44-4				33.33	160	ug/kg	RTI
8270D	SVOCs	Bis(2-ethylhexyl) phthalate	117-81-7				33.33	160	ug/kg	RTI
8270D	SVOCs	Butyl benzyl phthalate	85-68-7				33.33	160	ug/kg	RTI
8270D	SVOCs	Carbazole	86-74-8				16.67	160	ug/kg	RTI
8270D	SVOCs	Chrysene	218-01-9	1	0.5	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Di-n-butyl phthalate	84-74-2				33.33	160	ug/kg	RTI
8270D	SVOCs	Di-n-octyl phthalate	117-84-0				16.67	160	ug/kg	RTI
8270D	SVOCs	Dibenz(a,h)anthracene	53-70-3	0.33	0.17	mg/kg	33.33	160	ug/kg	RTI
8270D	SVOCs	Dibenzofuran	132-64-9				16.67	160	ug/kg	RTI
8270D	SVOCs	Diethyl phthalate	84-66-2				16.67	160	ug/kg	RTI
8270D	SVOCs	Dimethyl phthalate	131-11-3				16.67	160	ug/kg	RTI
8270D	SVOCs	Fluoranthene	206-44-0	100	50	mg/kg	16.16	160	ug/kg	RTI
8270D	SVOCs	Fluorene	86-73-7	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Hexachlorobenzene	118-74-1				16.67	160	ug/kg	RTI

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
8270D	SVOCs	Hexachlorobutadiene	87-68-3				16.67	160	ug/kg	RTI
8270D	SVOCs	Hexachlorocyclopentadiene	77-47-4				83.33	160	ug/kg	RTI
8270D	SVOCs	Hexachloroethane	67-72-1				16.67	160	ug/kg	RTI
8270D	SVOCs	Indeno[1,2,3-cd]pyrene	193-39-5	0.5	0.25	mg/kg	33.33	160	ug/kg	RTI
8270D	SVOCs	Isophorone	78-59-1				16.67	160	ug/kg	RTI
8270D	SVOCs	N-Nitrosodi-n-propylamine	621-64-7				16.67	160	ug/kg	RTI
8270D	SVOCs	N-Nitrosodimethylamine	62-75-9				16.67	160	ug/kg	RTI
8270D	SVOCs	Naphthalene	91-20-3	100	50	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Nitrobenzene	98-95-3				16.67	160	ug/kg	RTI
8270D	SVOCs	Nitrosodiphenylamine	86-30-6				16.67	160	ug/kg	RTI
8270D	SVOCs	Pentachlorophenol	87-86-5				83.33	160	ug/kg	RTI
8270D	SVOCs	Phenanthrene	85-01-8	2.4	1.2	mg/kg	16.67	160	ug/kg	RTI
8270D	SVOCs	Phenol	108-95-2	100	50	mg/kg	83.33	160	ug/kg	RTI
8270D	SVOCs	Pyrene	129-00-0	100	50	mg/kg	16.67	160	ug/kg	RTI
8081B	Pesticides	4,4'-DDD	72-54-8	2.6	1.3	mg/kg	0.8	2	ug/kg	RTI
8081B	Pesticides	4,4'-DDE	72-55-9	1.8	0.9	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	4,4'-DDT	50-29-3	1.7	0.85	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Aldrin	309-00-2	.019	0.01	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	alpha-BHC	319-84-6	.097	0.05	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	alpha-Chlordane	5103-71-9	.91	0.46	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	beta-BHC	319-85-7	.072	0.04	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	delta-BHC	319-86-8	100	50	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Dieldrin	60-57-1	.039	0.02	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Endosulfan I	959-98-8	4.8	2.4	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Endosulfan II	33213-65-9	4.8	2.4	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Endosulfan sulfate	1031-07-8	4.8	2.4	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Endrin	72-20-8	2.2	1.1	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Endrin aldehyde	7421-93-4				0.8	1	ug/kg	RTI
8081B	Pesticides	Endrin ketone	53494-70-5				0.8	1	ug/kg	RTI
8081B	Pesticides	gamma-BHC (Lindane)	58-89-9	0.28	0.14	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	gamma-Chlordane	5103-74-2	0.54	0.27	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Heptachlor	76-44-8	0.42	0.21	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Heptachlor epoxide	1024-57-3	0.077	0.04	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Methoxychlor	72-43-5	100	50	mg/kg	0.8	1	ug/kg	RTI
8081B	Pesticides	Chlordane (technical)	57-74-9				16	20	ug/kg	RTI
8081B	Pesticides	Toxaphene	8001-35-2				16	20	ug/kg	RTI
8082A	PCBs	Arochlor 1016	12674-11-2				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1221	11104-28-2				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1232	11141-16-5				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1242	53469-21-9				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1248	12672-29-6				6.67	33	ug/kg	RTI

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
8082A	PCBs	Arochlor 1254	11097-69-1				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1260	11096-82-5				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1262	37324-23-5				6.67	33	ug/kg	RTI
8082A	PCBs	Arochlor 1268	11100-14-4				6.67	33	ug/kg	RTI
8082A	PCBs	Total PCBs	1336-36-3	1	0.5	mg/kg	6.67	33	ug/kg	RTI
8151A	Herbicides	2,4,5-T	93-76-5				1.9	2	ug/kg	RTI
8151A	Herbicides	2,4-D	94-75-7				28	42	ug/kg	RTI
8151A	Herbicides	2,4-DB	94-82-6				18	20	ug/kg	RTI
8151A	Herbicides	Dalapon	75-99-0				100	110	ug/kg	RTI
8151A	Herbicides	Dicamba	1918-00-9				9.3	14	ug/kg	RTI
8151A	Herbicides	Dichlorprop	120-36-5				21	21	ug/kg	RTI
8151A	Herbicides	Dinoseb	88-85-7				21	28	ug/kg	RTI
8151A	Herbicides	MCPA	94-74-6				1800	2900	ug/kg	RTI
8151A	Herbicides	MCPP	93-65-2				1800	2900	ug/kg	RTI
8151A	Herbicides	Silvex (2,4,5-TP)	93-72-1				1.8	2	ug/kg	RTI
8151A	Herbicides	Pentachlorophenol	87-86-5				0.77	2	ug/kg	RTI
6010B	Metals	Aluminum	7429-90-5				2000	5000	ug/kg	RTI
6010B	Metals	Antimony	7440-36-0	2.0	1.0	mg/kg	500	1000	ug/kg	RTI
6010B	Metals	Arsenic	7440-38-2	16	8	mg/kg	1000	2000	ug/kg	RTI
6010B	Metals	Barium	7440-39-3	350	175	mg/kg	5000	10000	ug/kg	RTI
6010B	Metals	Beryllium	7440-41-7	14	7	mg/kg	50	250	ug/kg	RTI
6010B	Metals	Boron	7440-42-8						ug/kg	RTI
6010B	Metals	Cadmium	7440-43-9	2.5	1.25	mg/kg	50	250	ug/kg	RTI
6010B	Metals	Calcium	7440-70-2				1000	5000	ug/kg	RTI
6010B	Metals	Chromium	7440-47-3	36	18	mg/kg	400	500	ug/kg	RTI
6010B	Metals	Cobalt	7440-48-4	50	25	mg/kg	250	1000	ug/kg	RTI
6010B	Metals	Copper	7440-50-8	270	135	mg/kg	1000	5000	ug/kg	RTI
6010B	Metals	Iron	7439-89-6	2000	1000	mg/kg	5000	15000	ug/kg	RTI
6010B	Metals	Lead	7439-92-1	400	200	mg/kg	1000	5000	ug/kg	RTI
6010B	Metals	Lithium	7439-93-2						ug/kg	RTI
6010B	Metals	Magnesium	7439-95-4				5000	50000	ug/kg	RTI
6010B	Metals	Manganese	7439-96-5	2000	1000	mg/kg	250	1000	ug/kg	RTI
6010B	Metals	Mercury	7439-97-6	0.81	0.41	mg/kg	5	10	ug/kg	RTI
6010B	Metals	Nickel	7440-02-0	140	70	mg/kg	1000	5000	ug/kg	RTI
6010B	Metals	Potassium	7440-09-7				10000	20000	ug/kg	RTI
6010B	Metals	Selenium	7782-49-2	36	18	mg/kg	1500	2000	ug/kg	RTI
6010B	Metals	Silver	7440-22-4	36	18	mg/kg	250	1000	ug/kg	RTI
6010B	Metals	Sodium	7440-23-5				5000	50000	ug/kg	RTI
6010B	Metals	Thallium	7440-28-0	5.1	2.55	mg/kg	1000	2000	ug/kg	RTI
6010B	Metals	Uranium	7440-61-1						ug/kg	RTI
6010B	Metals	Vanadium	7440-62-2	33	16.5	mg/kg	1000	2500	ug/kg	RTI

Analytical Method	Method Description	Analyte	CAS Number	PAL ¹	Project QL Goal	PAL & QL Units	Lab LOD	Lab LOQ	Lab LOD & LOQ Units	Off-Site Lab
6010B	Metals	Zinc	7440-66-6	2200	1100	mg/kg	500	5000	ug/kg	RTI
6010B	General Chemistry	Cyanide, Total	57-12-5	27	13.5	mg/kg			ug/kg	RTI
9060	General Chemistry	Total Organic Carbon (TOC)	7440-44-0				2400000	3100000	ug/kg	RTI
HASL 300 Series	Isotopic Uranium	U-232	14158-29-3	0.0552	0.0276	pCi/g	1.0	N/A	pCi/g	Pace Analytical
HASL 300 Series	Isotopic Uranium	U-234	13966-29-5	0.661	0.3305	pCi/g	1.0	N/A	pCi/g	Pace Analytical
HASL 300 Series	Isotopic Uranium	U-235	15117-96-1	0.0961	0.04805	pCi/g	1.0	N/A	pCi/g	Pace Analytical
HASL 300 Series	Isotopic Uranium	U-238	7440-61-1	0.644	0.322	pCi/g	1.0	N/A	pCi/g	Pace Analytical
HASL 300 Series	Isotopic Plutonium	Plutonium-238	13981-16-3	0.0298	0.0149	pCi/g	1.0	N/A	pCi/g	Pace Analytical
HASL 300 Series	Isotopic Plutonium	Plutonium-239/240	15117-48-3	0.0288	0.0144	pCi/g	1.0	N/A	pCi/g	Pace Analytical
GA-01-R (901.1 equivalent)	Gamma Spectroscopy	Potassium-40	13966-00-2	15.2	7.6	pCi/g	1.0	N/A	pCi/g	Pace Analytical
GA-01-R (901.1 equivalent)	Gamma Spectroscopy	Cobalt-60	10198-40-0	0.0164	0.0082	pCi/g	0.2	N/A	pCi/g	Pace Analytical
C1507-07e1 or 905.0 (Eichrom GFPC)	Gamma Spectroscopy	Strontium-90	10098-97-2	0.02505	0.012525	pCi/g	1.0	N/A	pCi/g	Pace Analytical
GA-01-R (901.1 equivalent)	Gamma Spectroscopy	Cesium-137	10045-97-3	0.06	0.03	pCi/g	0.1	N/A	pCi/g	Pace Analytical
HASL 300 Series	Gamma Spectroscopy	Americium-241	14596-10-2	0.0394	0.0197	pCi/g	1.0	N/A	pCi/g	Pace Analytical
900.0/9310	Gas Flow Proportional Counting	Gross Alpha	12587-46-1	15.1	7.55	pCi/g	10.0	N/A	pCi/g	Pace Analytical
900.0/9310	Gas Flow Proportional Counting	Gross Beta	12587-47-2	19.8	9.9	pCi/g	10.0	N/A	pCi/g	Pace Analytical

¹PAL: Project Action Limit, November 2015 U.S. EPA Regional Screening Levels (RSLs) with a target cancer risk of 1E-06 and a hazard quotient of 0.1, or local radiologic background for sediments.

²Project Action Limits (PALs) in bold are lower than laboratory Method Detection Limit (MDL).

³PAL Reference: Tapwater- November 2015 U.S. EPA RSLs for tapwater, MCL- Maximum Contaminant Levels, U.S. EPA National Primary Drinking Water Regulations

⁴QL: Quantitation Limit ⁵MDL: Method Detection Limit

QAPP Worksheet #17: Sampling Design and Rationale
(UFP-QAPP Manual Section 3.1.1)
(EPA 2106-G-05 Section 2.3.1)

Details are contained in Section 4 of the FSP.

QAPP Worksheet #18: Sampling Locations and Methods
(UFP-QAPP Manual Section 3.1.1 and 3.1.2)
(EPA 2106-G-05 Section 2.3.1 and 2.3.2)

Planned sampling locations and methods are described in Section 5.0 and shown on Figure 2 of the FSP.

Worksheet #19 & 30: Sample Containers, Preservation, and Hold Times
(UFP-QAPP Manual Section 3.1.2.2)
(EPA 2106-G-05 Section 2.3.2)

Laboratory: RTI Laboratories, 31628 Glendale St., Livonia, MI 48150
POC: Chino Ortiz; cortiz@artilab.com; 734-422-8000

Pace Analytical, 1638 Roseytown Rd – Suite 2, 3, 4, Greensburg, PA 15601
POC: Carin Ferris; carin.ferris@pacelabs.com, 724-850-5615

Required accreditations/certifications: The samples will be shipped to RTI and Pace Analytical Laboratories, which are accredited by the Department of Defense Environmental Lab Accreditation Program (DoD ELAP).

Backup Laboratory: Geotechnical analyses will be performed by a contracted laboratory based upon a separate drilling contract award.

Sample Delivery Method: Federal Express or alike overnight shipping service.

Analyte/ Analyte Group	Matrix	Method	Container(s) (number, size and type per sample) ¹	Preservation ¹	Holding Time
Gamma Spectroscopy Suite (Cs-137 Primary Analyte)	Sediment	HASL 300 Gamma Spectral Method GA- 01-R (EPA 901.1 Equivalent)	1L HDPE, 1000g	None	180 days
Strontium-90	Sediment	ASTM C1507-07e1 or EPA 905.0	1L HDPE, 1000g	None	180 days
Isotopic Plutonium (Pu-238, Pu-239/240)	Sediment	Alpha Spectroscopy DOE EML HASL 300 Series	1L HDPE, 1000g	None	180 days
Uranium-232, -234, -235, -238	Sediment	Alpha Spectroscopy DOE EML HASL 300 Series	1L HDPE, 1000g	None	180 days
Gross Alpha	Sediment	EPA 900.0/9310	1L HDPE, 1000g	None	180 days
Gross Beta	Sediment	EPA 900.0/9310	1L HDPE, 1000g	None	180 days
TAL Metals (23 Analytes)	Sediment	6010B, 7471	4oz. glass jar	Cool to 4° C	180 days, 28 days for Hg
Volatile Organic Compounds (VOCs)	Sediment	EPA 8260B	3 EnCore® type samplers (preferred) or 4 ounce (oz.) jars	Cool to 4° C Zero headspace	14 days, 7 days if not preserved
Semi-volatile Organic Compounds (SVOCs)	Sediment	EPA 8270C	4oz. glass jar	Cool to 4°C	14/7 days
Pesticides	Sediment	EPA 8081A	4oz. glass jar	Cool to 4°C	14 days to extraction, 40 days after extraction
Herbicides	Sediment	EPA 8151A	4oz. glass jar	Cool to 4°C	14 days to extraction, 40 days after extraction
PCBs (Aroclors)	Sediment	EPA 8082	4oz. glass jar	Cool to 4°C	14/7 days
Total Cyanide	Sediment	EPA 9012B	125 mL glass	Cool to 4°C	14 days
Total Organic Carbon (TOC)	Sediment	EPA 9060	8 oz. jar	Cool to 4°C	14 days
Particle Size Analysis	Sediment	ASTM D422	Based upon geotechnical laboratory is contract.		

QAPP Worksheet #20: Field QC Summary
(UFP-QAPP Section 3.1.1 and 3.1.2)
(EPA 2106-G-05 Section 2.3.5)

Matrix	Analyte/Analytical Group	Field Samples with Contingency	Field Duplicates ¹	Matrix Spikes ²	Matrix Spike Duplicates ²	Field Blanks	Equipment Blanks ³	Trip Blanks ⁴	Total Analyses ⁵
Sediment									
	Gamma Spectroscopy Suite	65	6	3	3	0	0	0	77
	Strontium-90	65	6	3	3	0	0	0	77
	Isotopic Plutonium (Pu-238, Pu-239/240)	65	6	3	3	0	0	0	77
	Uranium-232, -234, -235, -238	65	6	3	3	0	0	0	77
	Gross Alpha	65	6	3	3	0	0	0	77
	Gross Beta	65	6	3	3	0	0	0	77
	TAL Metals (23 Elements)	65	6	3	3	0	0	0	77
	Volatile Organic Compounds (VOCs)	65	6	3	3	0	0	10	87
	Semi-volatile Organic Compounds (SVOCs)	65	6	3	3	0	0	0	77
	Pesticides	65	6	3	3	0	0	0	77
	Herbicides	65	6	3	3	0	0	0	77
	PCBs (Aroclors)	65	6	3	3	0	0	0	77
	Total Cyanide	65	6	3	3	0	0	0	77
	Total Organic Carbon (TOC)	65	6	3	3	0	0	0	77
	Particle Size Analysis	65	6	3	3	0	0	0	77

¹ Field duplicates provide information on consistency in the field and the laboratory. Consistency can be affected by the project matrix and by

sample handling techniques.

Field duplicates will be collected at a rate of one per 10 field samples if practicable as determined by the field crew. Ideally, field duplicates are created by collecting twice the usual sample volume, splitting the sample volume into two sets of sample containers, and submitting the resulting samples “blind” to the laboratory. If collection of duplicate volume is not possible, field duplicates may be co-located samples collected at approximately the same time. Field duplicate sample identification will be communicated by the field team to the project chemist, and the nature of the field duplicate (splits, co-located samples) will be identified in the field logbook at a minimum. Field duplicate collection locations are at the discretion of the field team.

² MS/MSD pairs are triplicate volumes of a sample collected into separate containers. MS/MSD pairs are spiked at the laboratory to show the effect of the project matrix upon the project parameters. MS/MSD pairs may or may not be collected for this project. Collection of volume for MS/MSD analysis will be determined by the field crew based upon site conditions. If contamination appears to be present based on visual inspections and/or PID readings, MS/MSD collection will be given more importance, with field duplicate collection given priority.

MS/MSD pairs, if collected, will be collected at a rate of one per 20 field samples for all sample types. Identification of samples selected for MS/MSD analysis is made on the comment line of the COC. MS/MSD pair collection locations are at the discretion of the field team. Additional MS/MSD pairs may be selected at the discretion of the laboratory to meet method specifications; however, analysis of project-specific MS/MSDs by the laboratory is not required unless indicated on the COC.

³ Equipment blanks (also called “rinsates”) are used to show that equipment decontamination is adequately thorough, such that samples are not subjected to “carry-over” contamination from the equipment. Equipment blanks are created by running clean de-ionized water over thoroughly cleaned sampling equipment, and collecting that water into the appropriate containers. Equipment blanks are collected for all analyses except waste characterization parameters for off-site disposal at a rate of one/event unless disposable equipment is used for sample collection or equipment is not re-used between locations.

⁴ A trip blank is a clean, preserved water sample in 2x or 3x 40 mL volatile organic analysis (VOA) vials. Trip blanks are used to determine if field samples were subjected to VOC contamination en-route or during sample handling. As such, one trip blank (two to three VOA vials/trip blank) is included in each cooler containing samples for VOC analysis. Trip blanks are used for VOCs only.

Trip blanks are provided by the laboratory and must be requested by the field team when placing the bottle order with the laboratory. Trip blank identification (sample IDs) are designated by the field team. Trip blank are not opened by the field crew.

⁵ Sample quantities are approximate, and may change based on field conditions, material volumes or collection of contingency samples.

QAPP Worksheet #21: Field SOPs
(UFP-QAPP Manual Section 3.1.2)
(EPA 2106-G-05 Section 2.3.2)

Sampling techniques will be in accordance with the Department of Defense Environmental Field Sampling Handbook (DoD, 2013), and are described in the Field Sampling Plan. The appropriate SOPs and guidance documents are referenced therein.

QAPP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection
(UFP-QAPP Manual Section 3.1.2.4)
(EPA 2106-G-05 Section 2.3.6)

This worksheet lists instruments that may be used in the field for this project. Information summarized in this worksheet will be recorded in the field notes/logs for the instruments used.

Field Equipment	Activity	SOP Reference	Title or position of responsible person	Frequency	Acceptance Criteria	Corrective Action ¹
Photoionization Detector (PID)	Standard 2-point calibration (zero and span)	Manufacturer’s Instruction Manual	Field Personnel	Daily before use	Calibration successful	Clean filter and re-calibration
	Maintenance			As needed	Clean the PID bulb with methanol when the calibration check fails or the displayed reading is erratic.	Replace equipment
Geiger-Mueller meter	Calibration	Manufacturer’s instruction manual	Contractor	Annually	Manufacturer’s instruction manual	-
	QC Tracking – background and source check		Field Personnel	Start of project	Generate QC Chart ² (background and Sr-90).	-
				Daily before use	Confirm within QC ³	Repeat check, remove from service.
Sodium-iodide (NaI) scintillation detector	Calibration	Manufacturer’s instruction manual	Contractor	Annually	Manufacturer’s instruction manual	-
	QC Tracking – background and source check		Field Personnel	Start of project	Generate QC Chart ² (background and Cs-137).	-
				Daily before use	Confirm within QC ³	Repeat check, remove from service.
Alpha-beta phosphor sandwich detector	Calibration	Manufacturer’s instruction manual	Contractor	Annually	Manufacturer’s instruction manual	-
	QC Tracking – background and source check		Field Personnel	Start of project	Generate QC Chart ² (background, Sr-90 and Th-230)	-
				Daily before use	Confirm within QC ³	Repeat check, remove from service.

¹In the event the corrective action is unsuccessful, backup equipment will be available on-site to prevent stand by time.

²QC Chart created by obtaining 20 readings for ambient background and with appropriate check source (Cs-137, Sr-90 or Th-230)

³QC acceptance criteria set points: Warning levels set at 2 sigma and control at 3 sigma. See Appendix B for details.

QAPP Worksheet #23: Analytical SOP's
(UFP-QAPP Manual Section 3.2.1)
(EPA 2106-G-05 Section 2.3.4)

Analytical SOPs are available upon request from the contract laboratories.

QAPP Worksheet #24: Analytical Instrument Calibration
(UFP-QAPP Manual Section 3.2.2)
(EPA 2106-G-05 Section 2.3.6)

The laboratories shall calibrate all instrumentation in accordance with their SOPs, Quality Manual, and the associated methods. Analytical SOPs are available upon request from the laboratories.

QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection
(UFP-QAPP Manual Section 3.2.3)
(EPA 2106-G-05 Section 2.3.6)

Maintenance of all instrumentation shall be performed in accordance with the laboratories SOPs, analytical methods, and lab quality manual. Analytical SOPs are available upon request from laboratories.

QAPP Worksheet #26 & 27: Sample Handling, Custody, and Disposal
(UFP-QAPP Manual Section 3.3)
(EPA 2106-G-05 Section 2.3.3)

Sampling Organization: USACE

Laboratory: RTI Laboratories and Pace Analytical

Method of sample delivery (shipper/carrier): Federal Express

Number of days from reporting until sample disposal: 90

Activity	Organization and title or position of person responsible for the activity	SOP reference
Sample labeling	Samples will be assigned unique sample numbers in the field as specified in the FSP. These sample numbers will be cross-checked with the laboratory sample log-in receipt notification.	FSP
Chain-of-custody form completion	COCs will be completed by field personnel. The Field Team Lead is responsible for ensuring that the COC accurately and completely represents the sample collection date, time, personnel, matrices, and required analyses, including MS/MSD pairs and (blind to the lab) field duplicates, as needed.	FSP
Packaging	Field personnel will review the COC and inventory all samples prior to packaging and shipment. Glass sample containers will be placed in protective bubble wrap bags, and packed with enough ice to maintain 4°C ±2°C throughout storage and shipment. COCs will be placed in a re-sealable plastic bag and taped to the inside lid of each cooler, and the coolers sealed with strapping tape and custody seals.	FSP
Shipping coordination	Samples will be shipped overnight in a sealed cooler with custody seals and the air bill number tracked, or delivered via laboratory courier. The Field Team Lead or designee will contact the subcontract laboratory each day following shipment of samples to verify that samples were received on time and in good condition. The laboratory will be notified in advance of the need for a Saturday sample receipt.	FSP
Sample receipt, inspection, and login	Samples will be inspected for condition upon receipt; sample conditions will be recorded and forwarded to the Project Chemist.	FSP and Laboratory SOPs

Activity	Organization and title or position of person responsible for the activity	SOP reference
Sample custody and storage	COC procedures require a sample to be under custody if: • It is in the actual possession of the sampler. • It is in the view of the sampler after being in that person's physical possession. • The sample was in physical possession and then locked up to prevent tampering. • It is in a designated and identified secure area. A COC record will accompany the sample at all times). Field samples will be kept under strict COC in the field. The Field Team Lead or designee will review the COC and inventory all samples prior to packaging and shipment or courier pickup. COCs will be reviewed for completeness, accuracy, and legibility. Copies of all COCs will be provided to the Project Manager on a daily basis.	FSP and Laboratory SOPs
Sample disposal	Samples will be archived at the laboratory. Sample disposal will take place 90 days from the issuance of the final report.	Laboratory SOPs

QAPP Worksheet #28: Analytical Quality Control and Corrective Action
(UFP-QAPP Manual Section 3.4 and Tables 4, 5, and 6)
(EPA 2106-G-05 Section 2.3.5)

Analytical QC and corrective actions described in the following worksheets are associated with project-specific MPC. The guidance documents for evaluation of MPC for this project are the *DoD Quality Systems Manual for Environmental Laboratories Version 5.0*, July 2013; USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*, OSWER 9240.1-51, USEPA 540-R-10-011, January 2010; and the USEPA *Guidance on Environmental Data Verification and Data Validation (QA/G-8)*, USEPA 240-R-02-004, November 2002, reissued January 2008. Additional criteria are established based upon project-specific DQO. No validation qualification is performed absent from consideration of project DQOs.

Matrix: Sediment

Analytical Group: Gamma Spectroscopy Suite

Analytical Method/SOP: HASL 300 Gamma Spectral Method GA-01-R (EPA 901.1 Equivalent)

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	Correct problem, then re-reanalyze method blank and all samples processed with the contaminated blank.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		Identify problem; if not related to matrix interference, re-reanalyze LCS and all associated batch samples.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Correct problem, then re-reanalyze all samples processed with the duplicate.		
Surrogate Spikes	N/A		N/A		

Matrix: Sediment

Analytical Group: Strontium-90

Analytical Method/SOP: ASTM C1507-07e1 or EPA 905.0

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	Correct problem, then re-analyze method blank and all samples processed with the contaminated blank.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		Identify problem; if not related to matrix interference, re-analyze LCS and all associated batch samples.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Correct problem, then re-analyze all samples processed with the duplicate.		
Carrier/tracer	All field and QC samples		Correct problem, then re-prepare and reanalyze all failed samples for all carriers/tracers in the associated preparatory batch, if sufficient sample material is available. If obvious interference with carrier/tracer is present, reanalysis may not be necessary.		

Matrix: Sediment

Analytical Group: Isotopic Plutonium (Pu-238, Pu-239/240) and Uranium (U-232, -234, -235, -238)

Analytical Method/SOP: Alpha Spectroscopy DOE EML HASL 300 Series

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	Correct problem, then re-reanalyze method blank and all samples processed with the contaminated blank.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		Identify problem; if not related to matrix interference, re-reanalyze LCS and all associated batch samples.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Correct problem, then re-reanalyze all samples processed with the duplicate.		
Carrier/Tracer	All field and QC samples		Correct problem, then re-prep and reanalyze all failed samples for all carriers/tracers in the associated preparatory batch, if sufficient sample material is available. If obvious interference with carrier/tracer is present, reanalysis may not be necessary.		

Matrix: Sediment

Analytical Group: Gross Alpha and Gross Beta

Analytical Method/SOP: EPA 900.0/9310

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	Correct problem, then re-reanalyze method blank and all samples processed with the contaminated blank.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		Identify problem; if not related to matrix interference, re-reanalyze LCS and all associated batch samples.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Correct problem, then re-reanalyze all samples processed with the duplicate.		
Surrogate Spikes	N/A		N/A		

Matrix: Sediment
 Analytical Group: Metals
 Analytical Method/SOP: 6010B

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	N/A		N/A		

Matrix: Sediment

Analytical Group: VOCs

Analytical Method/SOP: EPA 8260C

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	All field and QC samples		Correct problem, then re-prep and reanalyze all failed samples for all surrogates in the associated preparatory batch, if sufficient sample material is available. If obvious chromatographic interference with surrogate is present, reanalysis may not be necessary.		

Matrix: Sediment

Analytical Group: SVOCs

Analytical Method/SOP: EPA 8270D

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	All field and QC samples		Correct problem, then re-prepare and reanalyze all failed samples for all surrogates in the associated preparatory batch, if sufficient sample material is available. If obvious chromatographic interference with surrogate is present, reanalysis may not be necessary.		

Matrix: Sediment
 Analytical Group: Pesticides
 Analytical Method/SOP: EPA 8081B

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	All field and QC samples		Correct problem, then re-prepare and reanalyze all failed samples for all surrogates in the associated preparatory batch, if sufficient sample material is available. If obvious chromatographic interference with surrogate is present, reanalysis may not be necessary.		

Matrix: Sediment
 Analytical Group: Herbicides
 Analytical Method/SOP: EPA 8151A

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	All field and QC samples		Correct problem, then re-prepare and reanalyze all failed samples for all surrogates in the associated preparatory batch, if sufficient sample material is available. If obvious chromatographic interference with surrogate is present, reanalysis may not be necessary.		

Matrix: Sediment
 Analytical Group: PCBs
 Analytical Method/SOP: EPA 8082

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project- specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	All field and QC samples		Correct problem, then re-prepare and reanalyze all failed samples for all surrogates in the associated preparatory batch, if sufficient sample material is available. If obvious chromatographic interference with surrogate is present, reanalysis may not be necessary.		

Matrix: Sediment

Analytical Group: Total Cyanide

Analytical Method/SOP: EPA 9012

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If sufficient sample is available, reanalyze samples. Qualify data as needed. Report results if sample results >5x (10x for common laboratory contaminants) blank result or sample results non-detect.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		If sufficient sample is available, reanalyze samples. Qualify data as needed.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Examine the project-specific requirements. Contact the client as to additional measures to be taken.		
Surrogate Spikes	N/A		N/A		

Matrix: Sediment

Analytical Group: Total Organic Carbon (TOC)

Analytical Method/SOP: EPA 9060

QC Sample	Number/Frequency	Method/SOP Acceptance Criteria	Corrective Action	Title/Position of Person Responsible for Corrective Action	Project-Specific MPC
Method Blank	1/Preparatory Batch (20 samples)	See WS #12	If the lowest sample concentration is more than 10x the blank concentration, no action. If samples are non-detected, no action. If detected sample concentrations are less than 10x the blank concentration, all associated samples must be prepared again with another method blank and reanalyzed.	Laboratory Analyst / Section Supervisor	See WS #12
LCS/LCSD	1/Preparatory Batch (20 samples)		Terminate analysis. Identify and document the problem. Reanalyze all associated samples.		
MS/MSD	1/Preparatory Batch – with a minimum of one MS/MSD pair per matrix		Determine root cause; flag MS/MSD data; discuss in narrative.		
Duplicates (field and lab)	1/Preparatory Batch (20 samples)		Flag associated data with an “*”.		
Surrogate Spikes	N/A		N/A		

QAPP Worksheet #29: Project Documents and Records
(UFP-QAPP Manual Section 3.5.1)
(EPA 2106-G-05 Section 2.2.8)

Sample Collection and Field Records			
Record	Generation	Verification	Storage location/archival
Field logbook or data collection sheets	Field Personnel	Field Team Lead/Project Chemist	Electronic Project File (electronic/portable document format [PDF])
COC Forms	Field Personnel	Field Team Lead/Project Chemist	
Air bills	Field Personnel	Field Team Lead	
QC Reports	Field Team Lead	Project Chemist	

Project Assessments			
Record	Generation	Verification	Storage location/archival
Data verification / Data validation report	Project Chemist	Field Team Lead, Project Manager	Electronic Project File (electronic/PDF)

Laboratory Records			
Record	Generation	Verification	Storage location/archival
Laboratory QC Summary and Data Package / Laboratory Electronic Data Deliverable (EDD)	Laboratory	Project Chemist	Electronic Project File (electronic/PDF)

QAPP Worksheet #31, 32 & 33: Assessments and Corrective Action
(UFP-QAPP Manual Sections 4.1.1 and 4.1.2)
(EPA 2106-G-05 Section 2.4 and 2.5.5)

Assessments:

Assessment Type	Responsible Party & Organization	Number/Frequency	Estimated Dates	Assessment Deliverable	Deliverable Due Date
Initial, Preparatory, and Completion Assessments	Site personnel PM	Upon initiation and completion of each major phase of work	See Project Schedule	Daily field reports	NA

QAPP Worksheet #34: Data Verification and Validation Inputs
(UFP-QAPP Manual Section 5.2.1 and Table 9)
(EPA 2106-G-05 Section 2.5.1)

Item	Description	Verification (completeness)	Validation (conformance to specifications)
Planning Documents/Records			
1	Approved QAPP	X	
2	Contract	X	
3	Field SOPs	X	
4	Laboratory SOPs	X	
Field Records			
5	Field logbooks	X	X
6	Equipment calibration records	X	X
7	Chain-of-Custody Forms	X	X
8	Sampling diagrams/surveys	X	X
9	Drilling logs	X	X
10	Geophysics reports	X	X
11	Relevant Correspondence	X	X
12	Change orders/deviations	X	X
13	Field audit reports	X	X
14	Field corrective action reports	X	X
15	Sampling field forms	X	X
Analytical Data Package			
16	Cover sheet (laboratory identifying information)		X
17	Case narrative		X
18	Internal laboratory chain-of-custody		X
19	Sample receipt records		X
20	Sample chronology (i.e., dates and times of receipt, preparation, and analysis)		X
21	Communication records		X
22	LOD/LOQ establishment and verification		X
23	Standards Traceability		X
24	Instrument calibration records		X
25	Definition of laboratory qualifiers		X
26	Results reporting forms	X	X
27	QC sample results	X	X
28	Corrective action reports	X	X
29	Raw data		X
30	EDD		X

QAPP Worksheet #35: Data Verification Procedures
(UFP-QAPP Manual Section 5.2.2)
(EPA 2106-G-05 Section 2.5.1)

Records Reviewed	Requirement Documents	Process Description	Responsible Person, Organization
Field logbook	QAPP, FSP	Verify that records are present and complete for each day of field activities. Verify that planned samples, including field QC, were collected and that sample collection locations are documented. Verify that meteorological data were provided for each day of field activities. Verify any changes/exceptions were documented and reported in accordance with requirements. Verify that any required field monitoring was performed and results were documented.	Daily: Field Team Lead At conclusion of field activities: Project Chemist
Chain-of-custody forms	QAPP, COCs	Verify completeness of COC records. Examine entries for consistency with the field logbook. Check that appropriate methods and sample preservation have been recorded. Verify that the required volume of sample was collected and sufficient sample volume is available for QC samples (e.g., MS/MSD). Verify required signatures and dates are present. Check for transcription errors.	Daily: Field Team Lead At conclusion of field activities: Project Chemist
Laboratory Deliverable	QAPP, Lab Report	Verify that the laboratory deliverable contains all records specified in the QAPP. Check sample receipt records to ensure sample condition upon receipt was noted, and any missing/broken sample containers were noted and reported. Compare the data package with the COCs to verify results were provided for all collected samples. Review the narrative to ensure all QC exceptions are described. Check for evidence that required notifications were provided to project personnel as specified in the QAPP. Verify that necessary signatures and dates are present.	Before release: Laboratory PM Upon receipt: Project Chemist
Audit Reports, Corrective Action Reports	QAPP	Verify that planned audits were conducted. Examine audit reports. For any deficiencies noted, verify that corrective action was implemented according to plan.	Project Manager
Outlier Data	QAPP	Outlier data will be identified by comparison to the historical data set. No statistical workup of outlier data will be performed. Data that is an outlier will be evaluated with respect to the areal and/or vertical location of the detection.	Project Chemist in conjunction with project team

QAPP Worksheet #36: Data Validation Procedures
(UFP-QAPP Manual Section 5.2.2)
(EPA 2106-G-05 Section 2.5.1)

Data Validator: USACE Project Chemist

Analytical Group/Method:	Gamma Spectroscopy Suite, Strontium-90, Isotopic Plutonium (Pu-238, Pu-239/240), Uranium-232, -234, -235, -238, Gross Alpha, Gross Beta, Metals, VOCs, SVOCs, Pesticides, Herbicides, PCBs, TOC
Data deliverable requirements:	See WS #29
Analytical specifications:	See WS #23
Measurement performance criteria:	See WSs #12, 15, and 28
Percent of data packages to be validated (Level II – QC summary review including surrogates, sample receipt and field documentation review):	100% of soil, liquid, and air data for the analyses listed above - unless assessment results indicate reanalysis or re-sampling is needed or data are used for informational purposes only
Percent of data packages to be validated (Level III = Level II + internal standard and calibration review):	100% of soil, liquid, and air data for the analyses listed above - unless assessment results indicate reanalysis or re-sampling is needed or data are used for informational purposes only
Percent of raw data reviewed (Level IV = Level III plus recalculation of selected detections [see below], calibration results, recoveries and chromatography review):	No Level IV validation is planned for this project. Level IV validation may be performed if problems with compounds identification or quantification are identified during Level II validation after the raw data package is received from the laboratory.
Percent of results to be recalculated:	Results will not be re-calculated unless computerized calculations were not used or there is evidence of an issue with final results
Validation Procedure:	USEPA National Function Guidelines and this QAPP
Validation Qualifiers	Non-detect (U), Non-detect with estimated MDL and QL (UJ), rejected or unusable (R), estimated (J), tentatively identified (N)

QAPP Worksheet #37: Data Usability Assessment
(UFP-QAPP Manual Section 5.2.3 including Table 12)
(EPA 2106-G-05 Section 2.5.2, 2.5.3, and 2.5.4)

Identify personnel (organization and position/title) responsible for participating in the data usability assessment:

- Project Manager
- Project Chemist
- Field Team Leader
- Project Hydrogeologist
- Risk Assessor

Describe how the usability assessment will be documented:

Data usability recommendations will be provided to the project team. These recommendations will be incorporated into the risk assessment report. Final reports will provide a summary of data usability incorporating data validation findings and assessments.

Summarize the data usability assessment process including statistics, equations, and computer algorithms that will be used to analyze the data:

Step 1	Review the project's objectives and sampling design The project team will review the project DQOs and MPC to ensure they support the project objectives. The project team will review the sampling design before each phase of the fieldwork to ensure that the sampling design implementation is consistent with the project objectives.
Step 2	Review the data verification and data validation outputs The applicable members of the project team (see WS #35) will prepare and/or review project QA/QC reports. Summarized data will be evaluated for results exceeding PALs and anomalies. Deviations from planned activities (e.g., number and locations of samples, holding time exceedances, damaged samples, and SOP deviations) will be reviewed to determine the impact, if any, on the data usability.
Step 3	Verify the assumptions of the selected statistical method No statistical analyses are planned for this project.
Step 4	Implement the statistical method Sampled data will be assessed against the PALs noted in WS #15 .
Step 5	Document data usability and draw conclusions Data usability recommendations will be provided to the project team, and will include a summary of data usability incorporating data validation findings and general assessments of data representativeness and accuracy.

The data usability assessment is an evaluation based on the results of data verification and validation in the context of the overall project decisions or objectives. The assessment determines whether project execution and resulting data meet the project DQOs. Both the sampling and analytical activities must be considered, with the ultimate goal of assessing whether the final, qualified results support the decisions to be made with the data.

It is the responsibility of the USACE Project Chemist and the laboratory to ensure that the data meet the method detection limits, reporting limits/minimum detected activities, and laboratory QC limits listed in this QAPP. During the data validation assessment, non-conformances are documented and data are qualified for use in decision making. The data are determined to be usable by the USACE Project Chemist based on the requirements of this QAPP; the guidance presented in the *USACE Kansas City and St. Louis District Radionuclide Data Quality Evaluation Guidance for Alpha and Gamma Spectroscopy*, 2002; and the U. S. Nuclear Regulatory Commission (NUREG), *Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP)*, NUREG-1576, July 2004. Data gaps will be present if a sample is not collected, a sample is not analyzed for the requested parameters, or the data are determined to be unusable. The need for further investigation will be determined on a case-by-case basis, depending on whether data can be extrapolated from adjacent sampling locations, and whether or not the results are unnecessary based on the results from adjacent locations. All data are usable as qualified by the data validator (USACE Project Chemist), with the exception of rejected data. Estimated and/or biased results are usable. Outliers, if present, can be addressed on a case-by-case basis.

The following sections summarize the processes to determine whether the collected data are of the right type, quality, and quantity to support the environmental decision-making for the project, and describes how data quality issues will be addressed and how limitations of the use of the data will be handled.

Data Usability Assessment Documentation:

The data verification report will identify precision and accuracy exceedances with respect to the laboratory performance for each batch of samples, as well as comparability of field and lab duplicates. All the results will be assembled and statistically reported for an overall quality assessment in a Data Usability Summary Report (DUSR) in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, May 2010.

Discussion will cover precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters, which are defined as follows.

Precision. Precision measures the reproducibility of measurements. It is strictly defined as the degree of reproducibility among independent measurements as the result of repeated application of the same process under prescribed similar conditions. The precision measurement is established using the relative percent difference (RPD) or relative error ratio (RER) between the duplicate sample results, and is expressed as follows:

$$\text{RPD} = \frac{[X_1 - X_2]}{[(X_1 + X_2)/2]} \times 100 \qquad \text{RER} = \frac{[X_1 - X_2]}{[(u_c^2(X_1) + u_c^2(X_2))]^{0.5}}$$

where:

X_1 and X_2 represent the individual values/activities found for the target analyte in the two replicate analyses.
 $u_c(X_1)$ and $u_c(X_2)$ represent respective combined standard uncertainties.

RER is functionally equivalent to the normalized absolute difference (NAD) based on MARLAP Z-statistics (ZLCSD/MSD/Dup) statistic. The calculated RER/NAD are compared to an acceptable performance range of -1.96 to +1.96. Calculated RER/NAD results within the performance range are considered acceptable. Calculated RER/NAD results outside the performance range are investigated for possible discrepancies in analytical precision.

When RPDs and RERs (radiochemistry only) exceed established control limits, corrective action is warranted. Corrective action can include recalibration, reanalysis of the laboratory duplicate samples or matrix spike/matrix spike duplicate (MS/MSD) samples, or environmental sample reanalysis. Corrective actions must be taken, but if the laboratory cannot improve results, data will be flagged.

Field duplicate samples and laboratory duplicate samples (or MS/MSD samples) will be analyzed to assess field and analytical precision. Field duplicates are defined as two samples collected independently at a single sampling location during a single sample collection. Field duplicates will be collected at a frequency of 10 percent. Field duplicates will be collected for all matrices and analyzed for the same parameters. Frequency of analysis of laboratory duplicates or MS/MSD is 5 percent, as summarized by method on Worksheet #20.

Accuracy/Bias. Accuracy is the statistical measurement of correctness and includes components of random error (variability due to imprecision) and systematic error. A measurement is accurate when the reported value does not differ from the true value or known concentration of the spike or standard. Analytical accuracy is measured by comparing the percent recovery (organic and inorganic) or warning/control limits (radiochemistry) of analytes spiked into Laboratory Control Samples (LCSs) and MS and/or MSD samples to the laboratory-established or method-established control limits. Control limits will be based on previously established laboratory capabilities for similar samples using control chart techniques. Recoveries outside the control limits indicate a cause other than normal measurement error. Corrective action may include instrument recalibration, reanalysis of the QC sample, or reanalysis of the samples in the batch. For organic and radiochemistry analyses, surrogate compound recoveries and tracer yields, respectively, are also used to assess accuracy and method performance for each sample analyzed. The calculation used for percent recovery/yield is expressed as:

$$\text{Percent Recovery (organics and inorganics)} = \frac{[X - D]}{[D]} \times 100$$

Percent Recovery LCS/MS (radiochemistry)

$$Z_{\text{LCS}} = \frac{[X - D]}{[(u_c^2(X) + u_c^2(D))]^{0.5}}$$

$$Z_{\text{MS}} = \frac{[X - X_0 - D]}{[(u_c^2(X) + u_c^2(X_0) + u_c^2(D))]^{0.5}}$$

where:

Z_{LCS} represents performance indicator for laboratory control samples.

Z_{MS} represents performance indicator for matrix spikes.

X represents the value/activity of the spike sample.

D represents the spike concentration added.

X_0 represents the value of the unspiked sample.

$u_c(X)$, $u_c(X_0)$, and $u_c(D)$ represent respective combined standard uncertainties.

The calculated Z_{LCS} and Z_{MS} statistic(s) should be between -1.96 and +1.96. Calculated Z_{MS} outside the performance range require further evaluation.

Accuracy of analytical results reported in environmental samples is also measured against any contamination present in laboratory method blanks and instrument blanks, as well as field blanks, such as trip and equipment rinsate blank samples. Frequency of sampling and analysis of laboratory and field blanks is specified on Worksheet #20. For radiochemistry, blank/sample accuracy is expressed as follows, and will only be evaluated when the blank/sample result is above the minimum detected activity (MDA):

$$Z_{\text{Blank}} = \frac{X}{[(u_c(X))]} \qquad Z_{\text{Sample}} = \frac{X}{[(u_c(X))]}$$

where:

$Z_{\text{Blank/Sample}}$ represents performance indicator for blanks/samples.

X represents the measures blank activity.

$u_c(X)$ represent the combined standard uncertainty.

Radiochemistry blank analysis results are assessed to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks applies to any blank associated with the samples. If problems with any blank exist, all data associated with the case shall be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

If the blank QC results fall outside the appropriate tolerance limits or if the net blank results are not less than the associated uncertainty, the following equation should be used in determining the effect of possible blank contamination on the sample results. NAD evaluation: > 2.58 no qualification, $1.96 < x < 2.58$ -J flag, $x < 1.96$ -J or R*.

*Minimally the result should be qualified as estimated, J; however, if other quality indicators are deficient the validator may determine the result should be qualified as unusable, R.

Representativeness. Representativeness is the degree to which sample data accurately reflect the characteristics of a population of samples. It is achieved through a well-designed sampling program and by using standardized sampling strategies and techniques and analytical procedures. Factors that can

affect representativeness include site homogeneity, sample homogeneity at a single point, and available information around which the sampling program is designed.

Completeness. Completeness is a measure of the amount of valid data obtained compared with the amount expected under correct, normal conditions. It is calculated for the aggregation of data for each analyte measured as a compound of concern for the project objectives. Valid data are data that are usable in the context of the project goals. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not qualified with an R-flag after a usability assessment has been performed. The goal for completeness, based on specific project goals, is 90 percent. Defined as follows for all measurements:

$$\text{Percent Completeness} = \frac{V}{T} \times 100$$

where:

V = number of measurements judged valid

T = total number of measurements

Comparability. Comparability is the confidence with which one data set can be compared to another. It is achieved by maintaining standard techniques and procedures for collecting and analyzing samples and reporting the analytical results in standard units.

Sensitivity. Sensitivity is the ability of the method or acceptable sensitivity instrument to detect the contaminant of concern and other target compounds at the level of interest. Quantitative measurement performance criteria need to be determined for acceptable sensitivity to ensure that the quantitation limits or minimum detected activities can be routinely achieved for each matrix, analytical parameter, and concentration level. The use of standards and instrument calibration will enable the instrument to identify and differentiate between various compounds/analytes of interest and interferences/instrument background.

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A P P E N D I X B

Springville Dam Sediment Sampling - Radiological Screening Logs

Springville Dam Sediment Sampling Radiological Scan Data

Springville Dam													Date:
Probe Model	Probe SN	Meter Model	Meter SN	Count Time (min)	Background (counts)				Background (cpm)				Minimum Scan Interval (s)
					Alpha	Beta	Gamma	Gross	Alpha	Beta	Gamma	Gross	
Ludlum 43-93	PR182386	Ludlum 2360	170571	1	4.3	238.5			4	239	0	0	39.1
Ludlum 43-93	PR260689	Ludlum 2361	245787	1	2.3	215			2	215	0	0	52.2
Eberline SP-3	RN013224	Ludlum 2360	127249	1			10700		0	0	10700	0	0.1
Ludlum 44-9	PR222094	Ludlum 2221	254679	1				86	0	0	0	86	5.1

Springville Dam													Date:
Probe Model	Probe SN	Meter Model	Meter SN	Scan Interval (s)	Action Level (cpm)				MDCR (cpm)				Meets Sensitivity
					Alpha	Beta	Gamma	Gross	Alpha	Beta	Gamma	Gross	
Ludlum 43-93	PR182386	Ludlum 2360	170571	40.0	8	269	0	0	8	62	0	0	Yes
Ludlum 43-93	PR260689	Ludlum 2361	245787	53.0	5	244	0	0	5	51	0	0	Yes
Eberline SP-3	RN013224	Ludlum 2360	127249	1.0	0	0	10907	0	0	0	2636	0	Yes
Ludlum 44-9	PR222094	Ludlum 2221	254679	6.0	0	0	0	105	0	0	0	96	Yes

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD001							Date:	07/17/2018 - 07/18/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	60	2681	33	
		1	2	0	80	2922	29	
2		3	0	60	3129	44		
3		4	0	40	3294	55		
4		5	-	-	-	-		
5		6	0	60	3228	45		
4	2	6	7	0	80	3555	50	
7		8	0	100	3862	58		
8		9	0	80	3590	42		
9		10	0	20	3502	46		
10		11	0	60	3682	47		
11		12	0	80	4202	44		
7	3	12	13	0	100	3440	59	
13		14	0	120	3580	60		
14		15	0	120	3555	25		
15		16	0	100	3743	22		
16		17	0	100	3880	39		
17		18	0	80	4120	44		
10	4	18	19	0	100	3828	49	Offset
19		20	0	40	3755	32		
20		21	0	140	3746	76	Shale	
21		22	0	120	3619	84	Shale	
22		23	0	140	3072	33		
23		24	0	160	2954	34		
Depth to Bedrock (ft):			Average:	0	89	3519	46	
			Std Dev:	0	35	384	15	
			Minimum:	0	20	2681	22	
			Maximum:	0	160	4202	84	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD002							Date:	7/18/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	60	2861	28	
		1	2	0	80	3013	31	
2		3	0	66	3064	59		
3		4	0	60	3092	61		
4		5	0	80	3454	44		
5		6	0	100	3698	37		
4	2	6	7	0	80	2728	31	
7		8	0	100	3098	43		
5		8	9	-	-	-	-	
		9	10	0	100	2587	41	
6		10	11	0	100	2953	37	
		11	12	0	80	3007	29	
7	3	12	13	0	50	2424	40	
13		14	0	60	2341	42	Offset	
8		14	15	-	-	-	-	
		15	16	0	110	3090	68	
9		16	17	-	-	-	-	
		17	18	0	80	3271	28	
10	4	18	19					
11		19	20					
		20	21					
12		21	22					
		22	23					
Depth to Bedrock (ft):			Average:	0	80	2979	41	
	Std Dev:		0	19	361	12		
	Minimum:		0	50	2341	28		
	Maximum:		0	110	3698	68		
	Action Level (cpm)		8	269	10907	105		

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD003							Date:	7/17/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	-	-	-	-	
		1	2	-	-	-	-	
2		3	0	80	3232	51		
3		4	0	100	3346	53		
4		5	0	100	3336	58		
5		6	0	100	3870	34		
4	2	6	7	0	80	3258	35	
7		8	0	120	3340	37		
5		8	9	0	100	2298	44	
		9	10	0	80	3302	52	
6		10	11	0	60	3257	50	
		11	12	0	60	3201	45	
7	3	12	13	0	60	3385	27	
13		14	0	80	3655	33		
8		14	15	0	100	3040	42	
		15	16	0	100	3283	57	
9		16	17	0	60	2883	34	
		17	18					
10	4	18	19					
11		19	20					
		20	21					
12		21	22					
		22	23					
Depth to Bedrock (ft):				Average:	0	85	3246	43
			Std Dev:	0	19	347	10	
			Minimum:	0	60	2298	27	
			Maximum:	0	120	3870	58	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD004							Date:	7/13/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	120	3414	74	
		1	2	0	140	3642	86	
2		3	0	140	3164	38		
3		4	0	160	3120	46		
4		5	0	120	3990	38		
5		6	0	100	4020	40		
4	2	6	7	0	120	3572	19	
7		8	0	160	3880	32		
5		8	9	0	120	3819	42	
		9	10	0	140	3384	52	
6		10	11	0	130	3342	37	
		11	12	0	140	3040	36	
7	3	12	13	0	140	3613	32	
13		14	0	120	3477	33		
8		14	15	0	110	3585	41	
		15	16	0	150	3615	44	
9		16	17	0	140	3482	32	
		17	18	0	120	3118	31	
10	4	18	19	-	-	-	-	
19		20	0	160	3392	37		
11		20	21	-	-	-	-	
		21	22	0	140	3440	36	
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	134	3505	41	
			Std Dev:	0	17	280	15	
			Minimum:	0	100	3040	19	
			Maximum:	0	160	4020	86	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD005							Date:	7/10/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	-	-	-	-	Will Redo Location
		1	2	-	-	-	-	
2		2	3	0	120	2602	27	
		3	4	-	-	-	-	
3		4	5	0	140	3132	33	
		5	6	-	-	-	-	
4	2	6	7	0	100	2486	38	
		7	8	0	110	2592	40	
5		8	9	0	100	2390	32	
		9	10					
6		10	11					
		11	12					
7	3	12	13					
		13	14					
8		14	15					
		15	16					
9		16	17					
		17	18					
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	114	2640	34	
			Std Dev:	0	17	288	5	
			Minimum:	0	100	2390	27	
			Maximum:	0	140	3132	40	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD005							Date:	7/19/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	96	2817	49	
		1	2					
2		2	3	0	117	2703	58	
		3	4					
3		4	5	1	115	3213	49	Rocky recovery
	5	6						
4	2	6	7	0	123	2705	53	
		7	8					
5		8	9	2	102	2787	46	
		9	10					
6		10	11	1	90	2669	43	
	11	12						
7	3	12	13	-	-	-	-	Poor recovery
		13	14					
8		14	15	1	83	2860	43	
		15	16					
9		16	17	2	110	3016	45	
	17	18						
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
	23	24						
Depth to Bedrock (ft):			Average:	1	105	2846	48	
			Std Dev:	1	14	185	5	
			Minimum:	0	83	2669	43	
			Maximum:	2	123	3213	58	
			Action Level (cpm)	5	244	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD006							Date:	7/10/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	120	2689	28	Will Redo Location
		1	2	0	140	3206	33	
2		2	3	-	-	-	-	
		3	4	-	-	-	-	
3		4	5	-	-	-	-	
		5	6	-	-	-	-	
4	2	6	7	0	200	2951	29	
		7	8	0	180	2985	22	
5		8	9	0	-	2759	29	
		9	10					
6		10	11					
		11	12					
7	3	12	13					
		13	14					
8		14	15					
		15	16					
9		16	17					
		17	18					
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	160	2918	28	
			Std Dev:	0	37	204	4	
			Minimum:	0	120	2689	22	
			Maximum:	0	200	3206	33	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD006							Date:	-
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	120	3417	35	
		1	2	0	100	3445	37	
2		3	0	100	3559	52		
3		4	-	-	-	-		
4		5	0	100	3397	64		
5		6	0	110	3642	47		
4	2	6	7	0	40	3301	37	
		7	8	0	100	3030	31	
5		8	9					
		9	10					
6		10	11					
		11	12					
7	3	12	13					
		13	14					
8		14	15					
		15	16					
9		16	17					
		17	18					
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	96	3399	43	
			Std Dev:	0	26	197	12	
			Minimum:	0	40	3030	31	
			Maximum:	0	120	3642	64	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD007							Date:	07/16/2018 - 07/17/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	102	3794	44	Poor recovery
		1	2					
2		2	3	0	97	3697	44	Poor recovery
		3	4					
3		4	5	3	116	3662	50	Poor recovery
		5	6					
4	2	6	7	0	100	3381	47	
		7	8	0	80	3321	52	
5		8	9	0	120	3573	49	
		9	10	0	100	3640	42	
6		10	11	0	120	3232	46	
		11	12	0	140	3294	39	
7	3	12	13	0	120	3869	71	
		13	14	0	100	3740	68	
8		14	15	0	80	3672	62	
		15	16	0	60	3720	56	
9		16	17	0	60	3429	73	
		17	18	0	80	3307	82	
10	4	18	19	0	60	3434	63	
		19	20	0	80	3540	62	
11		20	21	0	100	3600	60	
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	95	3550	56	
			Std Dev:	1	23	191	12	
			Minimum:	0	60	3232	39	
			Maximum:	3	140	3869	82	
			Action Level (cpm)	5	244	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD008							Date:	7/16/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	1	127	3298	48	Poor recovery
		1	2					
2		2	3	1	163	3159	48	Poor recovery
		3	4					
3		4	5	0	126	3397	40	Poor recovery
		5	6					
4	2	6	7	0	172	3364	41	Poor recovery
		7	8					
5		8	9	0	176	3290	58	
		9	10	0	155	3210	47	
6		10	11	0	147	3090	52	
		11	12	0	136	3204	44	
7	3	12	13	0	130	3189	51	Low recovery
		13	14					
8		14	15	0	178	3266	37	Low recovery
		15	16					
9		16	17	1	156	3318	50	Alpha/Beta scintillation detector (SN170571) began malfunctioning at ~14' and was replaced with SN245787. The alpha and beta scans for 14'-22' were performed with the new instrument after the location was completed.
		17	18			2924	48	
10	4	18	19	0	154	3330	44	
		19	20			3430	53	
11		20	21	0	153	3540	47	
		21	22			3192	56	
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	152	3263	48	
			Std Dev:	0	18	145	6	
			Minimum:	0	126	2924	37	
			Maximum:	1	178	3540	58	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD009							Date:	7/13/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	80	3750	16	
		1	2	0	120	3600	18	
2		3	0	110	3522	34		
3		4	0	110	3750	37		
3		4	5	0	120	3570	37	
		5	6	-	130	3429	32	
4	2	6	7	-	-	-	-	Poor recovery
		7	8	-	-	-	-	Poor recovery
5		8	9	0	110	3576	41	
		9	10	0	100	3735	42	
6		10	11	0	120	2892	45	
		11	12	0	130	3649	46	
7	3	12	13	0	150	3790	26	
		13	14	0	140	3640	28	
8		14	15	0	135	3450	32	
		15	16	0	150	3550	40	
9		16	17	0	140	3660	45	
		17	18	0	110	3890	50	
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	122	3591	36	
			Std Dev:	0	19	224	10	
			Minimum:	0	80	2892	16	
			Maximum:	0	150	3890	50	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD010							Date:	7/12/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	40	3487	16	
		1	2	-	-	-	-	
2		2	3	0	140	2910	52	
		3	4	0	180	3457	48	
3		4	5	0	150	3504	35	
		5	6	0	160	3033	36	
4	2	6	7	0	90	3500	35	
		7	8	0	110	3650	45	
5		8	9	0	100	3247	45	
		9	10	0	110	3732	50	
6		10	11	0	110	3575	55	
		11	12	0	120	3279	63	
7	3	12	13	0	60	3175	35	
		13	14	0	40	3180	42	
8		14	15	0	100	3229	47	
		15	16	0	110	3590	51	
9		16	17	0	120	3420	45	
		17	18	0	130	3345	35	
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	110	3371	43	
			Std Dev:	0	38	224	11	
			Minimum:	0	40	2910	16	
			Maximum:	0	180	3732	63	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD011							Date:	7/13/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	80	3862	28	Poor recovery
		1	2					
2		2	3	0	80	3729	27	Poor recovery
		3	4					
3		4	5	0	120	3609	26	Poor recovery
		5	6					
4	2	6	7	0	140	3642	36	Poor recovery
		7	8					
5		8	9	0	130	3261	22	Poor recovery
		9	10					
6		10	11	0	160	3488	41	Poor recovery
		11	12					
7	3	12	13	0	100	3637	34	
		13	14	0	180	3452	37	
8		14	15	0	160	3488	42	
		15	16	0	140	3302	48	
9		16	17	0	130	4050	29	
		17	18					
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	129	3593	34	
			Std Dev:	0	32	233	8	
			Minimum:	0	80	3261	22	
			Maximum:	0	180	4050	48	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD012							Date:	7/11/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	120	2890	32	Poor recovery
		1	2					
2		2	3	0	100	2922	44	Poor recovery
		3	4					
3		4	5	0	100	3144	40	Poor recovery
		5	6					
4	2	6	7	0	90	3290	55	
		7	8	0	100	3030	46	
5		8	9	0	100	2734	38	
		9	10	0	120	2580	36	
6		10	11	-	-	-	-	
		11	12	-	-	-	-	
7	3	12	13	0	80	2989	34	
		13	14	0	100	4000	24	
8		14	15	0	120	3949	30	
		15	16	0	60	3500	27	
9		16	17	0	120	3703	27	Test
		17	18	0	160	3600	27	
10	4	18	19	0	100	3340	34	
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	105	3262	35	
			Std Dev:	0	23	441	9	
			Minimum:	0	60	2580	24	
			Maximum:	0	160	4000	55	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

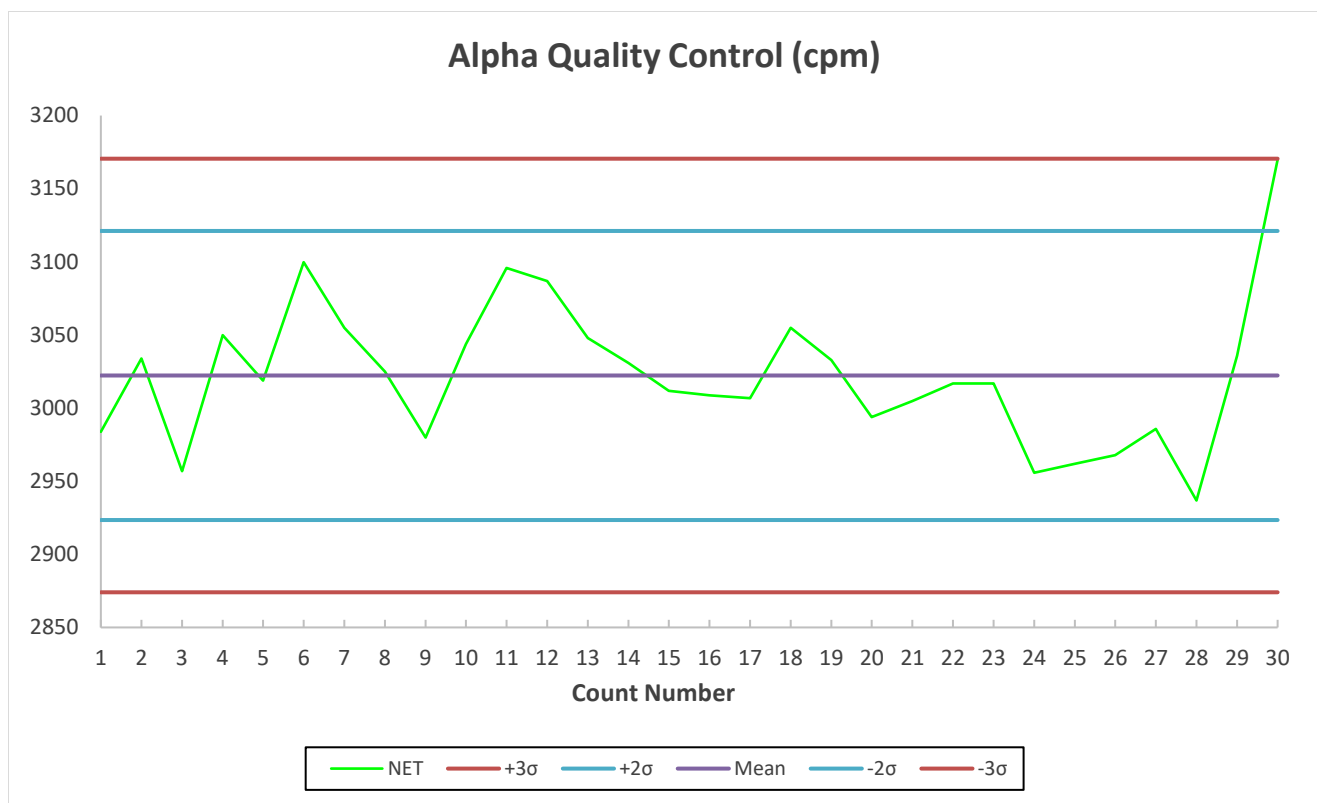
SVD-SD013							Date:	7/19/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	-	-	-	-	No Recovery
		1	2	-	-	-	-	No Recovery
2		3	2	103	3423	44		
3		4						
3		4	5	1	102	3391	57	
		5	6					
4	2	6	7	2	107	3121	48	
		7	8					
5		8	9	0	90	3263	49	
			9					
6		10	11	0	110	3750	59	
			11	12	1			
7	3	12	13	0	91	3295	54	Poor recovery
		13	14					
8		14	15	2	105	3706	44	
		15	16	1	99	3727	55	
9		16	17	0	85	3862	43	
		17	18	2	101	3850	46	
10	4	18	19	2	102	2927	52	
		19	20	0	120	2799	61	
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	1	102	3426	51	
			Std Dev:	1	9	360	6	
			Minimum:	0	85	2799	43	
			Maximum:	2	120	3862	61	
			Action Level (cpm)	5	244	10907	105	

Springville Dam Sediment Sampling Radiological Scan Data

SVD-SD014							Date:	7/20/2018
Split Spoon Number	Composite Sample Number	Split Spoon Sample Depth (ft)		Alpha/Beta Scintillator (cpm)		Sodium Iodide (NaI) (cpm)	GM Scan (cpm)	Comments
		Starting	Ending	Gross Alpha	Gross Beta	Gross Gamma	Gross Counts	
1	1	0	1	0	102	3804	52	
		1	2					
2		2	3					
		3	4					
3		4	5					
	2	5	6	0	102	3860	40	
			6	0	124	3864	39	
4		6	7	2	134	3527	56	
		7	8					
5		8	9	1	120	3708	51	
		9	10	1	110	3864	49	
6		10	11	0	128	3772	51	
		11	12	1	134			
7	3	12	13	0	121	3844	57	
		13	14	0	89	3814	39	
8		14	15	0	109	3704	52	
		15	16	0	119	3874	51	
9		16	17	0	97	3026	55	
		17	18	1	117	3802	46	
10	4	18	19					
		19	20					
11		20	21					
		21	22					
12		22	23					
		23	24					
Depth to Bedrock (ft):			Average:	0	115	3727	50	
			Std Dev:	1	13	223	6	
			Minimum:	0	89	3026	39	
			Maximum:	2	134	3874	57	
			Action Level (cpm)	8	269	10907	105	

Springville Dam Sediment Sampling

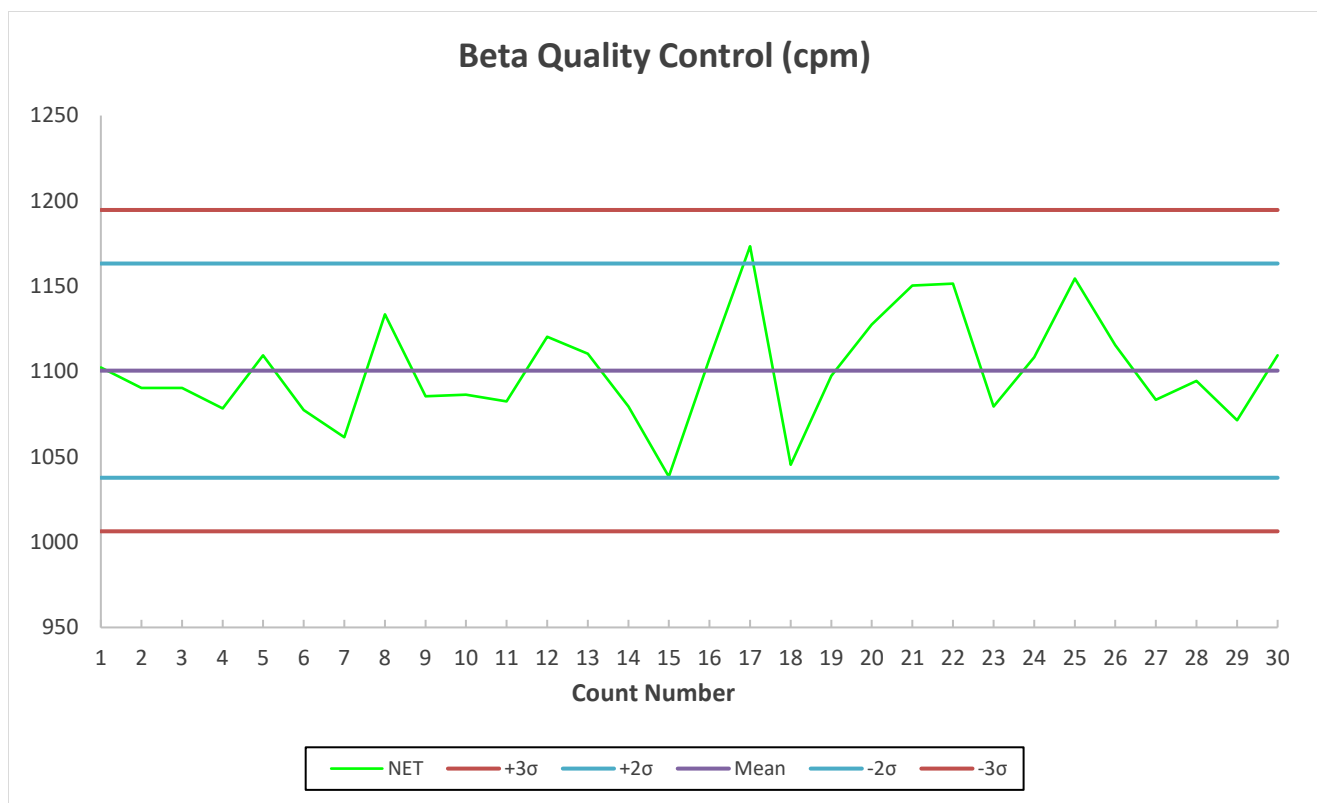
Instrument Efficiency Check																
Date: 10-Jul-18		Check Date's Calculated Activity (dpm)	Check Date's Calculated Activity (uCi)	Probe SN	Alpha				Beta				Gamma			
Source	Source Number				Observed Counts (cpm)	Efficiency (cpm/dpm)		Relative Percent Difference	Observed Counts (cpm)	Efficiency (cpm/dpm)		Relative Percent Difference	Observed Counts (cpm)	Efficiency (cpm/dpm)		Relative Percent Difference
						Observed	Calibrated			Observed	Calibrated			Observed	Calibrated	
Th-230	1288/92	19899.579	0.009	PR182386	3022	0.1519	0.2190	36.21%	-	-	-	-	-	-	-	-
Th-230	1288/92	19899.579	0.009	PR260689	3231	0.1624	0.2212	30.68%	-	-	-	-	-	-	-	-
Sr-90	3947-01	3946.105	0.002	PR182386	-	-	-	-	1101	0.2790	0.4340	43.48%	-	-	-	-
Sr-90	3947-01	3946.105	0.002	PR260689	-	-	-	-	821	0.2081	0.3654	54.88%	-	-	-	-
Sr-90	3947-01	3946.105	0.002	PR222094	-	-	-	-	1355	0.3434	0.5935	53.39%	-	-	-	-
Cs-137	1271	1637708.52	0.738	RN013224	-	-	-	-	-	-	-	-	173779	0.1061	0.1020	3.95%



Model:	2360	SN#	170571	Probe:	43-93	SN#	PR182386	Cal Due:	21Mar19
Source:	Th-230	SN#	1288/92	Activity (μCi):		0.009	Cal Date:	21Mar18	
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%	Date:		3Jul18
3022	3121	2923	3171	2874	3627	2418	Inst. Efficiency:		21.90%
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS
1	2984	2984	11	3096	3096	21	3005	3005	
2	3034	3034	12	3087	3087	22	3017	3017	
3	2957	2957	13	3048	3048	23	3017	3017	
4	3050	3050	14	3031	3031	24	2956	2956	
5	3019	3019	15	3012	3012	25	2962	2962	
6	3100	3100	16	3009	3009	26	2968	2968	
7	3055	3055	17	3007	3007	27	2986	2986	
8	3025	3025	18	3055	3055	28	2937	2937	
9	2980	2980	19	3033	3033	29	3036	3036	
10	3044	3044	20	2994	2994	30	3170	3170	
Bkgd:	0	CPM	Mean:	3022	CPM	2σ:	98 CPM	3σ:	148 CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

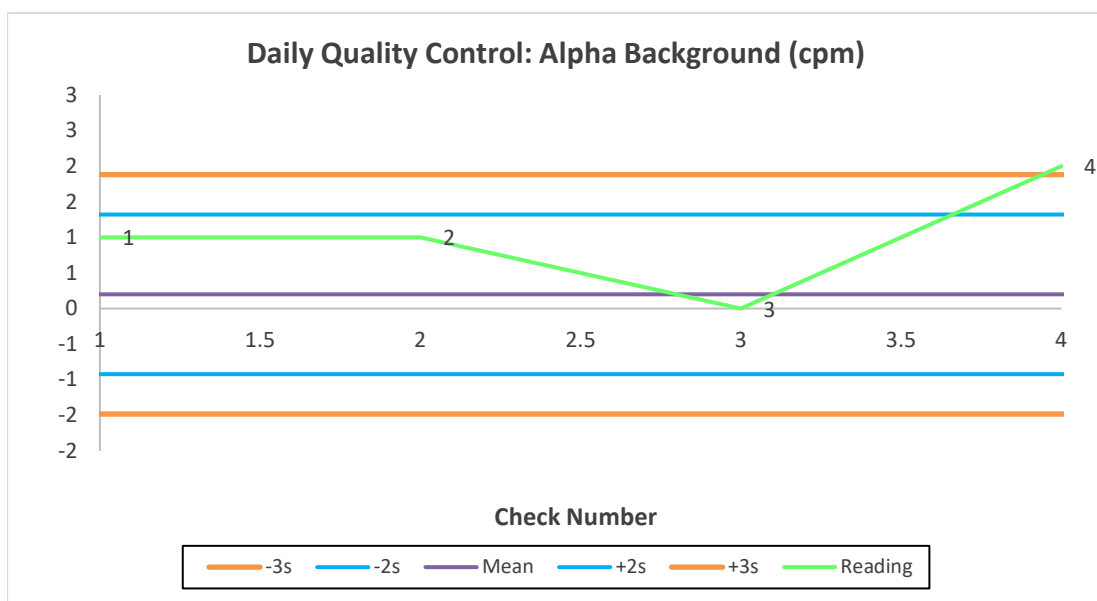
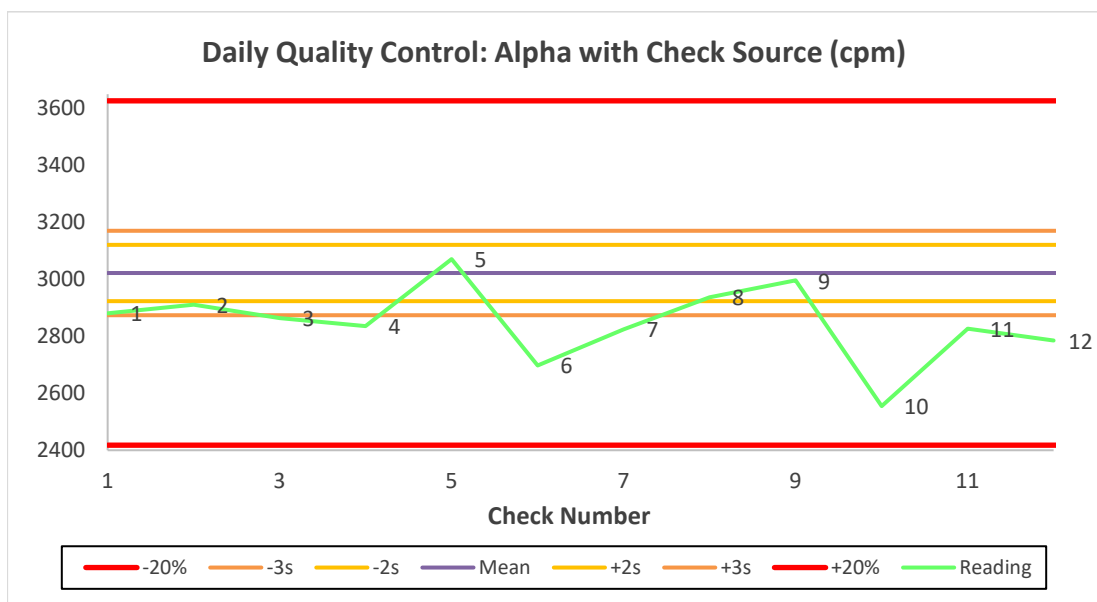
χ^2 : 23.4
 p: 0.76
 Reduced χ^2 : 0.8



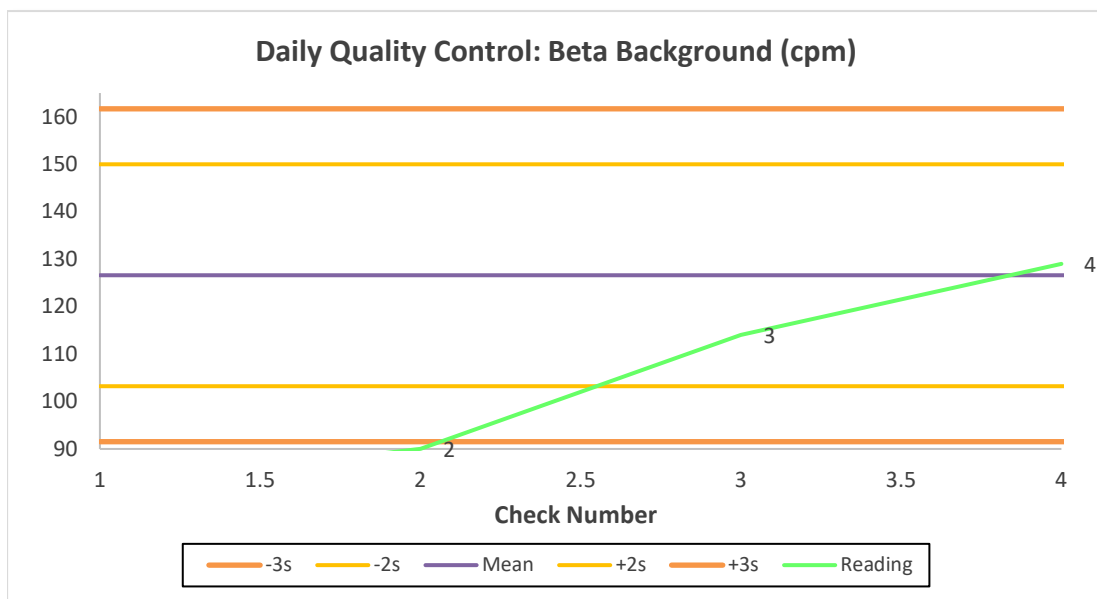
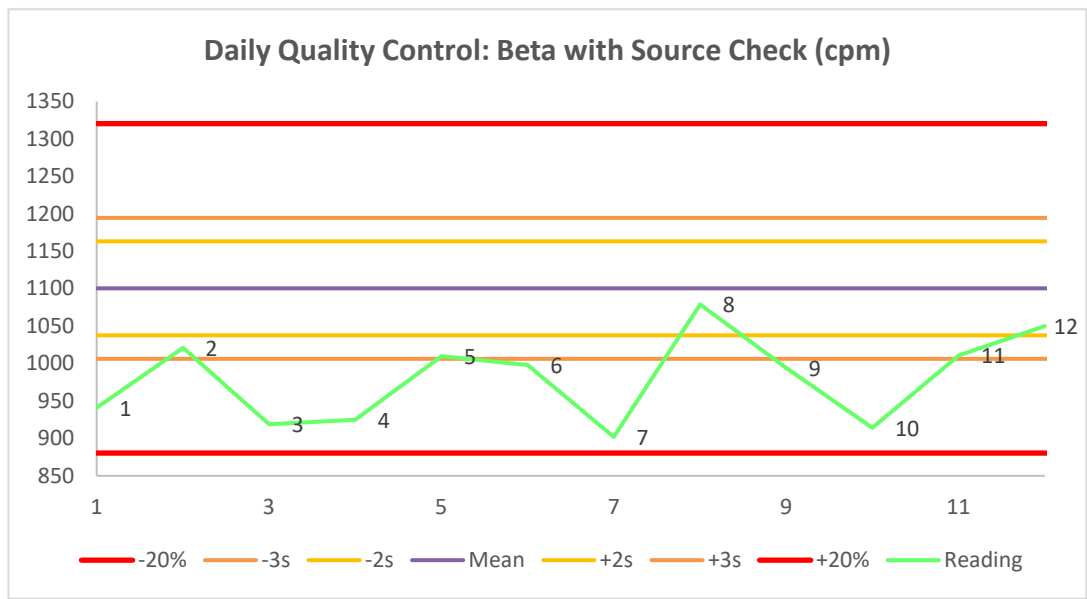
Model:	2360	SN#	170571	Probe:	43-93	SN#	PR182386	Cal Due:	21Mar19
Source:	Sr-90	SN#	3947-01	Activity (μCi):		0.002	Cal Date:	21Mar18	
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%	Date:		3Jul18
1101	1163	1038	1195	1006	1321	880	Inst. Efficiency:		43.40%
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS
1	1229	1102	11	1209	1082	21	1277	1150	
2	1217	1090	12	1247	1120	22	1278	1151	
3	1217	1090	13	1237	1110	23	1206	1079	
4	1205	1078	14	1206	1079	24	1235	1108	
5	1236	1109	15	1165	1038	25	1281	1154	
6	1204	1077	16	1234	1107	26	1242	1115	
7	1188	1061	17	1300	1173	27	1210	1083	
8	1260	1133	18	1172	1045	28	1221	1094	
9	1212	1085	19	1224	1097	29	1198	1071	
10	1213	1086	20	1254	1127	30	1236	1109	
Bkgd:	127	CPM	Mean:	1101	CPM	2σ:	62 CPM	3σ:	94 CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

χ^2 : 26.0
 p : 0.63
 Reduced χ^2 : 0.9



Daily Alpha Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
9Jul18	2882	1	2881			0			0
10Jul18	2912	1	2911			0	2865	1	2864
11Jul18	2837	1	2836			0	3072	1	3071
12Jul18	2699	1	2698			0	2826	1	2825
13Jul18	2938	1	2937			0	2997	1	2996
16Jul18	2556	1	2555			0			0
19Jul18	2827	0	2827			0			0
20Jul18	2787	2	2785			0			0



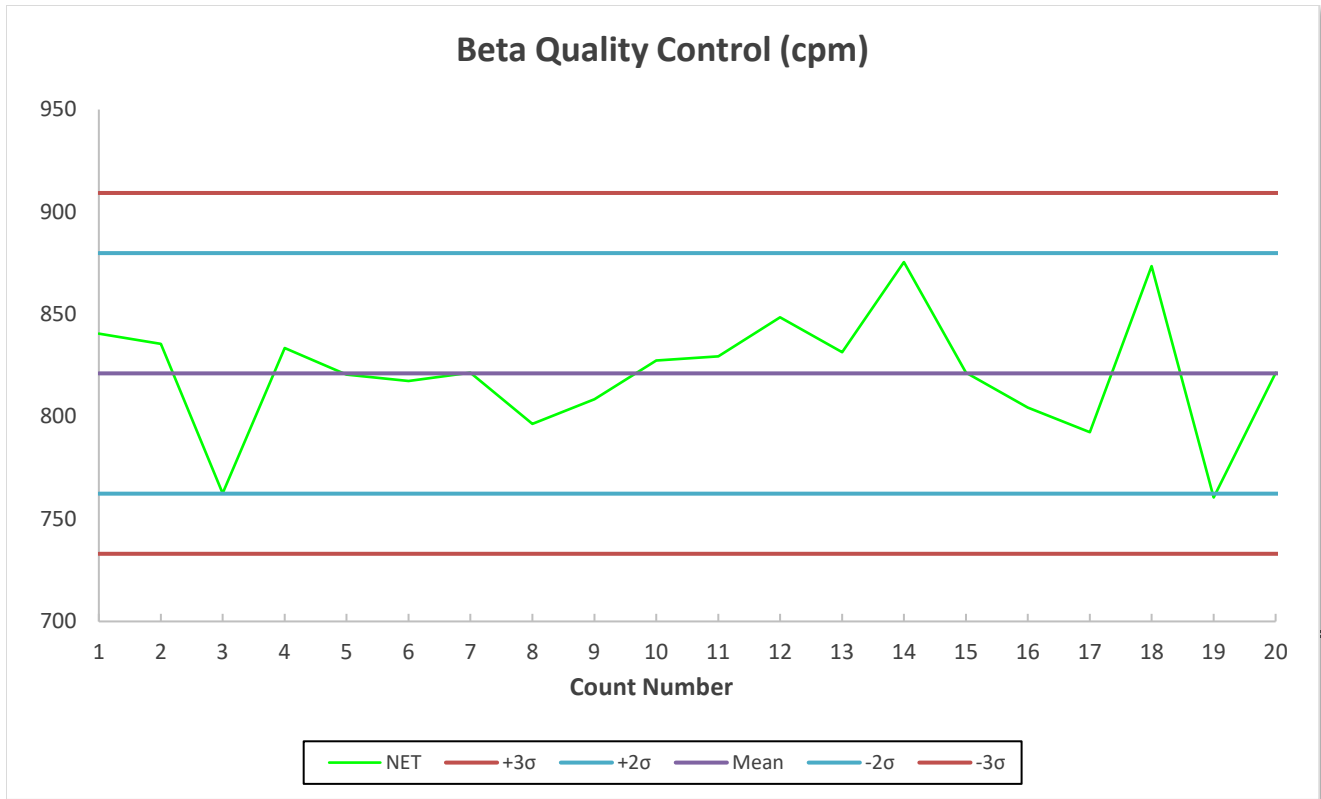
Daily Beta Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
9Jul18	1023	82	941			0			0
10Jul18	1103	82	1021			0	1001	82	919
11Jul18	1007	82	925			0	1092	82	1010
12Jul18	1080	82	998			0	984	82	902
13Jul18	1161	82	1079			0	1076	82	994
16Jul18	1004	90	914			0			0
19Jul18	1125	114	1011			0			0
20Jul18	1179	129	1050			0			0



Model:	2360	SN#	245787	Probe:	43-93	SN#	PR260689	Cal Due:	25Jul18
Source:	Th-230	SN#	1288/92	Activity (μCi):	0.009	Cal Date:	25Jul17		
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%	Date:	10Jul18	
3231	3328	3133	3377	3084	3877	2585	Inst. Efficiency:	21.90%	
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS
1	3310	3310	11	3164	3164				
2	3203	3203	12	3310	3310				
3	3293	3293	13	3175	3175				
4	3241	3241	14	3196	3196				
5	3255	3255	15	3199	3199				
6	3222	3222	16	3256	3256				
7	3225	3225	17	3210	3210				
8	3305	3305	18	3246	3246				
9	3150	3150	19	3231	3231				
10	3260	3260	20	3172	3172				
Bkgd:	1	CPM	Mean:	3231	CPM	2σ:	97 CPM	3σ:	146 CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

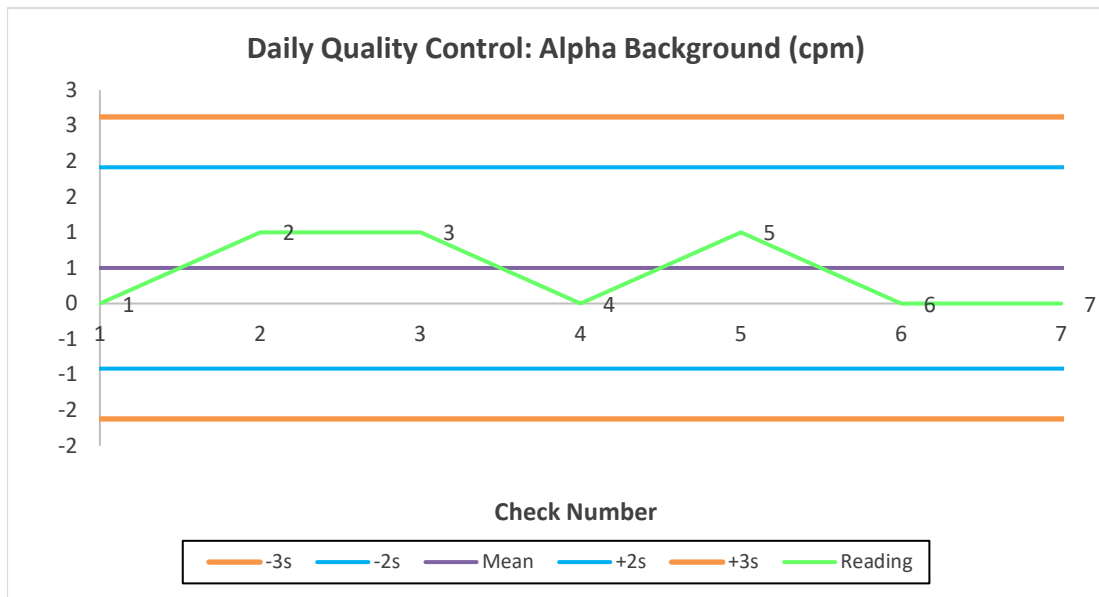
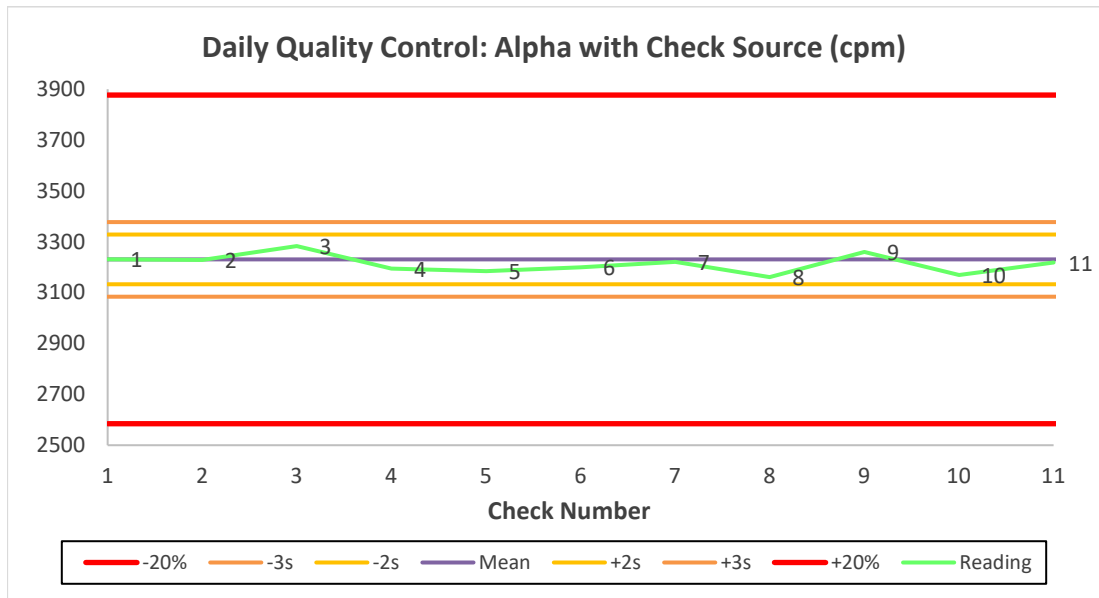
χ^2 : 14.1
 p: 0.78
 Reduced χ^2 : 0.7



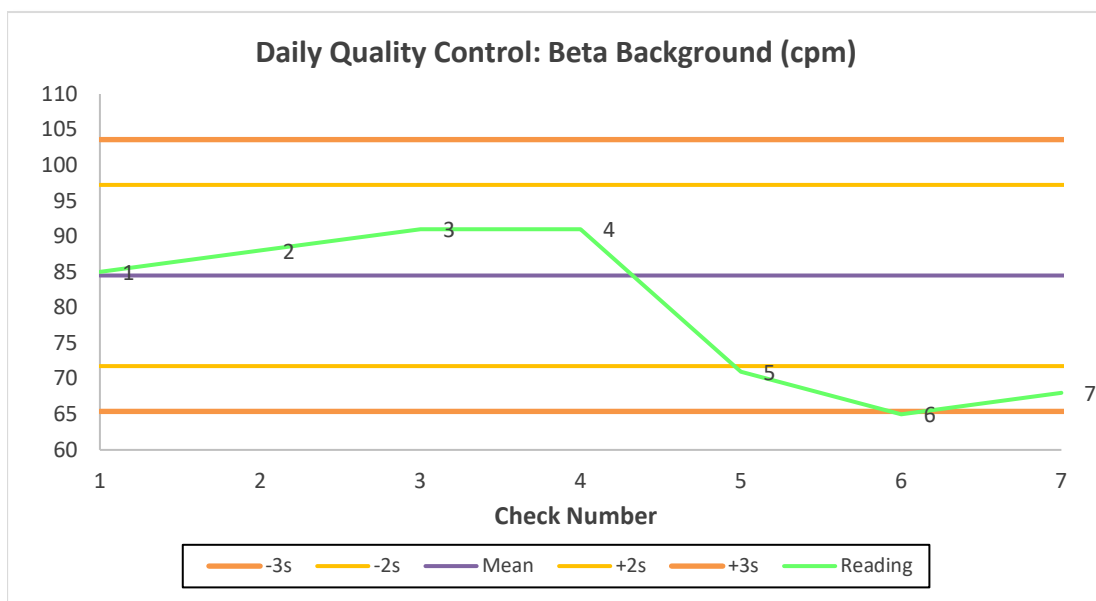
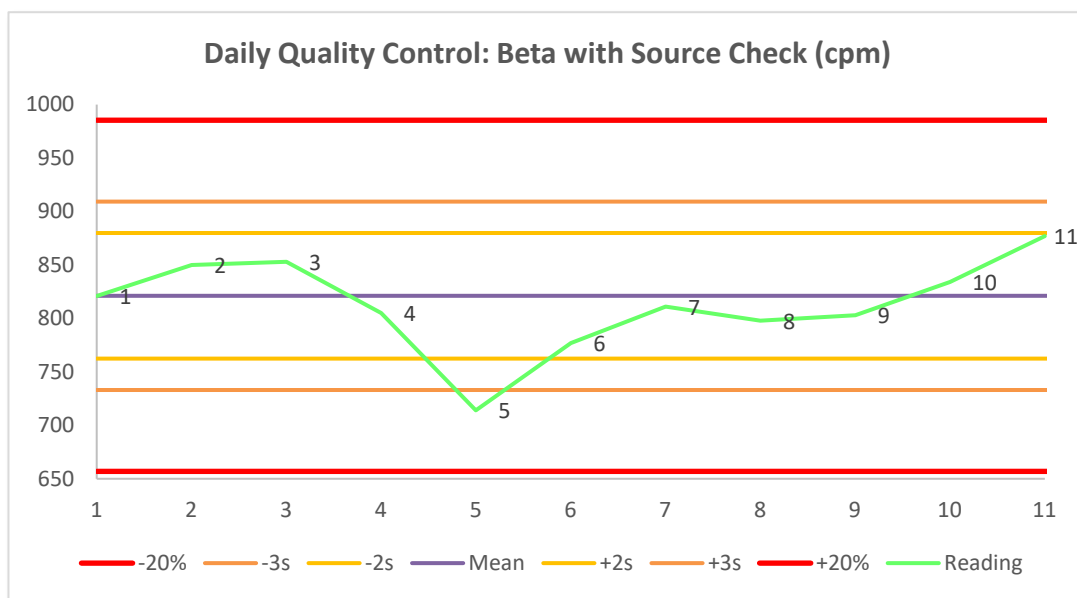
Model:	2360	SN#	245787	Probe:	43-93	SN#	PR260689	Cal Due:	25Jul18
Source:	Sr-90	SN#	3947-01	Activity (μCi):	0.002	Cal Date:	25Jul17		
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%	Date:	10Jul18	
821	880	762	909	733	985	657	Inst. Efficiency:	43.40%	
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS
1	925	841	11	914	830				
2	920	836	12	933	849				
3	847	763	13	916	832				
4	918	834	14	960	876				
5	905	821	15	906	822				
6	902	818	16	889	805				
7	906	822	17	877	793				
8	881	797	18	958	874				
9	893	809	19	845	761				
10	912	828	20	906	822				
Bkgd:	85	CPM	Mean:	821	CPM	2σ:	58 CPM	3σ:	88 CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

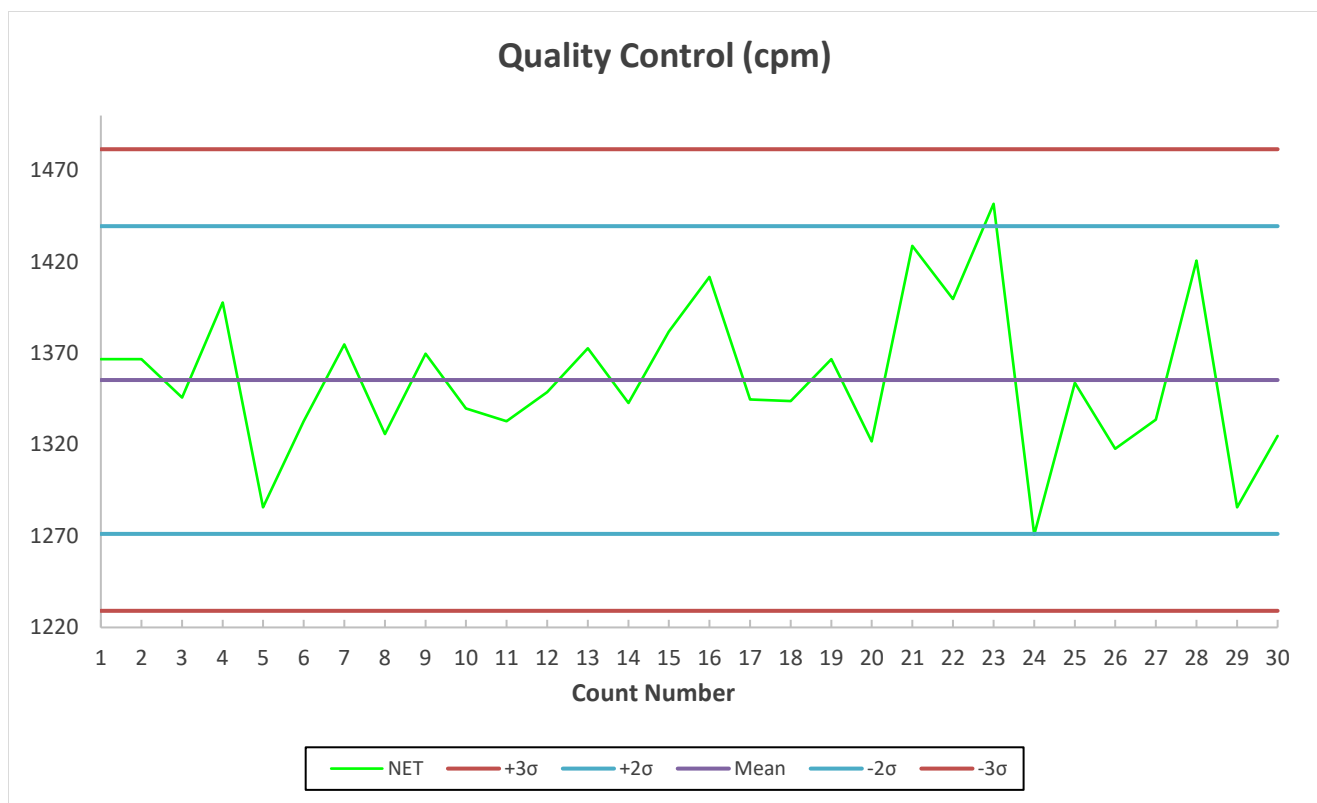
χ^2 : 20.0
 p : 0.40
 Reduced χ^2 : 1.1



Daily Alpha Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
10Jul18	3231	0	3231			0			0
16Jul18	3229	1	3228			0	3284	1	3283
17Jul18	3195	0	3195			0	3184	0	3184
18Jul18	3200	0	3200			0	3221	0	3221
19Jul18	3161	0	3161			0	3261	1	3260
20Jul18	3169	0	3169			0	3218	0	3218



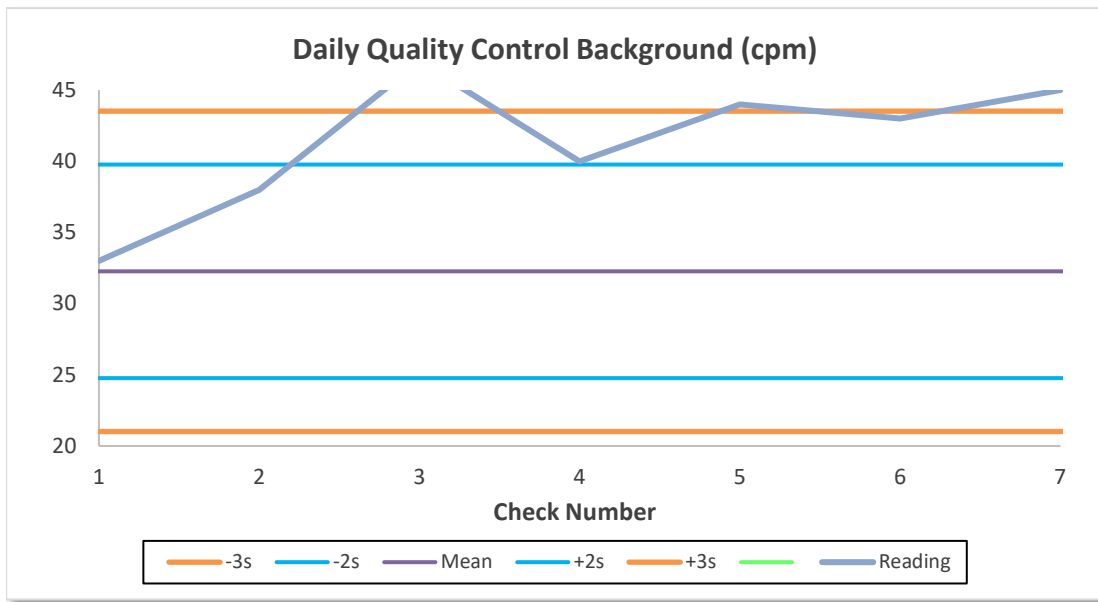
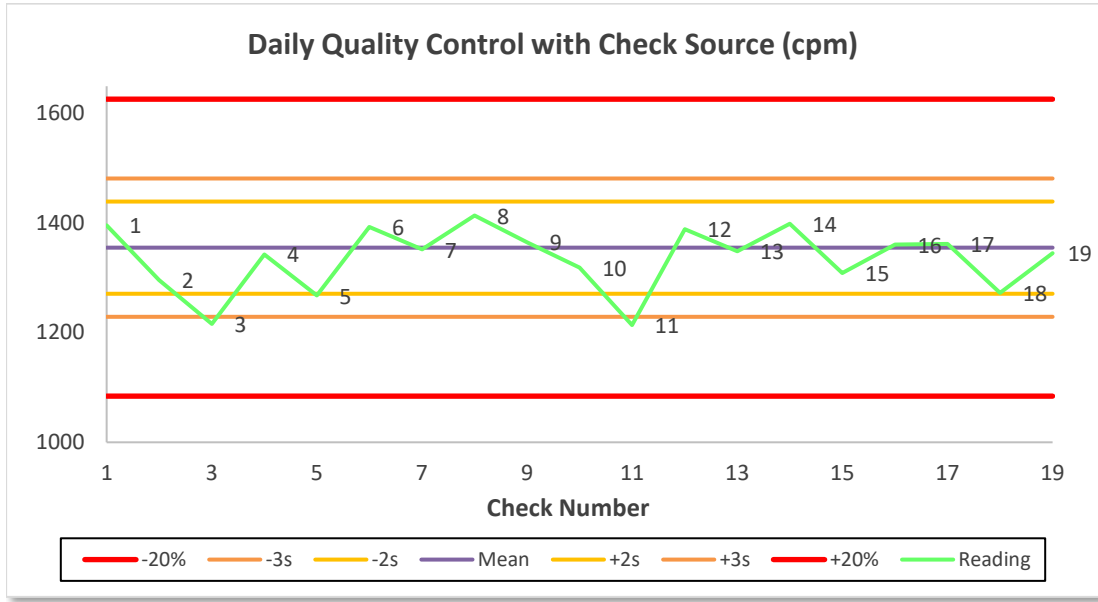
Daily Beta Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
10Jul18	906	85	821			0			0
16Jul18	938	88	850			0	944	91	853
17Jul18	890	85	805			0	799	85	714
18Jul18	862	85	777			0	896	85	811
19Jul18	889	91	798			0	874	71	803
20Jul18	899	65	834			0	945	68	877



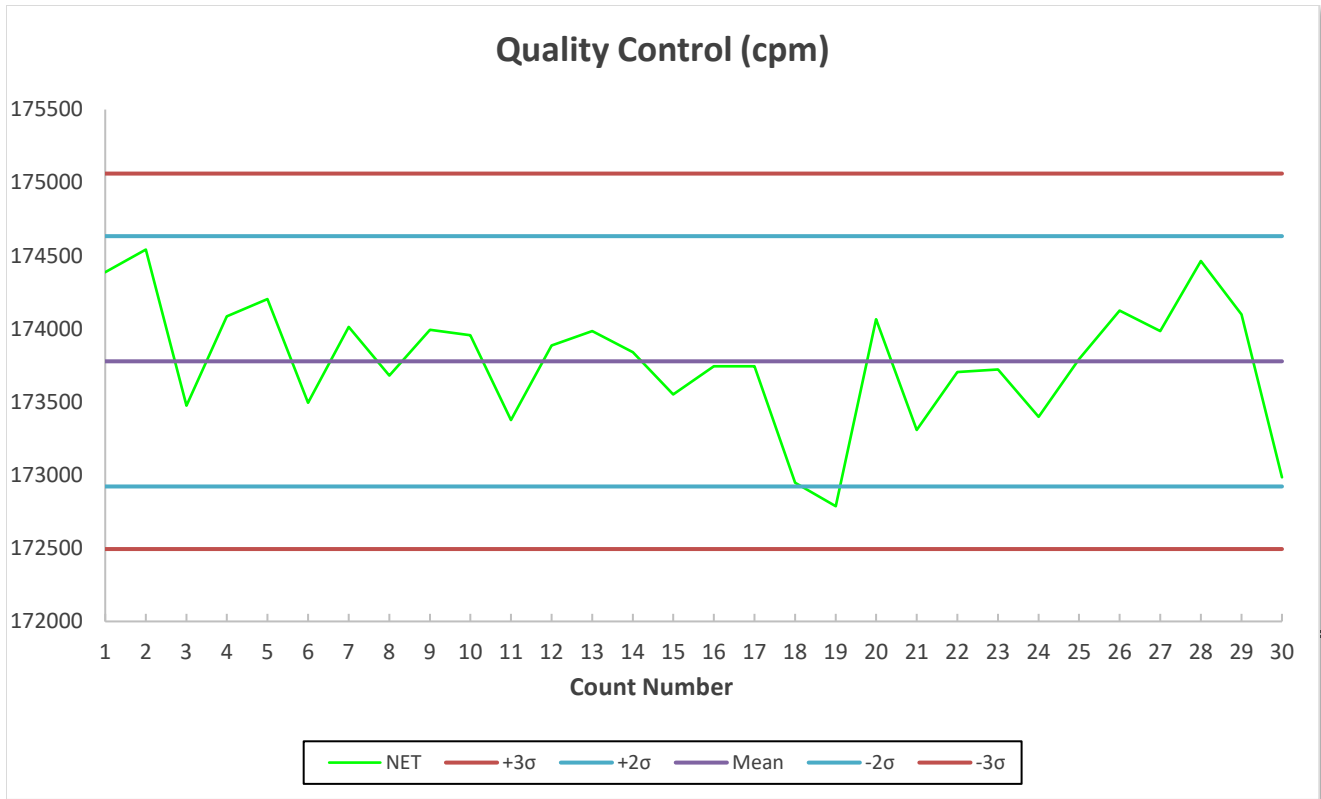
Model:	2241-2	SN#	254679	Probe:	44-9	SN#	PR222094	Cal Due:	21Mar19	
Source:	Sr-90	SN#	3947-01		Activity (μCi):		0.002	Cal Date:	21Mar18	
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%		Date:	3Jul18	
1355	1439	1271	1482	1229	1626	1084	Inst. Efficiency:		59.35%	
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS	
1	1399	1367	11	1365	1333	21	1461	1429		
2	1399	1367	12	1381	1349	22	1432	1400		
3	1378	1346	13	1405	1373	23	1484	1452		
4	1430	1398	14	1375	1343	24	1303	1271		
5	1318	1286	15	1414	1382	25	1386	1354		
6	1365	1333	16	1444	1412	26	1350	1318		
7	1407	1375	17	1377	1345	27	1366	1334		
8	1358	1326	18	1376	1344	28	1453	1421		
9	1402	1370	19	1399	1367	29	1318	1286		
10	1372	1340	20	1354	1322	30	1357	1325		
Bkgd:	32	CPM	Mean:	1355	CPM	2σ:	84	CPM	3σ:	126 CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

χ^2 : 37.9
 p: 0.12
 Reduced χ^2 : 1.3



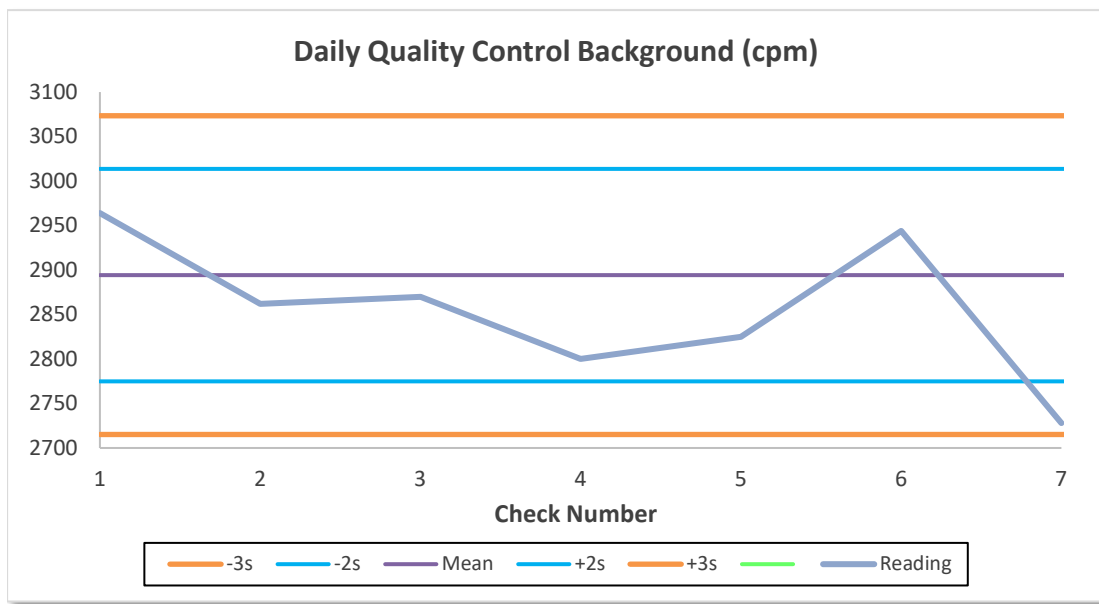
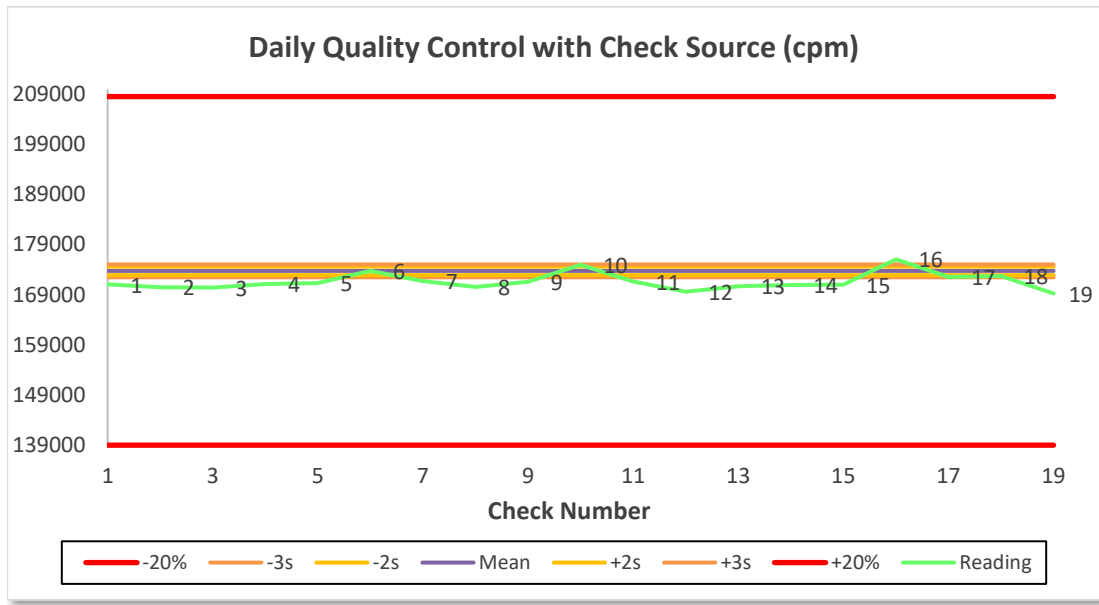
Daily Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
9Jul18	1429	33	1396			0			0
10Jul18	1329	33	1296			0	1249	33	1216
11Jul18	1376	33	1343			0	1301	33	1268
12Jul18	1426	33	1393			0	1385	33	1352
13Jul18	1447	33	1414			0	1398	33	1365
16Jul18	1357	38	1319			0	1261	47	1214
17Jul18	1422	33	1389			0	1382	33	1349
18Jul18	1432	33	1399			0	1342	33	1309
19Jul18	1401	40	1361			0	1406	44	1362
20Jul18	1316	43	1273			0	1390	45	1345



Model:	2221	SN#	127249	Probe:	SPA-3	SN#	RN013224	Cal Due:	25Jul18		
Source:	Cs-137	SN#	1271		Activity (μCi):		0.738	Cal Date:	25Jul17		
Mean	+2σ	-2σ	+3σ:	-3σ	+20%	-20%		Date:	3Jul18		
173779	174634	172923	175062	172495	208534	139023	Inst. Efficiency:		10.20%		
Chk.#	Gross	Net	Chk.#	Gross	Net	Chk.#	Gross	Net	COMMENTS		
1	177282	174388	11	176271	173377	21	176204	173310			
2	177437	174543	12	176781	173887	22	176600	173706			
3	176370	173476	13	176880	173986	23	176618	173724			
4	176981	174087	14	176736	173842	24	176293	173399			
5	177098	174204	15	176446	173552	25	176687	173793			
6	176390	173496	16	176638	173744	26	177019	174125			
7	176907	174013	17	176638	173744	27	176879	173985			
8	176575	173681	18	175843	172949	28	177358	174464			
9	176889	173995	19	175682	172788	29	176993	174099			
10	176852	173958	20	176960	174066	30	175879	172985			
Bkgd:	2894	CPM	Mean:	173779	CPM	2σ:	855	CPM	3σ:	1283	CPM

$$\chi^2 = \sum_{i=1}^{30} \frac{(\text{Observed}_i - \text{Mean})^2}{\text{Mean}}$$

χ^2 : 30.6
 p: 0.39
 Reduced χ^2 : 1.0



Daily Checks in CPM									
Date	Gross	BKG	NET	GROSS	BKG	NET	GROSS	BKG	NET
9Jul18	174031	2964	171067			0			0
10Jul18	173470	2964	170506			0	173390	2964	170426
11Jul18	174090	2964	171126			0	174320	2964	171356
12Jul18	176730	2964	173766			0	174670	2964	171706
13Jul18	173520	2964	170556			0	174560	2964	171596
16Jul18	177846	2862	174984			0	174524	2870	171654
17Jul18	172580	2964	169616			0	173680	2964	170716
18Jul18	173902	2964	170938			0	174013	2964	171049
19Jul18	178881	2800	176081			0	175400	2825	172575
20Jul18	175713	2944	172769			0	171999	2728	169271

APPENDIX C

Boring Logs and Geotechnical Analyses Results

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS										
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83										
						VERTICAL NAVD88										
2. HOLE NUMBER SVD-SD-001				11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B												
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 10										
						UNDISTURBED 0										
4. NAME OF DRILLER ART KOSKE				13. TOTAL NUMBER CORE BOXES		0										
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				14. ELEVATION GROUND WATER												
DEG FROM VERTICAL --- BEARING				15. DATE BORING		STARTED 7/17/18										
						COMPLETED 7/18/18										
6. THICKNESS OF OVERBURDEN 19.0				16. ELEVATION TOP OF BORING		1090.6										
7. DEPTH DRILLED INTO ROCK 0.0				17. TOTAL CORE RECOVERY FOR BORING		N/A										
8. TOTAL DEPTH OF BORING 22.6				18. SIGNATURE AND TITLE OF INSPECTOR												
ELEV	DEPTH	BloWS/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
1085.6	5.0	2				4' to 5': Gray SILT, tr.sand, tr.clay (wet, v.soft, ML)	35	1								3.6' deck to bottom of creek
		1				5' to 8': Brown f-c SAND, tr.gravel, tr.silt (wet, v.loose, SW)	25	2								0.8' deck to top of water
1082.6	8.0	2				8' to 10': Gray f-m SAND, some Silt (wet, loose, SM)	10	3								Sample #2 - 2 split spoons, 1 no recovery
1080.6	10.0	1				10' to 13': Contains tr.clay, occasional f-c Sand seam (v.loose)	70	4								Sample #3 - 3 split spoons, 2 no recoveries
1077.6	13.0	0				13' to 14': Gray Clayey SILT, tr.sand, tr.gravel (wet, v.soft, ML)	65	5	0	10						Sample #1, #2 & #3 not enough sample, after analytical samples
1076.6	14.0	0				14' to 16': Gray f-c SAND, tr.gravel, tr.silt (wet, loose, SW)	25	6								
1074.6	16.0	1				16' to 20': Contains some f-c Gravel	25	7	33	61	7					Sieve with hydrometer: 13 - 14' Gravel 0.3%, Sand 9.9%, Silt 63.4%, Clay 26.4%
		2					25	8								Sieve & wash: 16 - 22'
1070.6	20.0	4				20' to 21.5': Contains tr.wood (compact)	25	9								Sample #7 - wood in sampling shoe
1069.1	21.5	15				21.5' to 22.6': WOOD, little f-c Sand	67	10								Sample Spoon Refusal at 22.6'
1068.0	22.6	27														
		50														
		50														

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83	
				10. SIZE AND TYPE OF BIT		4" DRIVE SHOE	
2. HOLE NUMBER SVD-SD-001 1st Offset		LOCATION COORDINATES N 903,914.0 E 1,116,731.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B			
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 0	
						UNDISTURBED 0	
4. NAME OF DRILLER ART KOSKE				13. TOTAL NUMBER CORE BOXES 0			
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG FROM VERTICAL ---		BEARING	
				14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN 0.5				15. DATE BORING			
				STARTED 7/18/18		COMPLETED 7/18/18	
7. DEPTH DRILLED INTO ROCK 0.0				16. ELEVATION TOP OF BORING 1090.6			
8. TOTAL DEPTH OF BORING 9.5				17. TOTAL CORE RECOVERY FOR BORING N/A			
				18. SIGNATURE AND TITLE OF INSPECTOR			

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS		
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class			
						1' to 9':												
1081.6	9.0																	
1081.1	9.5					9' to 9.5': Roller bit to 9.5', 'refusal' - wood in cuttings												

Advanced casing to 9'
without sampling

Boring terminated at 9.5' in
wood

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

[illegible]

[illegible]

Boring Designation SVD-SD-002 Offset

[illegible]

Boring Designation SVD-SD-003

[illegible]

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT SPRINGVILLE DAM		9. COORDINATE SYSTEM		HORIZONTAL NAD83 VERTICAL NAVD88
2. HOLE NUMBER SVD-SD-004		LOCATION COORDINATES N 903,822.0 E 1,116,821.0		10. SIZE AND TYPE OF BIT 4" DRIVE SHOE
3. DRILLING AGENCY SJB SERVICES, INC.		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B		12. TOTAL SAMPLES DISTURBED 12 UNDISTURBED 0
4. NAME OF DRILLER ART KOSKE		13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG FROM VERTICAL ---		BEARING
6. THICKNESS OF OVERBURDEN 21.7		15. DATE BORING STARTED 7/13/18 COMPLETED 7/13/18		16. ELEVATION TOP OF BORING 1090.3
7. DEPTH DRILLED INTO ROCK 0.0		17. TOTAL CORE RECOVERY FOR BORING N/A		18. SIGNATURE AND TITLE OF INSPECTOR
8. TOTAL DEPTH OF BORING 25.1				

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
																Water Depth = 2.6' Bottom is 3.4' below deck
		0				3' to 7': Brown f-c GRAVEL and f-c Sand, tr.silt (wet, loose, GW)		1	58	39	4				GW	Sample #1 = 0" made 3 attempts to recover 6" total
		2														
		2														
		3														
		3	4													
		6														
		7						2								Sieve & wash: 3 - 9'
1083.3	7.0	6														
		6	13													
		3				7' to 10': Brown f-c SAND and f-c Gravel, tr.silt (wet, loose, SW)	50	3								Sample #2 = 6" in each of the 2 attempts
		3														
		5														
		3														
1080.3	10.0	6				10' to 14': Contains some f-m Gravel		4	48	49	3				SW	Sample #4 = 3 attempts to get 12" total
		4														
		3														
		2						5								
		2														
		4														
1076.3	14.0	21				14' to 15': (compact)	21	6								Sample #5 = 3" first attempt and 12" second attempt
		17														
1075.3	15.0	5				15' to 17': Contains some f-c Gravel		7	27	67	6					Sieve & wash: 9 - 15'
		3														
		14														
1073.3	17.0	7				17' to 20': Contains occasional f-m Sand seams (loose)		8								Sample #7 = 3 attempts for 6"
		10														
		4														
		3														
		2														
1070.3	20.0	4				20' to 21': (compact)		9								Sample #8 = 3", second attempt 24"
		7														
1069.3	21.0	9				21' to 25.1': Contains little f-m Gravel (loose)										Sample #9 = 0", second attempt = 0", third attempt = 6"
		7														
		0														
		4						21	10							
		4														
		4														
		2														
		1														
		3														
		3														
1065.2	25.1	16						25	11							Sample #11 = 6"; Sample #11 had large cobble in shoe
		50														
		11"														Sieve & wash: 15 - 21'
		50														Sample #12 = 10"; Sample #12 had shale fragments in shoe
		11"														Sample Spoon Refusal at 25.1'
								100	12							

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

Boring Designation SVD-SD-005

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83	
2. HOLE NUMBER SVD-SD-005				LOCATION COORDINATES N 903,853.0 E 1,116,814.0		VERTICAL NAVD88	
3. DRILLING AGENCY SJB SERVICES, INC.				10. SIZE AND TYPE OF BIT 4" DRIVE SHOE		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B	
4. NAME OF DRILLER ART KOSKE				12. TOTAL SAMPLES		DISTURBED 7	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG FROM VERTICAL ---		UNDISTURBED 0	
6. THICKNESS OF OVERBURDEN 14.0				13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0				15. DATE BORING		STARTED 7/10/18	
8. TOTAL DEPTH OF BORING 19.0				16. ELEVATION TOP OF BORING 1090.4		COMPLETED 7/10/18	
				17. TOTAL CORE RECOVERY FOR BORING N/A		18. SIGNATURE AND TITLE OF INSPECTOR	

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
																Water Depth = 5.0' from barge deck
																Deck = 0.8' above WL
1083.9	6.5	0				5' to 6.5': Brown f-c GRAVEL, little f-c Sand, tr.silt (wet, loose, GW)	0	1								
		1														
		1	2			6.5' to 10': Gray-Brown f-c SAND, little f-c Gravel, tr.silt (wet, loose, SW)	33	2								
		1														
		4														
1080.4	10.0	3	5													
		8														
		4				10' to 14': Gray and Brown fine GRAVEL, some f-c Sand, tr.silt (wet, loose, GW)	17	3								
		4														
		2	8				50	4								Sieve & wash: 10 - 12'
		2														
1076.4	14.0	14	5				0	5								
		6				14' to 19': (firm)										
		6														
		3	12				0	6								
		7														
		6														
		6	8													
		5														
1071.4	19.0	3					0	7								Attempted multiple times to obtain soil in spoon - unsuccessful
		3	8													

Boring terminated at 19.0'

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT SPRINGVILLE DAM		9. COORDINATE SYSTEM		HORIZONTAL NAD83
2. HOLE NUMBER SVD-SD-005 Offset		LOCATION COORDINATES N 903,849.0 E 1,116,836.0		VERTICAL NAVD88
3. DRILLING AGENCY SJB SERVICES, INC.		10. SIZE AND TYPE OF BIT 4" DRIVE SHOE		
4. NAME OF DRILLER ART KOSKE		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B		
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		12. TOTAL SAMPLES DISTURBED 10 UNDISTURBED 0		
6. THICKNESS OF OVERBURDEN 18.5		13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK 0.0		14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 24.7		15. DATE BORING STARTED 7/19/18 COMPLETED 7/19/18		
		16. ELEVATION TOP OF BORING 1090.4		
		17. TOTAL CORE RECOVERY FOR BORING N/A		
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS	
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class		
1083.4	7.0	0				6' to 7': Gray SILT, tr.sand, tr.organics (wet, v.loose, ML)	10	1								6.2' deck to creek bottom	0.0
1081.4	9.0	0	0			7' to 9': Gray f-m SAND, tr.silt, tr.organics (wet, v.loose, SP)										0.8' deck to top of water	2.5
1080.4	10.0	3	3	6		9' to 10': Brown f-c SAND, some f-c Gravel, tr.silt (wet, loose, SW)	30	2								Sample #1 - 2 split spoons	5.0
1078.4	12.0	6	6	12		10' to 12': Brown f-c GRAVEL, some f-c Sand, tr.silt (wet, firm, GW)	25	3	62	35	3				GW	Sample #2 - 2 split spoons	7.5
1076.4	14.0	6	6	12		12' to 14': Contains occasional f-c Sand seams	40	4	46	49	4				SW	Sample #3 - 2 split spoons Sieve & wash: 10 - 12'	10.0
1072.9	17.5	25	8	11		14' to 17.5': Brown f-c SAND and f-c Gravel, tr.silt (wet, firm, SW)	25	5								Sieve & wash: 12 - 18'	12.5
1072.4	18.0	4	1	19		17.5' to 18': Gray f-m SAND, some Silt (wet, v.loose, SP)	25	6								Sample #7 - 2 split spoons, 1 wash	15.0
1070.4	20.0	17	5	2		18' to 20': Brown f-c SAND, little Silt, tr.gravel (wet, loose, SW)	10	7								Sample #8 - 3 split spoons, 2 no recoveries install flapper	17.5
1068.4	22.0	0	1	3		20' to 22': Gray SILT, tr.clay, tr.sand (wet, loose, ML)	10	8								Sieve with hydrometer: 24 - 24.7' Gravel 58%, Sand 29.7%, Silt 8.8%, Clay 3.5%	20.0
1067.4	23.0	2	1	4		22' to 23': Gray Clayey SILT, tr.sand (wet, v.soft, ML)	20	9								Sample Spoon Refusal at 24.7'	22.5
1065.9	24.5	21	0	1		23' to 24.5': Gray f-c GRAVEL, some f-c Sand, tr.silt, tr.clay (wet, v.loose, GW / Possible Weathered Bedrock)	86	10	58	30							
1065.7	24.7	50	21	50		24.5' to 24.7': Gray Weathered SHALES											

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

DRILLING LOG			DIVISION	INSTALLATION			SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83	VERTICAL NAVD88	
				10. SIZE AND TYPE OF BIT		4" DRIVE SHOE		
2. HOLE NUMBER SVD-SD-006		LOCATION COORDINATES N 903,873.0 E 1,116,881.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B				
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 5	UNDISTURBED 0	
4. NAME OF DRILLER ART KOSKE				13. TOTAL NUMBER CORE BOXES		0		
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG FROM VERTICAL ---		BEARING		14. ELEVATION GROUND WATER
								15. DATE BORING
6. THICKNESS OF OVERBURDEN			9.3	16. ELEVATION TOP OF BORING		1090.4		
7. DEPTH DRILLED INTO ROCK			0.0	17. TOTAL CORE RECOVERY FOR BORING		N/A		
8. TOTAL DEPTH OF BORING			25.1	18. SIGNATURE AND TITLE OF INSPECTOR				

[illegible]

Boring Designation SVD-SD-006 Offset

[illegible]

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT SPRINGVILLE DAM		9. COORDINATE SYSTEM		HORIZONTAL NAD83
2. HOLE NUMBER SVD-SD-007		LOCATION COORDINATES N 903,719.0 E 1,116,868.0		VERTICAL NAVD88
3. DRILLING AGENCY SJB SERVICES, INC.		10. SIZE AND TYPE OF BIT 4" DRIVE SHOE		
4. NAME OF DRILLER ART KOSKE		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B		
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG FROM VERTICAL ---	BEARING	
6. THICKNESS OF OVERBURDEN 20.7		12. TOTAL SAMPLES		DISTURBED 11
7. DEPTH DRILLED INTO ROCK 0.0		13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED 0
8. TOTAL DEPTH OF BORING 23.9		14. ELEVATION GROUND WATER		
		15. DATE BORING		STARTED 7/16/18
				COMPLETED 7/17/18
		16. ELEVATION TOP OF BORING 1091.1		
		17. TOTAL CORE RECOVERY FOR BORING N/A		
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
																0.0
																2.5
																5.0
1085.1	6.0	0	0			3' to 6': Brown f-c GRAVEL, little f-c Sand, tr.silt (wet, v.loose, GW)	10	1	78	20	2				GP	3.2' deck to bottom of creek
		8	0													0.8' deck to top of water
1084.1	7.0	7	0			6' to 7': (firm)	10	2								7.5
		3	13			7' to 9': Contains "and" f-c Sand (loose)	60	3								Sample #1 - 3 split spoons, 2 no recovery
1082.1	9.0	4	7			9' to 13': Brown f-c GRAVEL, some f-c Sand, tr.silt (wet, firm, SW)	50	4	64	32	4				GP	10.0
		8	11													Sample #2 - 5 split spoons, 3 no recovery
		5														12.5
1078.1	13.0	2				13' to 15': Contains little f-c Gravel, occasional Silt partings, grades to Gray (firm)	50	5								Sample #4 - 2 split spoons
		1	4			15' to 17': Contains occasional Gray Silty Clay partings (loose)	25	6								15.0
1076.1	15.0	3	12				20	7								Sieve & wash: 9 - 15'
		5														Sample #6 - 2 split spoons
1074.1	17.0	3	8			17' to 19': Gray f-m SAND, little Silt, tr.gravel (wet, firm, SP)	70	8	2	86	12					Sample #7 - 2 split spoons
		1														Sieve & wash: 17 - 19'
1072.1	19.0	6				19' to 20': Grades to f-c Sand (loose, SW)	50	9	35	60	5					20.0
		7	12			20' to 21': Contains little f-c Gravel	40	10								Sample #9 - 3 split spoons, 2 no recovery
1071.1	20.0	4														22.5
1070.1	21.0	4	8			22' to 23': (v.loose)	56	11								Sieve & wash: 19 - 21'
		2														
1068.1	23.0	1				23' to 23.9': Gray f-c GRAVEL, little f-c Sand, tr.cobble (wet, v.compact, GW / Probable Weathered Shale Bedrock)										Sample Spoon Refusal at 23.9'
1067.2	23.9	36	2													

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS										
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83										
2. HOLE NUMBER SVD-SD-008				LOCATION COORDINATES N 903,751.0 E 1,116,903.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B										
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 11										
4. NAME OF DRILLER ART KOSKE				13. TOTAL NUMBER CORE BOXES		0										
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG FROM VERTICAL ---		BEARING										
6. THICKNESS OF OVERBURDEN				20.5		16. ELEVATION TOP OF BORING										
7. DEPTH DRILLED INTO ROCK				0.0		17. TOTAL CORE RECOVERY FOR BORING										
8. TOTAL DEPTH OF BORING				25.7		18. SIGNATURE AND TITLE OF INSPECTOR										
ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
1083.3	7.0	0 0 1 1	1			5' to 7': Gray to Brown f-c GRAVEL, some f-c Sand (wet, v.loose, GW)	5	1	73	26	1				GW	5.2' deck to bottom of creek
1081.3	9.0	2 2 3 5	5			7' to 9': Brown f-c SAND and f-c Gravel (wet, loose, SW-GW)	10	2								0.8' deck to top of water
1079.3	11.0	10 5 5 4	10			9' to 11': Contains little f-c Gravel (SW)	35	3								Sieve & wash: 5 - 11'
1077.3	13.0	5 3 3 4	10			11' to 13': Contains and f-c Gravel	20	4	43	51	6					Sample #1 - 3 split spoons
1075.3	15.0	18 6 7 7	6			13' to 15': Gray f-m SAND, little Silt, tr.gravel (wet, firm, SM)	35	5								Sample #2 - 2 split spoons
1073.3	17.0	11 7 2 4	13			15' to 17': Brown f-c SAND and f-c Gravel, tr.silt (wet, loose, SW)	20	6								Sample #3 - 3 split spoons, 1 was no recovery
1071.3	19.0	7 5 4 2	9			17' to 19': Gray f-m SAND, little f-c Gravel, occasional f-c Sand seams (wet, loose, SP)	35	7								Sample #4 - 2 split spoons (cobble present in sampling shoe)
1069.3	21.0	6 2 2 6	9			19' to 21': Gray to Brown f-c SAND, some f-c Gravel, occasional Sandy Silt seams (wet, loose, SP)	25	8								Sieve & wash: 11 - 17'
1067.3	23.0	2 8 13 19	4			21' to 23': Becomes Gray, Contains some Clayey Silt (firm, SM-SW)	60	9	22	49						Sample #6 - 3 split spoons, 2 was no recovery
1066.3	24.0	18 26 23	21			23' to 24': Contains little f- Gravel	70	10	44	43	13					Sample #8 - 3 split spoons, 2 was no recovery
1065.3	25.0	17 12	49			24' to 25': Gray f-c GRAVEL, little f-c Sand, tr.silt (wet, compact, GW / Possible Weathered Bedrock)		11								Sieve with hydrometer: 21 - 23' Gravel 22.1%, Sand 48.8%, Silt 21.4%, Clay 7.7%
1064.6	25.7	50 12	50 12			25' to 25.7': Contains little Silt, tr.clay (v.compact, GM / Possible Weathered Bedrock)										Sieve & wash: 23 - 25.7'
																Sample Spoon Refusal at 25.7'

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17.GDT 10/15/18

Boring Designation SVD-SD-009

DRILLING LOG				DIVISION		INSTALLATION										SHEET 1 OF 1 SHEETS			
1. PROJECT SPRINGVILLE DAM						9. COORDINATE SYSTEM				HORIZONTAL NAD83				VERTICAL NAVD88					
						10. SIZE AND TYPE OF BIT				4" DRIVE SHOE									
2. HOLE NUMBER SVD-SD-009		LOCATION COORDINATES N 903,751.0 E 1,116,933.0				11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B													
3. DRILLING AGENCY SJB SERVICES, INC.						12. TOTAL SAMPLES				DISTURBED 10				UNDISTURBED 0					
4. NAME OF DRILLER ART KOSKE						13. TOTAL NUMBER CORE BOXES 0													
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED						DEG FROM VERTICAL ---		BEARING		14. ELEVATION GROUND WATER									
										15. DATE BORING				STARTED 7/13/18				COMPLETED 7/13/18	
6. THICKNESS OF OVERBURDEN 18.8						16. ELEVATION TOP OF BORING 1090.3													
7. DEPTH DRILLED INTO ROCK 0.0						17. TOTAL CORE RECOVERY FOR BORING N/A													
8. TOTAL DEPTH OF BORING 25.5						18. SIGNATURE AND TITLE OF INSPECTOR													
ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)		% REC	Sam No.	Laboratory								REMARKS	
										Gravel	Sand	Fines	LL	PI	MC	ASTM Class			
																		0.0	
																		2.5	
																		5.0	
																		7.5	
1081.3	9.0	0 1 1 3 16	2			7' to 9': Brown f-c GRAVEL, little f-c Sand (wet, loose, GW)	21	1										Deck is 6.7' above creek bottom	
		7 4 6				9' to 12': Brown f-c SAND, some f-m Gravel (wet, compact, SW)		2										Water is 5.9' deep	
1078.3	12.0	2 1 1	11															10.0	
		3 14	2			12' to 14': Gray-Brown Silty CLAY, some fine Sand, tr.gravel (wet, soft, ML-CL)	83	3	2	65								12.5	
1076.3	14.0	14 7 6				14' to 20': Contains tr.sand (stiff)		4	8	25								Sieve with hydrometer: 11 - 13' Gravel 2.4%, Sand 65.1%, Silt 26.7%, Clay 5.8%	
		12 11 12	21					42	5									Sample #4 = wash	
		6 5 7						58	6									15.0	
1070.3	20.0	3 3	12					92	7									Sieve with hydrometer: 13 - 19' Gravel 8.2%, Sand 24.6%, Silt 25.2%, Clay 42%	
1069.3	21.0	4 4	7			20' to 21': (medium)												17.5	
1068.3	22.0	7 9				21' to 22': (stiff)												20.0	
		12 13	21			22' to 25.5': Gray-Brown f-c GRAVEL, little f-c Sand, some Silty Clay (wet, compact, GW-GM)	83	8	0	24								Sieve with hydrometer: 21 - 22.5' Gravel 0.1%, Sand 24.2%, Silt 39.6%, Clay 36.1%	
		25 18 16																22.5	
1064.8	25.5	11 18	34					83	9									Sieve & wash: 22.5 - 25'	
		50 /0"						10										25.0	
																		Sample Spoon Refusal at 25.5'	

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS										
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83										
				10. SIZE AND TYPE OF BIT		4" DRIVE SHOE										
2. HOLE NUMBER SVD-SD-0010		LOCATION COORDINATES N 903,620.0 E 1,116,948.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B												
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 9										
				13. TOTAL NUMBER CORE BOXES		0										
4. NAME OF DRILLER ART KOSKE				14. ELEVATION GROUND WATER												
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG FROM VERTICAL ---		BEARING		15. DATE BORING										
						STARTED 7/12/18										
						COMPLETED 7/12/18										
6. THICKNESS OF OVERBURDEN 17.3				16. ELEVATION TOP OF BORING 1090.3												
7. DEPTH DRILLED INTO ROCK 0.0				17. TOTAL CORE RECOVERY FOR BORING N/A												
8. TOTAL DEPTH OF BORING 24.6				18. SIGNATURE AND TITLE OF INSPECTOR												
ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
		0														
		0														
		1														
		14	0													
		4														
		5														
		6														
1078.3	12.0	5														
		8														
		13														
		4	11													
1075.3	15.0	6														
		8														
		12														
		2	14													
1073.3	17.0	5														
		10														
		12														
		10	15													
1071.3	19.0	11														
		13														
		12	24													
		1														
		3														
		4														
		8														
1068.8	21.5	7	7													
		5														
		12														
		17														
		13	17													
1067.3	23.0	6														
		23														
		50														
1065.7	24.6	11	29													
Water Depth = 6.5' Deck is 7.3' above creek bottom Sieve & wash: 7 - 12' Sample #1 made 3 attempts, each Rec. < 1" Sample #2 made 3 attempts, 4" - 6" each Sieve with hydrometer: 12 - 13' Gravel 8.2%, Sand 29.8%, Silt 23.1%, Clay 38.9% Sieve with hydrometer: 15 - 19' Gravel 0%, Sand 7.6%, Silt 37.1%, Clay 55.3% Shale in shoe Sample Spoon Refusal at 24.6'																

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

[illegible]

DRILLING LOG			DIVISION	INSTALLATION			SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83	VERTICAL NAVD88	
				10. SIZE AND TYPE OF BIT		4" DRIVE SHOE		
2. HOLE NUMBER SVD-SD-012		LOCATION COORDINATES N 903,387.0 E 1,117,008.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B				
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 10	UNDISTURBED 0	
4. NAME OF DRILLER ART KOSKE				13. TOTAL NUMBER CORE BOXES		0		
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG FROM VERTICAL ---		BEARING		14. ELEVATION GROUND WATER
								15. DATE BORING
6. THICKNESS OF OVERBURDEN		18.7		16. ELEVATION TOP OF BORING		1090.3		
7. DEPTH DRILLED INTO ROCK		0.0		17. TOTAL CORE RECOVERY FOR BORING		N/A		
8. TOTAL DEPTH OF BORING		21.7		18. SIGNATURE AND TITLE OF INSPECTOR				

[illegible]

Sample Spoon Refusal at 21.7'

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT SPRINGVILLE DAM		9. COORDINATE SYSTEM		HORIZONTAL NAD83 VERTICAL NAVD88
2. HOLE NUMBER SVD-SD-013		LOCATION COORDINATES N 903,417.0 E 1,116,993.0		10. SIZE AND TYPE OF BIT 4" DRIVE SHOE
3. DRILLING AGENCY SJB SERVICES, INC.		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B		12. TOTAL SAMPLES DISTURBED 10 UNDISTURBED 0
4. NAME OF DRILLER ART KOSKE		13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG FROM VERTICAL ---		BEARING
6. THICKNESS OF OVERBURDEN 19.4		15. DATE BORING STARTED 7/19/18 COMPLETED 7/19/18		16. ELEVATION TOP OF BORING 1090.4
7. DEPTH DRILLED INTO ROCK 0.0		17. TOTAL CORE RECOVERY FOR BORING N/A		18. SIGNATURE AND TITLE OF INSPECTOR
8. TOTAL DEPTH OF BORING 22.4				

ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory							REMARKS
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class	
1085.4	5.0	0				3' to 5': Brown f-c GRAVEL, tr.sand, tr.silt (wet, loose, GW)	5	1	39	58	4				SP	3.0' from deck to bottom of creek
1083.4	7.0	9	1			5' to 7': Brown f-c SAND, some f-c Gravel, tr.silt (wet, firm, SW)	20	2								0.8' from deck to top of water
1081.4	9.0	10	19			7' to 9': Contains little Silt (SM)	30	3								Sieve & wash: 3 - 9'
1079.4	11.0	7	13			9' to 11': Contains tr.silt (SW)	15	4	49	42	8					Sample #1 - 3 split spoons, 2 no recovery
1076.4	14.0	6	11			11' to 14': Contains little f-c Gravel	25	5								Sample #2 - 2 split spoons
1075.4	15.0	5	5			14' to 15': Gray SILT, some fine Sand, tr.clay (wet, medium, ML)	25	6								Sample #4 - 2 split spoons
1073.4	17.0	12	6			15' to 17': Gray Clayey SILT, little f-c Sand (wet, medium, CL)	15	7								Sieve & wash: 9 - 15'
1071.4	19.0	3	6			17' to 19': Contains tr.sand, occasional fine Sand partings (moist)	100	8	0	7						Sample #7 - sand is probable wash
1069.4	21.0	0	5			19' to 21': Gray fine SAND and Clayey Silt, occasional Clay partings (wet, v.loose, SM)	100	9	0	53						Sieve with hydrometer: 17 - 19' Gravel 0%, Sand 6.8%, Silt 61%, Clay 32.2%
1068.4	22.0	1	1			21' to 22': Contains tr.wood, tr.gravel	29	10	1	56						Sieve with hydrometer: 19 - 21' Gravel 0%, Sand 52.5%, Silt 35.6%, Clay 11.9%
1068.0	22.4	50				22' to 22.4': Gray f-c GRAVEL, little f-c Sand, tr.silt (wet, v.compact, GW / Possible Weathered Bedrock)										Sieve with hydrometer: 21 - 22' Gravel 0.5%, Sand 56.1%, Silt 34.6%, Clay 8.8%

Sample Spoon Refusal at 22.4'

ACE 1836-A (DRILLING LOG) SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY GPJ ACE MVD WITH RAPID CPT 2008 11 17 GDT 10/15/18

SVD-SD-014

DRILLING LOG			DIVISION	INSTALLATION			SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM				9. COORDINATE SYSTEM		HORIZONTAL NAD83	VERTICAL NAVD88	
				10. SIZE AND TYPE OF BIT		4" DRIVE SHOE		
2. HOLE NUMBER SVD-SD-014		LOCATION COORDINATES N 903,751.0 E 1,116,948.0		11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B				
3. DRILLING AGENCY SJB SERVICES, INC.				12. TOTAL SAMPLES		DISTURBED 9	UNDISTURBED 0	
4. NAME OF DRILLER R. STEINER				13. TOTAL NUMBER CORE BOXES		0		
				14. ELEVATION GROUND WATER				
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG FROM VERTICAL ---		BEARING		15. DATE BORING		
						STARTED 7/20/18	COMPLETED 7/20/18	
6. THICKNESS OF OVERBURDEN		18.0		16. ELEVATION TOP OF BORING		1090.3		
7. DEPTH DRILLED INTO ROCK		0.0		17. TOTAL CORE RECOVERY FOR BORING		N/A		
8. TOTAL DEPTH OF BORING		25.8		18. SIGNATURE AND TITLE OF INSPECTOR				

[illegible]

Sample Spoon Refusal at
25.8'

[illegible]

Boring Designation SVD-SD-015 Offset

DRILLING LOG				DIVISION				INSTALLATION										SHEET 1 OF 1 SHEETS	
1. PROJECT SPRINGVILLE DAM								9. COORDINATE SYSTEM				HORIZONTAL NAD83				VERTICAL NAVD88			
								10. SIZE AND TYPE OF BIT				4" DRIVE SHOE							
2. HOLE NUMBER SVD-SD-015 Offset								LOCATION COORDINATES N 903,883.0 E 1,116,844.0				11. MANUFACTURER'S DESIGNATION OF DRILL CME-45B							
3. DRILLING AGENCY SJB SERVICES, INC.								12. TOTAL SAMPLES				DISTURBED 1				UNDISTURBED 0			
4. NAME OF DRILLER R. STEINER								13. TOTAL NUMBER CORE BOXES				0							
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED								DEG FROM VERTICAL ---				BEARING				14. ELEVATION GROUND WATER			
																15. DATE BORING			
6. THICKNESS OF OVERBURDEN								11.9				16. ELEVATION TOP OF BORING				1090.3			
7. DEPTH DRILLED INTO ROCK								0.0				17. TOTAL CORE RECOVERY FOR BORING				N/A			
8. TOTAL DEPTH OF BORING								24.9				18. SIGNATURE AND TITLE OF INSPECTOR							
ELEV	DEPTH	Blows/ 0.5 ft	N _i	N ₆₀	LEGEND	FIELD CLASSIFICATION OF MATERIALS (Description)	% REC	Samp No.	Laboratory								REMARKS		
									Gravel	Sand	Fines	LL	PI	MC	ASTM Class				
1065.8	24.5	30				24' to 24.5': Gray f-m SAND, tr.gravel, tr.silt (wet, v.compact, SP) 24.5' to 24.9': Gray f-c GRAVEL, little f-c Sand, tr.silt (wet, v.compact, GW / Possible Weathered Bedrock)	33	1											
1065.4	24.9	50																	
																			0.0
																			2.5
																			5.0
																			7.5
																			10.0
																			12.5
																			15.0
																			17.5
																			20.0
																			22.5

GRAIN SIZE DISTRIBUTION

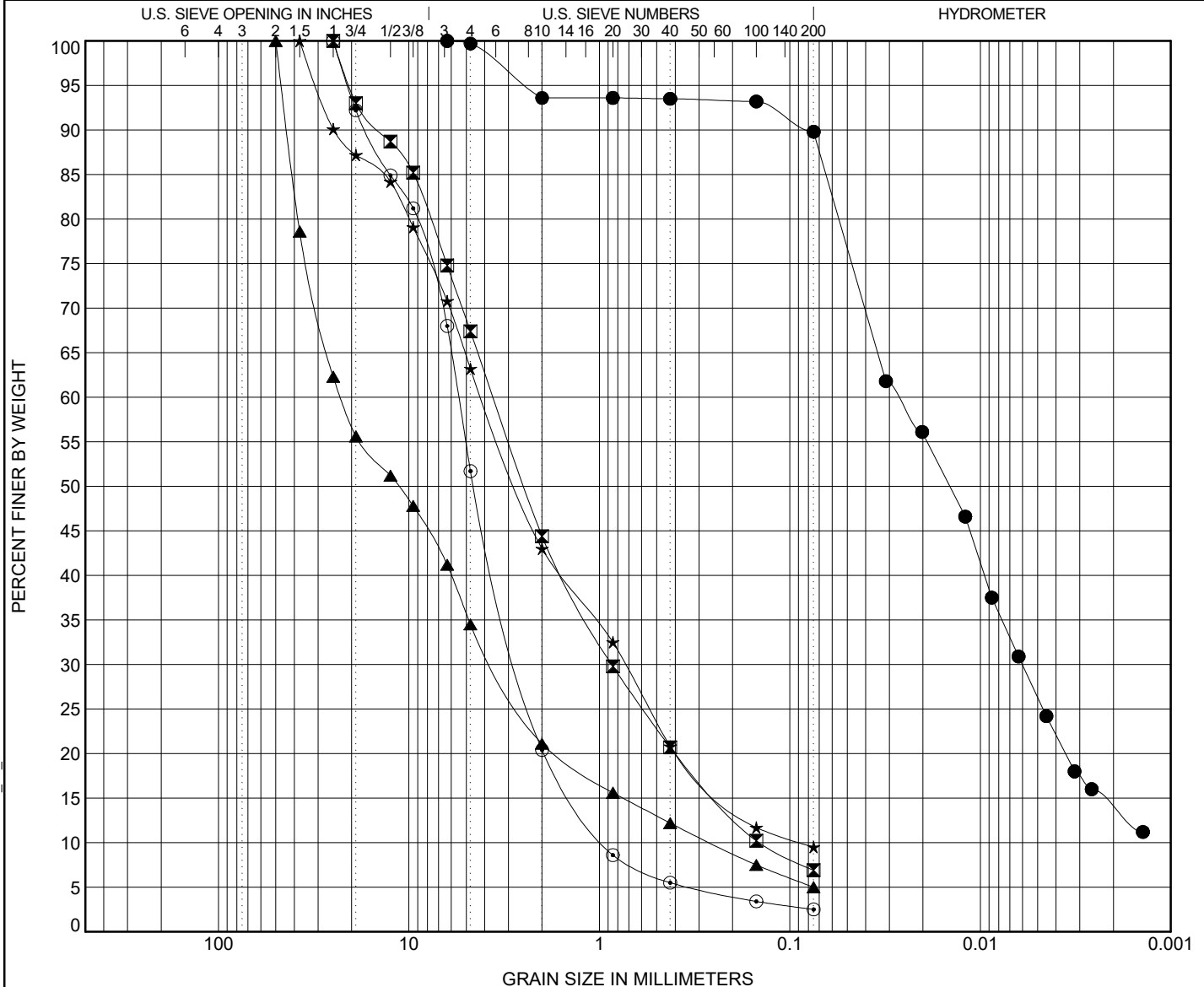
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

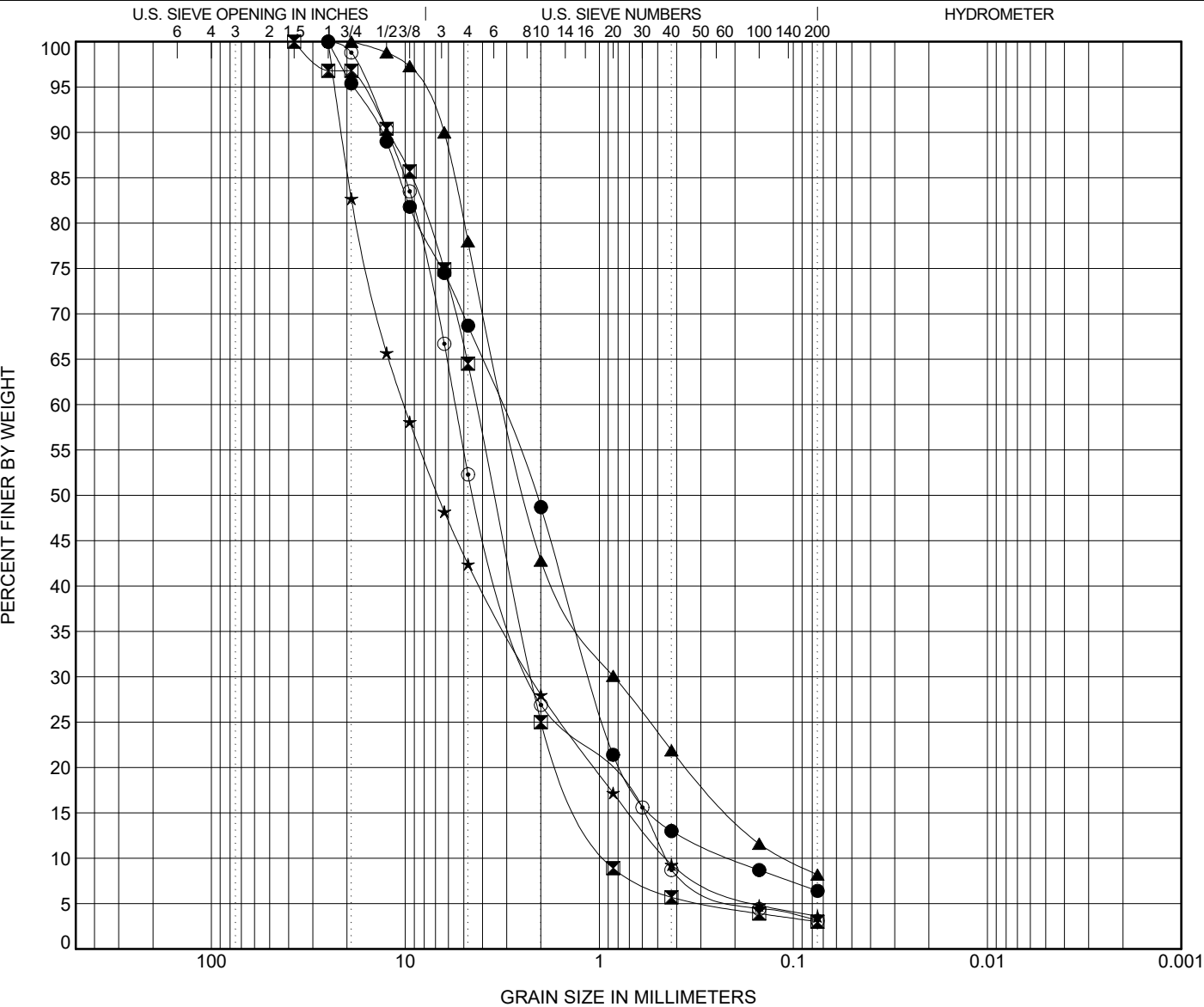
Specimen Identification		Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-001 13.0										
☒	SVD-SD-001 16.0									1.43	25.00
▲	SVD-SD-001 2nd Offset									2.13	87.17
★	SVD-SD-002 10.0									1.48	47.17
⊙	SVD-SD-002 16.0	POORLY GRADED SAND with GRAVEL(SP)								1.32	5.83
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	SVD-SD-001 13.0	6.3	0.027	0.006		0.3	9.9	63.5		26.3	
☒	SVD-SD-001 16.0	25	3.596	0.86	0.144	32.6	60.5	6.9			
▲	SVD-SD-001 2nd Offset	50	22.752	3.553	0.261	65.5	29.5	5.0			
★	SVD-SD-002 10.0	37.5	4.142	0.733	0.088	36.8	53.7	9.5			
⊙	SVD-SD-002 16.0	25	5.485	2.608	0.941	48.3	49.2	2.5			

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS PROJECT NAME SPRINGVILLE DAM
PROJECT NUMBER BD-18-038 PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-003	14.0									1.85	15.87
☒	SVD-SD-003	20.0	POORLY GRADED SAND with GRAVEL(SP)								1.28	4.78
▲	SVD-SD-003	26.0									2.15	28.19
★	SVD-SD-004	3.0	WELL-GRADED GRAVEL with SAND(GW)								1.11	22.51
⊙	SVD-SD-004	9.0	WELL-GRADED SAND with GRAVEL(SW)								1.97	12.18
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	SVD-SD-003	14.0	25	3.26	1.113	0.206	31.3	62.3	6.4			
☒	SVD-SD-003	20.0	37.5	4.304	2.231	0.901	35.5	61.5	3.0			
▲	SVD-SD-003	26.0	19	3.052	0.843	0.108	22.0	69.8	8.2			
★	SVD-SD-004	3.0	25	10.175	2.255	0.452	57.6	38.8	3.6			
⊙	SVD-SD-004	9.0	25	5.524	2.223	0.454	47.7	49.2	3.1			

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

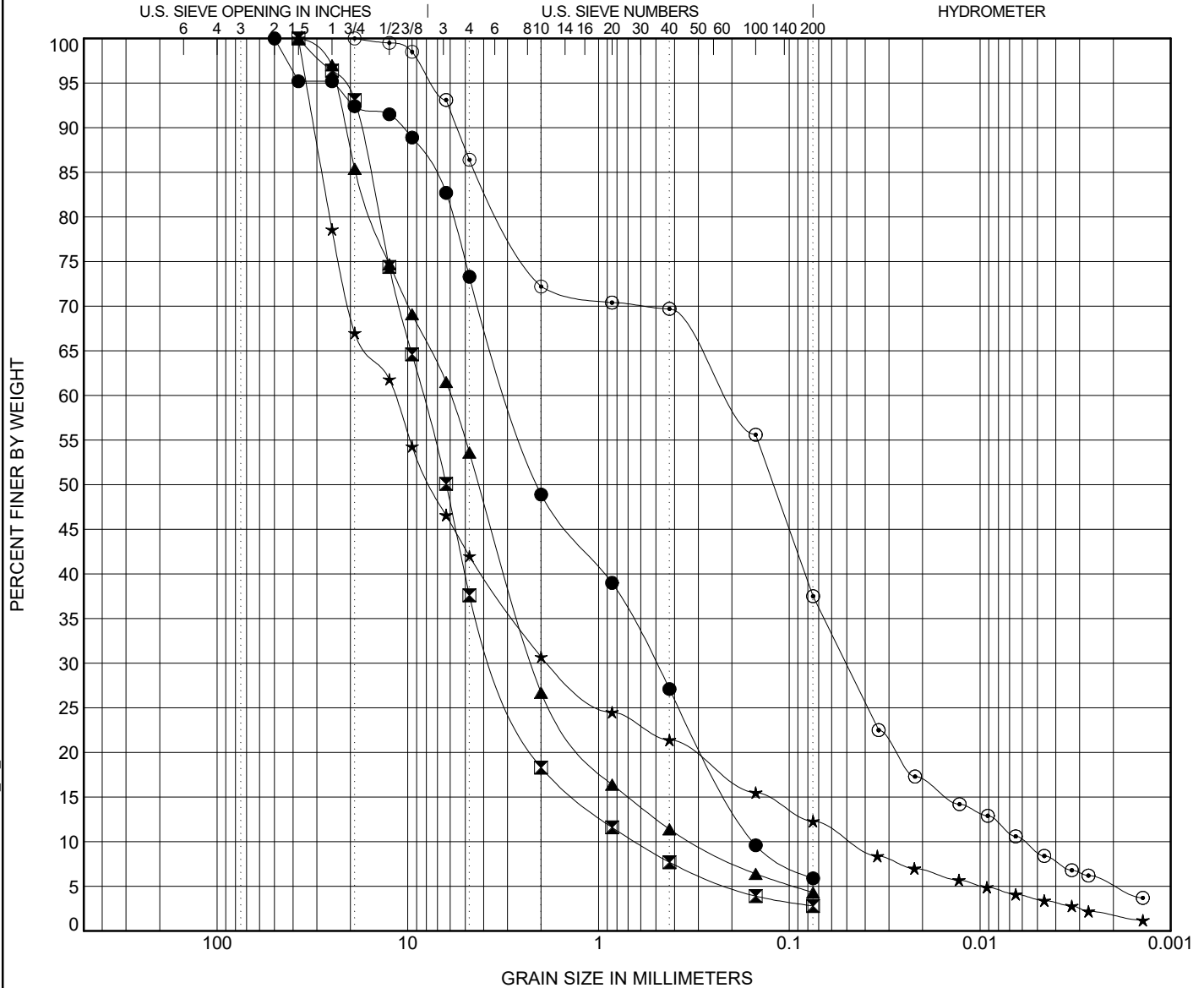
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-004	15.0									0.56	19.30
☒	SVD-SD-005	Off 10.0	WELL-GRADED GRAVEL with SAND(GW)								2.14	13.04
▲	SVD-SD-005	Off 12.0	WELL-GRADED SAND with GRAVEL(SW)								2.61	18.81
★	SVD-SD-005	Off 24.0									5.94	246.68
⊙	SVD-SD-006	20.0									2.08	35.10
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SVD-SD-004	15.0	50	2.964	0.503	0.154	26.7	67.4	5.9			
☒	SVD-SD-005	Off 10.0	37.5	8.339	3.379	0.64	62.4	34.8	2.8			
▲	SVD-SD-005	Off 12.0	37.5	5.971	2.224	0.318	46.4	49.3	4.3			
★	SVD-SD-005	Off 24.0	37.5	11.703	1.816	0.047	58.0	29.7	8.7	3.6		
⊙	SVD-SD-006	20.0	19	0.208	0.05	0.006	13.6	48.9	28.6	8.9		

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

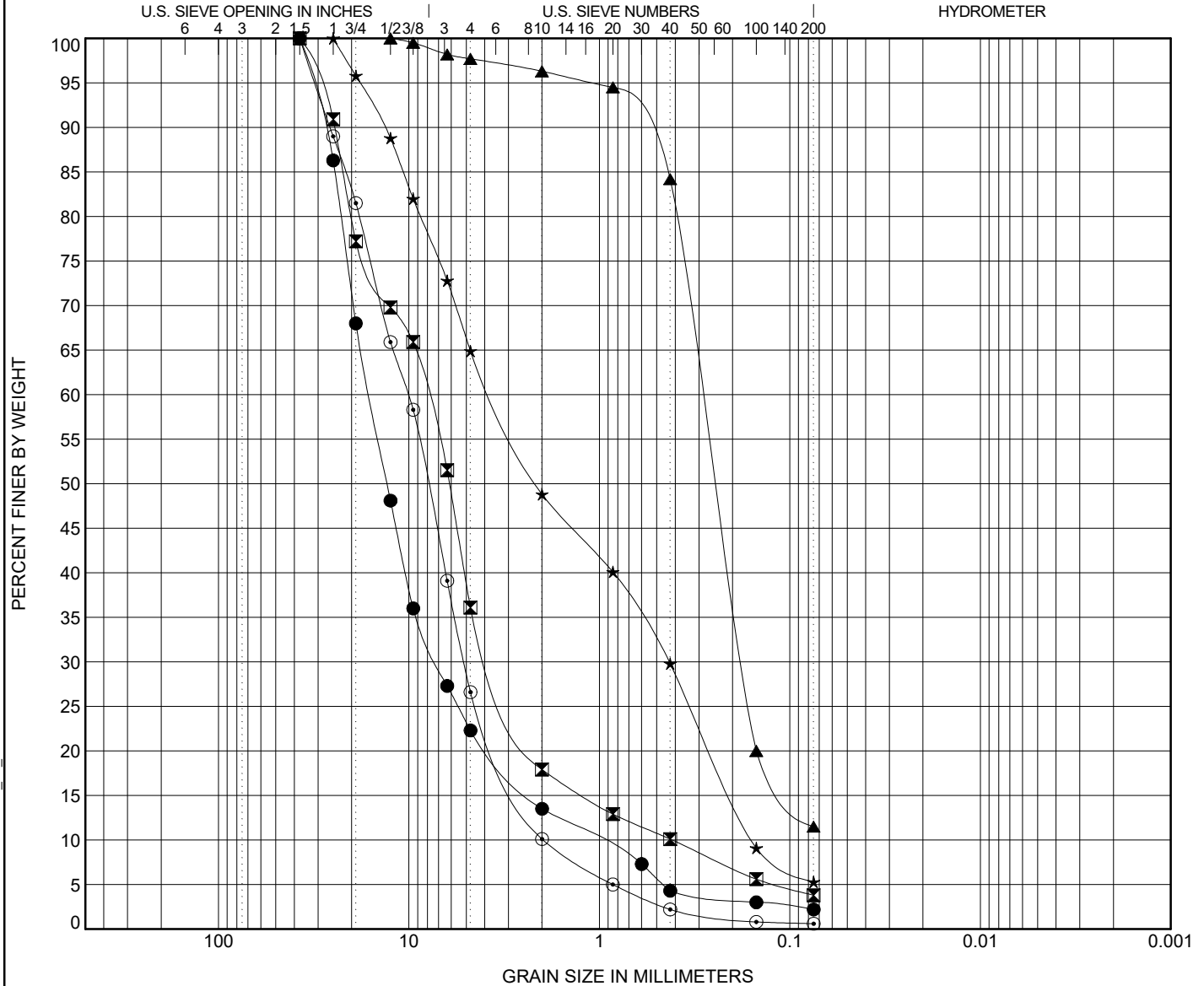
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

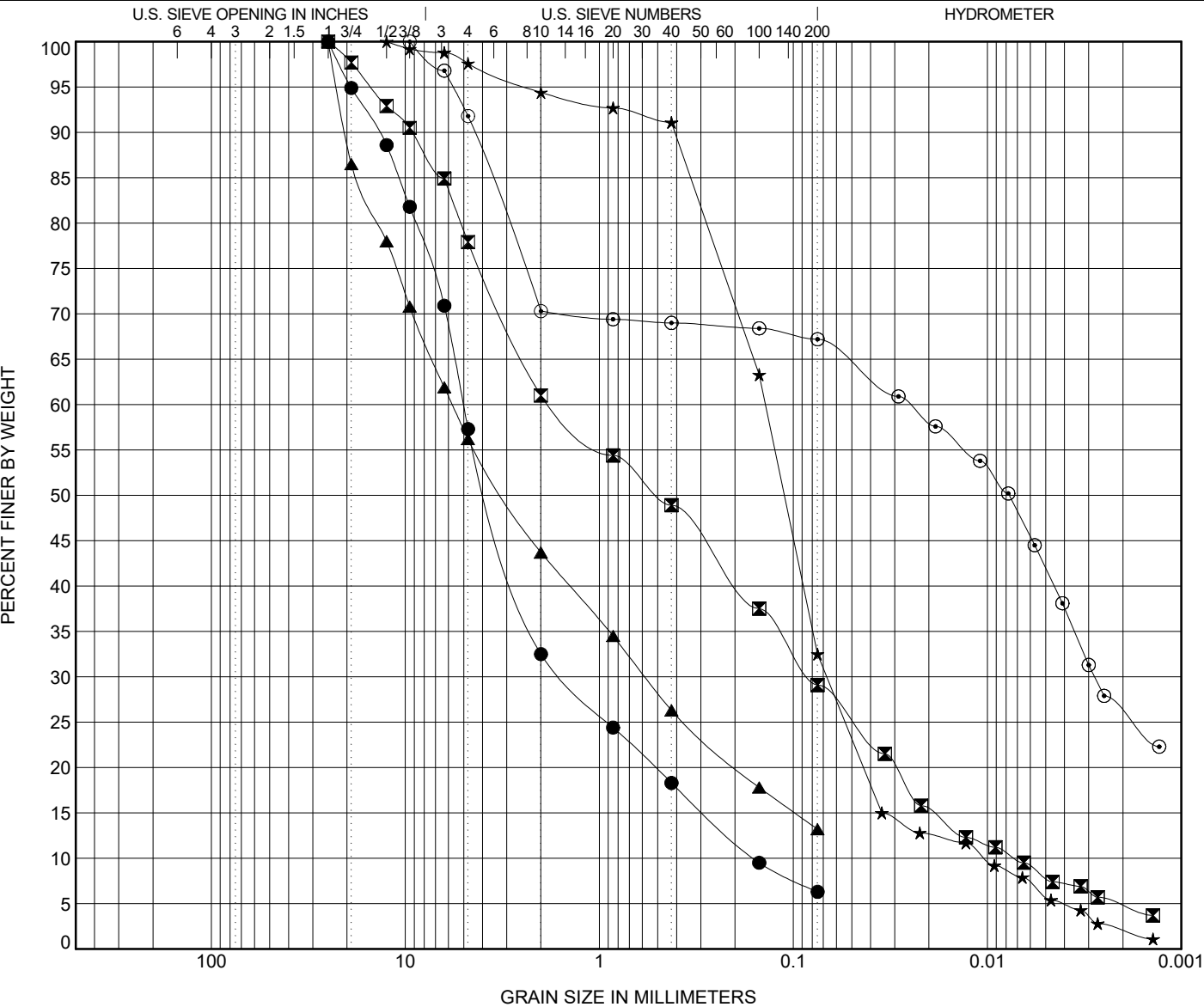
PROJECT LOCATION



GRAIN SIZE DISTRIBUTION

US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS PROJECT NAME SPRINGVILLE DAM
PROJECT NUMBER BD-18-038 PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-008	11.0									2.95	31.57
⊠	SVD-SD-008	21.0									0.52	244.81
▲	SVD-SD-008	23.0										
★	SVD-SD-009	11.0									3.17	13.59
⊙	SVD-SD-009	13.0										
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SVD-SD-008	11.0	25	5.024	1.536	0.159	42.7	51.0	6.3			
⊠	SVD-SD-008	21.0	25	1.757	0.081	0.007	22.1	48.8	21.2	7.9		
▲	SVD-SD-008	23.0	25	5.734	0.581		43.8	43.0	13.2			
★	SVD-SD-009	11.0	12.5	0.139	0.067	0.01	2.4	65.1	26.6	5.9		
⊙	SVD-SD-009	13.0	9.5	0.025	0.003		8.2	24.6	25.2	42.0		

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

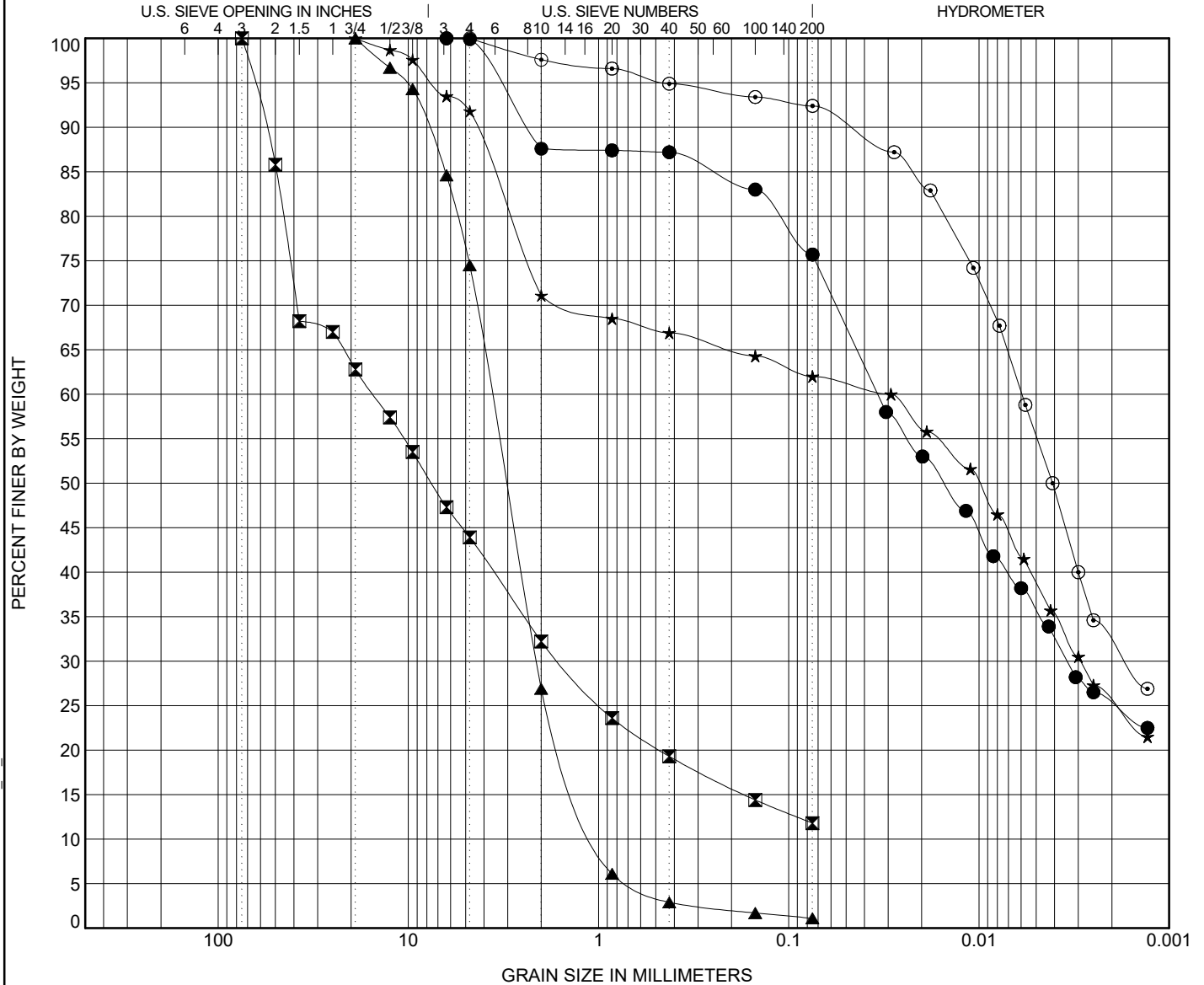
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-009	21.0										
☒	SVD-SD-009	22.5									3.64	329.46
▲	SVD-SD-0010	7.0	POORLY GRADED SAND with GRAVEL(SP)								1.23	3.66
★	SVD-SD-0010	12.0										
⊙	SVD-SD-0010	15.0										
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SVD-SD-009	21.0	6.3	0.034	0.003		0.1	24.2	39.9	35.8		
☒	SVD-SD-009	22.5	75	15.292	1.607		56.1	32.1	11.8			
▲	SVD-SD-0010	7.0	19	3.65	2.116	0.998	25.5	73.4	1.1			
★	SVD-SD-0010	12.0	19	0.029	0.003		8.2	29.8	23.2	38.8		
⊙	SVD-SD-0010	15.0	4.75	0.006	0.002		0.0	7.6	37.1	55.3		

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

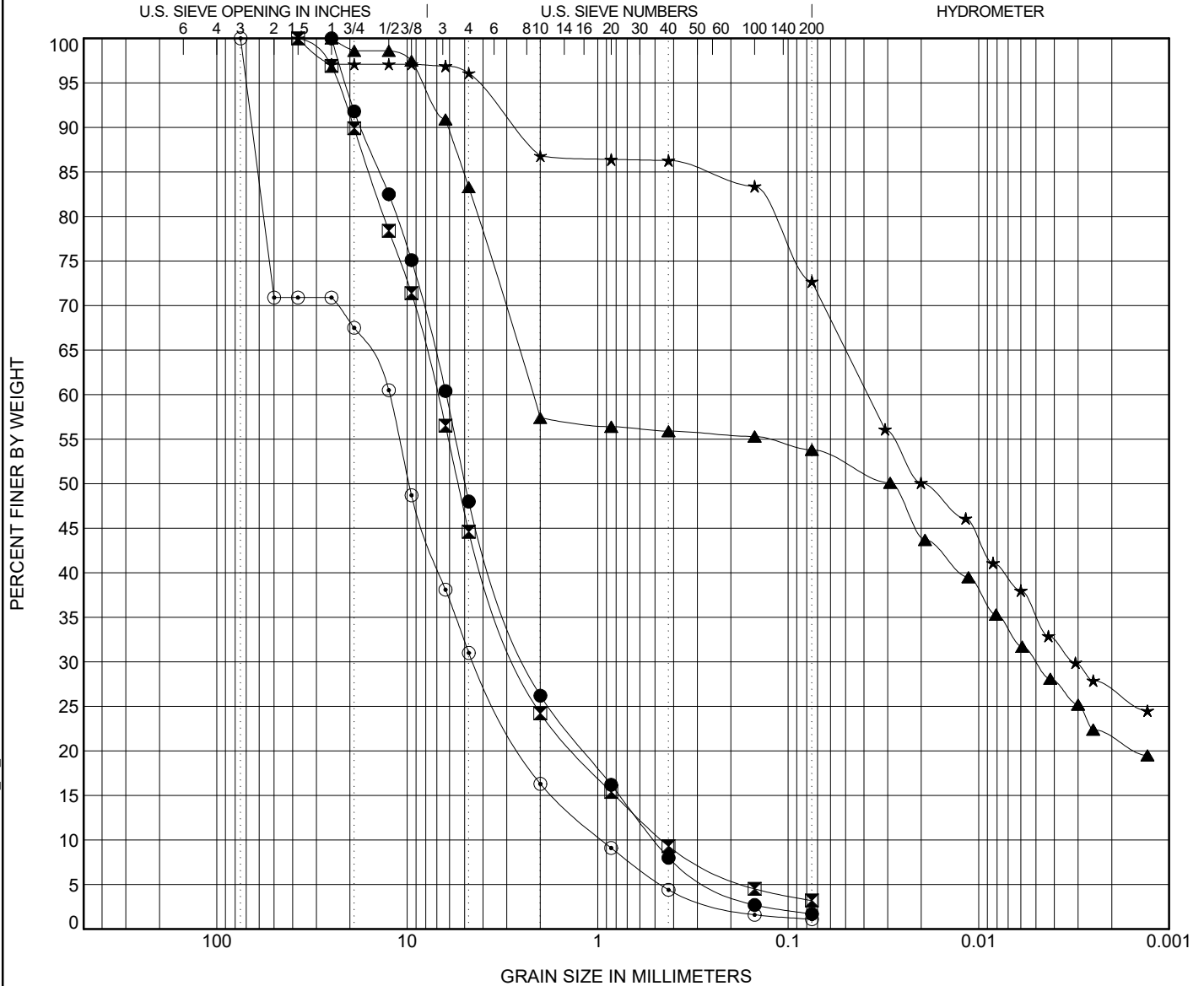
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

PROJECT LOCATION



GRAIN SIZE DISTRIBUTION

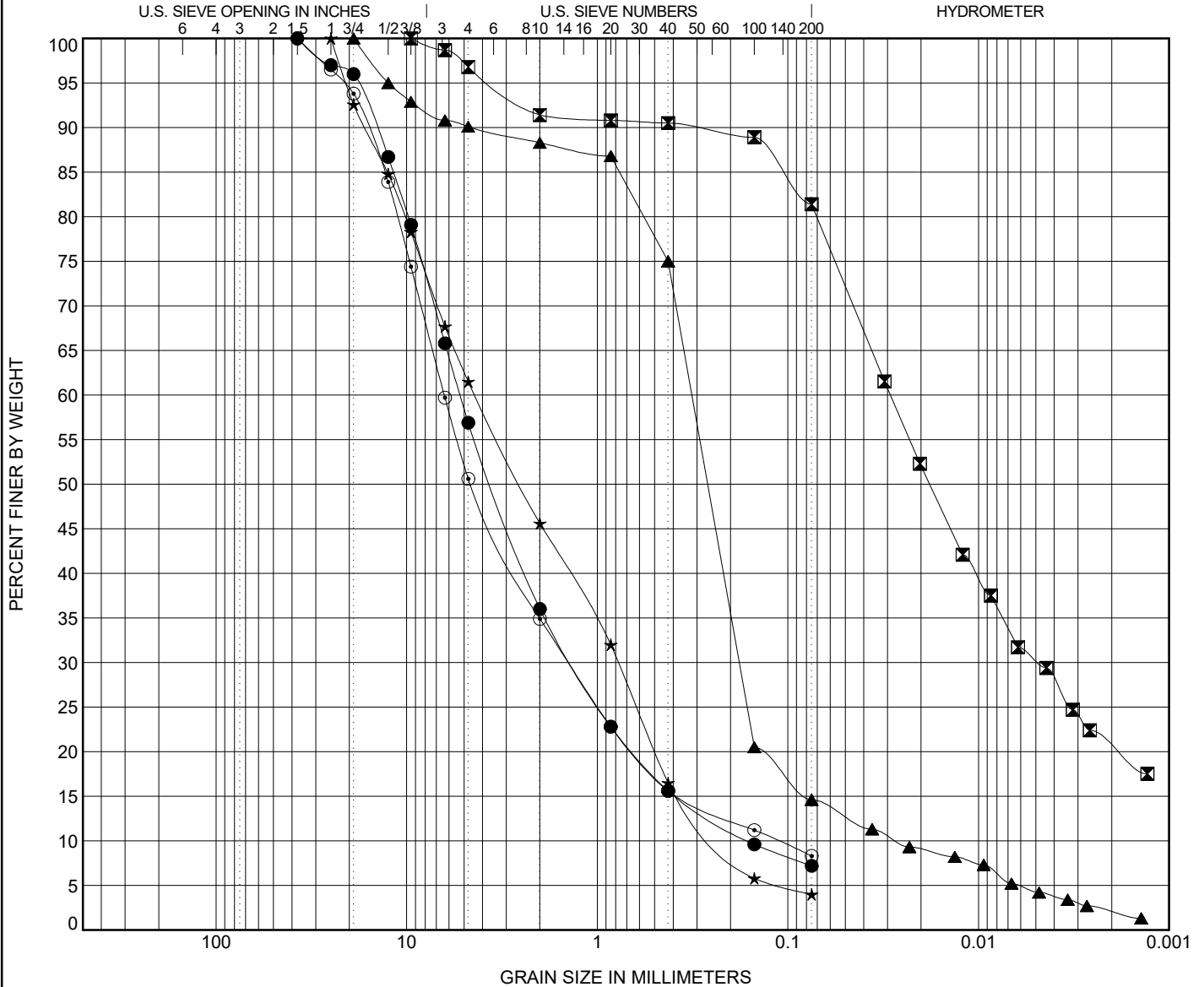
US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS

PROJECT NAME SPRINGVILLE DAM

PROJECT NUMBER BD-18-038

PROJECT LOCATION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

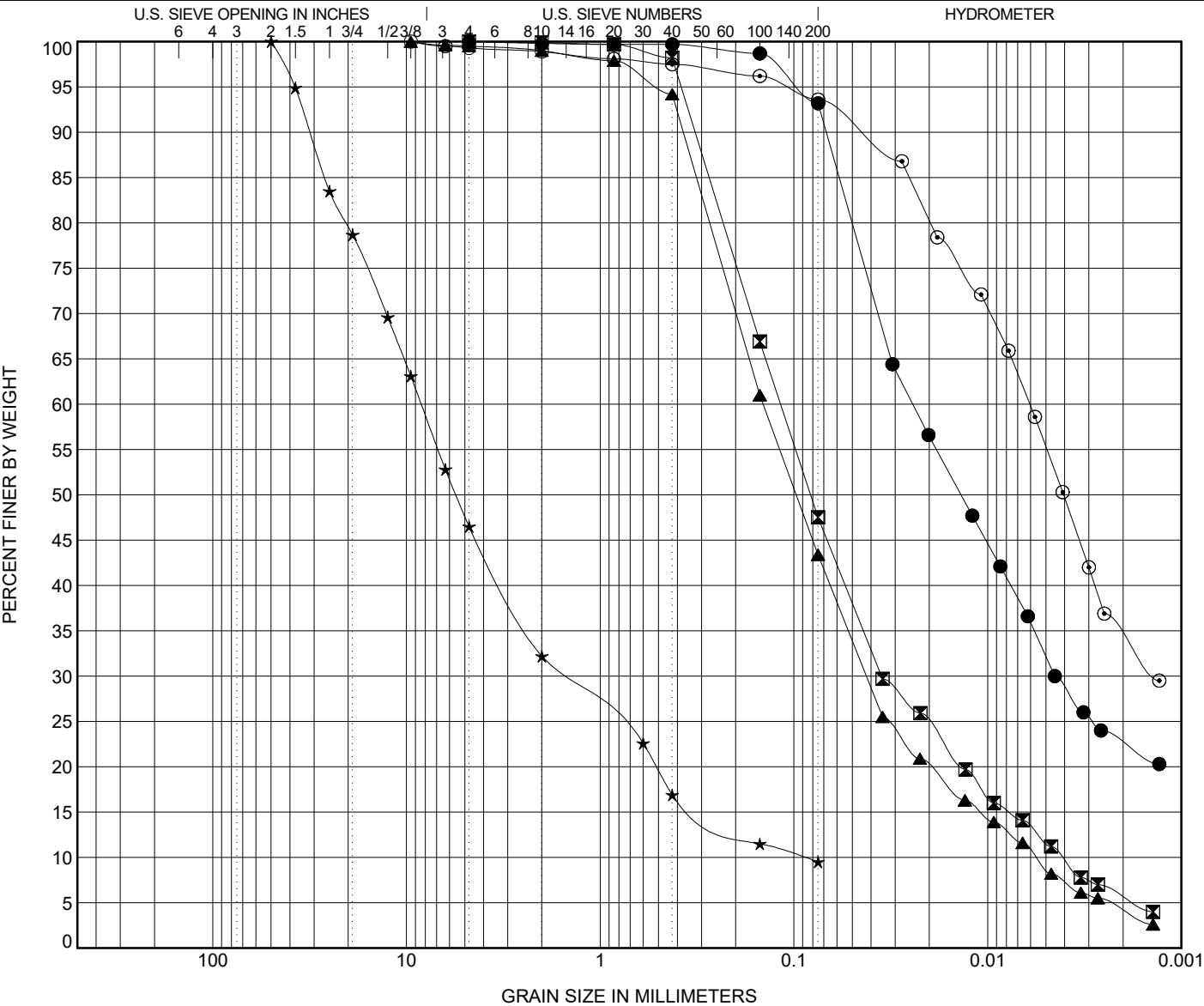
Specimen Identification		Classification					LL	PL	PI	Cc	Cu
●	SVD-SD-012 9.0									2.18	32.60
☒	SVD-SD-012 17.0										
▲	SVD-SD-012 21.0									3.76	11.84
★	SVD-SD-013 3.0	POORLY GRADED SAND with GRAVEL(SP)								0.61	19.39
⊙	SVD-SD-013 9.0									2.80	56.42
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	SVD-SD-012 9.0	37.5	5.241	1.356	0.161	43.1	49.7	7.2			
☒	SVD-SD-012 17.0	9.5	0.029	0.005		3.2	15.4	51.1		30.3	
▲	SVD-SD-012 21.0	19	0.319	0.18	0.027	9.9	75.5	10.3		4.3	
★	SVD-SD-013 3.0	25	4.378	0.777	0.226	38.5	57.5	4.0			
⊙	SVD-SD-013 9.0	37.5	6.353	1.414	0.113	49.4	42.3	8.3			

GRAIN SIZE SPRINGVILLE DAM 2018 SEDIMENT SAMPLING ONLY.GPJ ACE MVD WITH RAPID CPT 2008_11_17.GDT 10/15/18

GRAIN SIZE DISTRIBUTION

US Army Corps of Engineers - Buffalo District

CLIENT US ARMY CORPS PROJECT NAME SPRINGVILLE DAM
PROJECT NUMBER BD-18-038 PROJECT LOCATION



A P P E N D I X D

SJB and USACE Field Logs

Sample Photographs

DATE:

STARTED

7/17/18

FINISHED

7/18/18

SHEET

OF

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO.

SPYSD001

SURF. ELEV

G.W. DEPTH

See Notes

PROJECT:

Springville Dam

LOCATION:

42 28 51.0

C/L 79.5'

PROJ. NO.:

78 42 01.5

on 7/18/18

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		6/6	8/12	12/18	N	Rec (Ft)		
5	1	2	1				Gray SILT tr. sandy, tr. clay (wet, v. soft, m)	3.6 ft deck to bottom of creek
6	2	1	2		2	0.7	Brn FIC SAND, tr. gravel, tr. silt (wet, v. loose, sw)	
7	3	2	1					0.8 ft deck to top of water
8	3	3	2		2	0.5	Gray FIC SAND, some silt (wet, loose, sm)	
9	4	WH	WH				Contains tr. clay, occ. FIC Sand	S-2 2 split spoons, 1 no recovery
10	4	WH	WH		WH	1.4	Secm (v. loose)	
11	5	WH	WH					S-3 3 split spoons, 2 no recoveries
12	5	WH	WH					
13	6	1	2				Gray clayey SILT, tr. sand (wet, v. soft, m)	S-1 to S-3 Not enough sample, after anchored sampler
14	6	2	2		4	0.5	Gray FIC SAND, tr. gravel, tr. silt (wet, loose, sw)	
15	7	2	4				Contains some FIC Gravel	S-7 - Wood in sampling shoe
16	7	2	4					
17	8	6	7		8	0.5		End of 7/17/18 S-7
18	8	2	4		9	0.5		
19	9	13	21				Contains tr. wood (compact)	Split spoon Refused at 22.6 ft Below Top of Deck (Possible former wooden dam)
20	9	27	27		48	0.5		
21	10	50	50		27	0.4	Wood, little FIC Sand	
22	10	50	50		27	0.4		
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

22.6
- 3.6
19

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER:

DRILL RIG TYPE:

METHOD OF INVESTIGATION

ASTM D-1586 USING HOLLOW STEM AUGERS

CLASSIFIED BY:

1st offset

DATE
START 7/18/18
FINISH 7/18/18
SHEET 1 OF

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SP-50001
SURF. ELEV.
G.W. DEPTH See Notes

1st offset

PROJECT: Springville Dam
PROJ. NO.:

LOCATION: 42 28 51.2
78 42 01.2

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	-	N		
							Drove casing to 9 feet From top of deck Roller bit to 9.5 feet, 'refuse' - wood in cuttings	
5								
10								
15								
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW
CLASSIFIED BY: Geologist
DRILLER: DRILL RIG TYPE:
METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE _____

START

FINISH

SHEET

7/18/18
7/18/18
1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SP-5000
SURF. ELEV
G.W. DEPTH See Notes

2nd offset

PROJECT:

PROJ. NO.:

Springville Dm

LOCATION: 42 28 51.

79 42 01.

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	- N	Rec (FF)		
22	1	40	26				Drave casing to 22 ft below top of deck Brn FIC SAND, little FIC Gravel, fr. silt (Wet, compact, SW)	
		23	12		49	0.8	Gray FIC GRAVEL, little FIC Sand, fr. silt (Wet, compact, SW)	
25 1/2	2	16	19				Contains some FIC Sand, fr WOOD	
		18	12		37	0.6		
	3	15	6				Contains little FIC Sand Cn compact, Possible weathered bedrock	
		5 1/3			RF	0.3		
							Split Spoon Refused at 27.3 ft below top of deck	S-1 → S-3 not enough Sample after analytical Samples
10								
15								
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER:

DRILL RIG TYPE:

CLASSIFIED BY:

Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE

START

FINISH

SHEET

7/18/18
7/18/18
1 OF 1

SJB SERVICES, INC. SUBSURFACE LOG

HOLE NO. SPY-SD002SURF. ELEV G.W. DEPTH See NotesPROJECT: Springville DamLOCATION: 42 28 31.3PROJ. NO.: 78 42 00.7

DEPTH FT. 10	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	-	N		
15	1	WR	WR				Bm FIC SAND, some FIC Gravel, tr. silt (wet, v. loose, SW)	9.9 ft From deck to bottom of creek
		WH	WH			0.2		
	2	3	3					0.8 ft From deck to top of water
		4	4			7	(loose)	
	3	11	7				Contains tr. gravel (Firm)	S-1 - 2 split spoons
		6	6			13		
	4	6	5				Contains And FIC GRAVEL (loose)	S-5 - 2 split spoons
		3	8			8		
	5	3	3				Contains some FIC Gravel	S-8 - 2 split spoons, note wash
		6	4			9		
20	6	11	11					
		6	4			17		
	7	3	1					
		8	7			9	D Gray to Black FIC GRAVEL, some FIC Sand, tr. silt, tr. wood (wet, loose, SW)	
15	8	5 1/4					Split Spoon Refused at 24.4 ft from top of deck	Casing contains wood/possible wooden
20								

24.4
- 9.9

16.5

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER: DRILL RIG TYPE: CLASSIFIED BY:

Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START
FINISH
SHEET

7/18/18
7/18/18
1 OF

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPV-5002
SURF. ELEV
G.W. DEPTH See Notes

PROJECT: Springville Dam
PROJ. NO.:

LOCATION: 42 23 51.2
78 42 00.5

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N	R _{sc} (FT)		
22	1	46	38				Bn F/C SAND, tr. gravel, tr. silt (wet, v. compact, sw)	
		25	6		63	0.9		
25	2	11	7				Becomes Bn to Gray (Fm)	
		4	3		11	0.2		5-2 Wood Present in Sampler shoe
	3	20	5				Gray F/C GRAVEL, little F/C Sand, tr. silt, tr. clay (wet, v. compact, Gwl Possible Weathered Bed Rock)	
		50	14		Rt	0.4		
							Split Spoon Refused at 27.4 ft from top of deck	Not enough Sample after analytical samples
10								
15								
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER:

DRILL RIG TYPE:

CLASSIFIED BY:

Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7/17/18
FINISH 7/17/18
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPY-SD-003
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: Springville Dam
PROJ. NO.: _____

LOCATION: 42° 28' 51.4"
78° 41' 59.9"

DEPTH FT. 12	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES <u>73.6"</u>
		0/6	6/12	12/18	N	Rec (F)		
17 1/2	1	WR	WR					12.0 Ft deck to bottom of creek
		WR	WH		WR	Ø		
	2	14	8				Brn Fm SAND, tr. gravel, tr. silt tr. fabric (wet, firm)	0.8 Ft deck to top of water
		7	6		15	0.9	Grades to FIC SAND	
22 1/2	3	10	12				Brn FIC SAND, some FIC Gravel, tr. silt (wet, firm, SW)	S-1 4 split spoons, all no recoveries
		11	7		23	0.6		
	4	8	7					S-5 3 split spoons, 2 no recoveries
		6	6		13	0.8		
27 1/2	5	20	9				Contains little FIC Gravel, tr. wood	S-6 & S-7 2 split spoons, 1 no recovery
		6	7		15	0.7		
	6	7	2					
		5	5		7	1.1	(loose)	
29	7	8	7					
		16	7		33	0.8	Contains occ FIC Gravel seams (compact)	
	8	6	5				Contains tr. gravel	
		5	4		10	0.8	Gray FIC SAND, tr. gravel (wet, firm, S)	
20	9	29	9/4		RF	0.4	Gray FIC GRAVEL, some FIC Sand, tr. silt (wet, very compact, GW possible (weathered shale bedrock))	28.9 - 12 16.9
							Split Spoon Refusal at 28.9 Ft from Deck of Deck	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: _____

DRILL RIG TYPE: _____

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7-13-18
FINISH _____
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



SPV-SD-0004
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: SPRINGVILLE DAM LOCATION: N 42° 28' 50.3" E 30' E
PROJ. NO.: _____ W 078° 42' 00.0" LOC. IN SHALLOW

DEPTH FT.	SAMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES WATER FRONT of BAKE DECKING BOTTOM
		0/6	6/12	12/18	N		
3	1	WOA	2			Brn. f.c GRAVEL, little f.c Sand (wet, loose, GW)	WATER DEPTH = 2.6' BOTTOM IS 3.4' BELOW DECK S-1 = 0" made 3 attempts to recover 6" total S-2 = 6" in each of 2 attempts S-3 = 12" S-4, 3 att. to get 12" total S-5 = 3" 1st att., 12" 2nd att. S-6 = 5" (OK) S-7 = 3 att. for 6" S-8 = 3" 2nd att. = 24" S-9 = 0" 2ND ATT. = 0" 3rd att. = 6" S-10 = 5"
	2	3		4			
	2	3	6				
		7	6		13		
8	3	3	3			Brn. f.c SAND, little f.c Gravel (wet, loose, SW)	
		5	3		8		
	4	6	4				
		3	2		7	Contains some f-m Gravel	
	5	2	3				
		2	4		5		
13	6	2	17			(Compact)	S-10 = 5"
		5	3		22		
	7	14	3				
		7	10		10		
15	8	4	3			Contains occ. f-m Sand seams (loose)	
18		2	3		5		
	9	4	7				
		9	7		16	(compact)	
	10	WOA	4			Contains little f-m Sand (loose)	
26		4	2		8	Gravel	

DATE
START 7-10-18
FINISH _____
SHEET 1 OF

SJB SERVICES, INC.
SUBSURFACE LOG



SVD-SV005
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: SPRINGVILLE DAM
PROJ. NO.: _____

LOCATION: N 42° 28' 50.6"
W - 78° 42' 00.1"

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
5	1	Wor	1			Brn. f.-c GRAVEL, little f.-c Sand, tr. silt (wet, loose, GW)	WATER DEPTH = 5.0' FROM BARGE DECK DECK = 0.8' ABOVE WL
		1	1	2			
	2	1	1			Gray-brn. f.-c SAND, little f.-c Gravel, tr. silt (wet, loose, SW)	S-1 = 0" Rec
		4	3	5			
10	3	8	4			Gray & brn. f.-c GRAVEL, tr. sand (wet, loose, GP)	S-2 = 8" Rec
		4	3	8			S-3 = 4" Rec
	4	2	2			(Firm)	S-4 = 12" Rec
		3	2	5			S-5 = 0" Rec
	5	14	6				S-6 = 0" Rec
		6	3	12			S-7 = 0" Rec
16	6	7	2				
		6	6	8			
	7	5	3				
		5	3	8			
20						B.C. @ 19.0'	ATTEMPTED MULTIPLE TIMES TO OBTAIN SOIL IN SPOON - UNSUCCESSFUL
25							
26							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY:

Geologist

DRILLER:

DRILL RIG TYPE:

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

19
- 5
14

Off-Set

DATE
START
FINISH
SHEET

7-19-18
7-19-18
1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SP-50005
SURF. ELEV
G.W. DEPTH See Notes

PROJECT: Springville
PROJ. NO.:

LOCATION: 42 28 50.5
78 42 59.8

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	- N	Rec (FT)		
11 1/2	1	WR	WR				Gray SILT tr. sand, tr. organics (wet, v. loose, ml)	6.2 feet deck to creek bottom
		WR	WH		WR	0.2	Gray FINE SAND, tr. silt, tr. organics (wet, v. loose, SP)	0.8 feet deck to top of water
	2	4	3					
		3	4		6	0.6	BRN FIC SAND, some FIC gravel, tr. silt (wet, loose, SW)	S-1 2 split spoons
	3	8	6				BRN FIC GRAVEL, some FIC sand, tr. silt (wet, firm, GW)	S-3 2 split spoons
		6	4		12	0.5		
	4	8	6				Contains OCC. FIC sand seams	S-7 2 split spoons 1 wash
		6	3		12	0.8		
	5	25	8				BRN FIC SAND and FIC GRAVEL, tr. silt (wet, firm, SW)	S-8 3 split spoons
		11	6		19	0.5		2 - no recording install Flapper
16 1/2	6	4	1					
		1	2		2	0.5	Gray FINE SAND, some silt (wet, v. loose, SP)	
	7	17	5				BRN F-c SAND, little silt, tr. gravel (wet, loose, SW)	
		3	2		8	0.2		
21 1/2	8	WH	1				Gray SILT tr. clay, tr. sand (wet, loose, ml)	
		3	7		4	0.2		
	9	2	1				Gray clayey SILT tr. sand (wet, v. soft, ml)	
24		8			1	0.4	Gray FIC GRAVEL little FIC sand, tr. silt tr. clay (wet v. loose, GW/Possible Weathered Bedrock)	24.7 - 6.2 18.5
	10	21	50 1/2		RF	0.6	Gray Weathered Shale	
20							Split spoon Refused at 24.7 ft Below Top of Deck	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER:

DRILL RIG TYPE:

CLASSIFIED BY:

Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DRIVE & WASH
w/ 4" FJC

DATE
START 7-16-18
FINISH 7-17-18
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPYSD-007
SURF. ELEV. _____
G.W. DEPTH See Notes
WL 73.5"

PROJECT: Springville Dam LOCATION: 4228510 on 7/17/18
PROJ. NO.: _____ Not < 7842015
to confirm

DEPTH FT. <u>3</u>	SMPL NO.	BLOWS ON SAMPLER				Rec (Ft)	SOIL OR ROCK CLASSIFICATION	NOTES
		0/5	6/12	12/18	N			
<u>8 ft</u>	<u>1</u>	<u>WH</u>	<u>WH</u>				<u>Brn FIC GRAVEL, little FIC Sand, tr. silt (wet, v. loose, fw)</u>	<u>3.2 Ft deck to bottom of creek</u>
		<u>WH</u>	<u>WH</u>		<u>614</u>	<u>0.2</u>		
	<u>2</u>	<u>8</u>	<u>6</u>					<u>0.8 Ft deck to top of water</u>
		<u>7</u>	<u>7</u>		<u>13</u>	<u>0.2</u>	<u>(firm)</u>	<u>S-1 3 split spoons, 2 no recovery</u>
<u>13 ft</u>	<u>3</u>	<u>3</u>	<u>3</u>				<u>Contains 'and' FIC SAND (loose)</u>	
		<u>4</u>	<u>4</u>		<u>7</u>	<u>1.2</u>		<u>S-2 5 split spoons, 3 no recovery</u>
	<u>4</u>	<u>8</u>	<u>6</u>				<u>Brn FIC SAND, and FIC GRAVEL, tr. silt (wet, firm, sw)</u>	
		<u>5</u>	<u>4</u>		<u>11</u>	<u>1.0</u>		<u>S-4 2 split spoons</u>
<u>18 ft</u>	<u>5</u>	<u>5</u>	<u>2</u>					<u>S-5 End of deck</u>
		<u>2</u>	<u>1</u>		<u>4</u>	<u>1.0</u>		
	<u>6</u>	<u>17</u>	<u>8</u>				<u>Contains little FIC Gravel, occ. silt pebbles & grades to gray (firm)</u>	<u>S-6 2 split spoons</u>
		<u>4</u>	<u>3</u>		<u>12</u>	<u>0.5</u>		
<u>18 ft</u>	<u>7</u>	<u>12</u>	<u>5</u>				<u>Contains occ. gray silt/clay pebbles (loose)</u>	<u>S-7 2 split spoons</u>
		<u>3</u>	<u>3</u>		<u>8</u>	<u>0.4</u>		
	<u>8</u>	<u>1</u>	<u>6</u>				<u>Gray Fm SAND, tr. gravel, tr. silt (wet, firm, SP)</u>	<u>S-9 3 split spoons, 2 no recovery</u>
		<u>6</u>	<u>7</u>		<u>12</u>	<u>1.4</u>		
<u>23 ft</u>	<u>9</u>	<u>4</u>	<u>4</u>				<u>Grades to FIC SAND (loose, sw)</u>	
		<u>4</u>	<u>2</u>		<u>8</u>	<u>1.0</u>	<u>Contains little FIC Gravel</u>	
	<u>10</u>	<u>12</u>	<u>1</u>					<u>S-10 - Predominantly Fm Sand</u>
		<u>1</u>	<u>1</u>		<u>2</u>	<u>0.8</u>	<u>(v. loose)</u>	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: _____

DRILL RIG TYPE: _____

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7/16/18
FINISH 7/16/18
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPY-50008
SURF. ELEV
G.W. DEPTH See Notes

WL 82.5"

PROJECT: USAC - Springville Dam
PROJ. NO.: BD-18-038

LOCATION: 42 28 49.6 on 7/14/18
78 41 58.9

DEPTH FT. <u>5</u>	SMPL NO.	BLOWS ON SAMPLER				Rec (F)	SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	- N			
<u>10'X</u>	1	WR	WA				Gray to Brn FIC GRAVEL, some FIC Sand (wet, y/loose, Gw)	5.2 Ft deck to bottom of creek
		1	1		1	0.1		
	2	2	2				Brn FIC SAND and FIC GRAVEL (wet, loose, SW-GW)	0.8 Ft deck to top of water
		3	5		5	0.2		
	3	10	5				Contains little FIC Gravel (SW)	S-1 3 split spoons
		5	4		10	0.7		S-2 2 split spoons
	4	5	3				Contains and FIC GRAVEL	S-3 3 split spoons, 1 was no recovery
		3	4		6	0.4		S-4 2 split spoons - Cobble present
	5	18	6				Gray FIC SAND, little silt, tr. gravel (wet, firm, sm)	in empty shoe
		7	7		13	0.7		
<u>15'X</u>	6	11	7				Brn FIC SAND, and FIC GRAVEL, tr. silt (wet, loose, SW)	S-6 3 split - spoons - 2 was no recovery
		2	4		9	0.4		
	7	7	5				Gray FIC SAND, little FIC Gravel, occ. FIC Sand	
		4	2		9	0.7	Secms (wet, loose, SP)	
	8	6	2				Gray to Brn FIC SAND, little FIC Gravel, occ sandy silt	S-8 3 split spoons - 2 was no recovery
		2	6		4	0.5	Secms (wet, loose, SP)	
	9	2	8				Becomes Gray, Contains little silt, tr. clay (Firm, sm)	
		13	19		21	1.2		
	10	18	26				Contains little FIC Gravel	
		23	17		49	1.4	Gray FIC GRAVEL, little FIC Sand, tr. silt (wet, compact, Gw)	

Possible Weathered Bedrock

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER:

DRILL RIG TYPE:

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7-13-18
FINISH _____
SHEET 1 OF _____

SJB SERVICES, INC.
SUBSURFACE LOG



SPV-SD-0009
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: _____ LOCATION: N 42° 28' 49.6"
PROJ. NO.: _____ W 078° 41' 58.4" S

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
7	1	WHT	1			Brn. f-c GRAVEL, little f-c Sand (wet, loose, GW)	DECK IS 6.7' ABOVE CHALK BOTTOM WATER IS 5.9' DEEP
	2	1	3		2	Brn. f-c SAND, some f-m Gravel (compact) (wet, compact, SW)	S-1 = 5"
	3	2	1				S-2 = 0" 12" 2nd attempt
12	4	14	14			Gray-Brn Silty CLAY, some f. sand (wet, soft, ML-CL)	S-3 = 20"
	5	7	6		21	Contains tr. sand (stiff)	S-4 = Wash
	6	6	5				S-5 = 10"
17	7	3	3				S-6 = 14"
	8	7	7		12		S-7 = 22"
	9	25	16			(medium)	
22	10	18	50/8		Ref	(stiff)	S-8 = 20"
	11	16	11		34	Gray-brn. f-c GRAVEL, little f-c Sand, little Silty CLAY (wet, compact, GW-GM)	S-9 = 20"
25	12	18	50/8		Ref	B.C. w/SS Ref @ 25.5'	25.5 - 6.7 18.8

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW
DRILLER: _____ DRILL RIG TYPE: _____ CLASSIFIED BY: Geologist
METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS 4" FJC

DATE
START 7-12-18
FINISH _____
SHEET 1 OF _____

SJB SERVICES, INC.
SUBSURFACE LOG



SPU-SD-0010
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: _____ LOCATION: N 42° 29' 48.3"
PROJ. NO.: _____ W - 078° 41' 58.3"

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
7	1	WOH/1					Brn. f. SAND, some f. m Gravel (wet, loose, SW)	WATER DEPTH = 6.5 DECK IS 7.3 ABOVE CREEK BOTTOM FIRST SAMPLE 7'-9" S-1 made 3 attempts, each rec < 1" S-2 made 3 at. 4"-6" EACH S-3 = 14" S-4 = 16" S-5 = 18" S-6 = 20" S-7 = 18" S-8 = 18" S-9 = 15" Shale in shoe 24.6 6.5 18.1
		WOH	1			WOH		
	2	14	4					
		5	6		9			
	3	5	3					
12		8	13		11		Gray Brn. Silty CLAY, tr. sand (wet, stiff, CL)	
	4	4	6					
		8	12		14			
	5	2	5					
		10	12		15			
17	6	10	11				(v. stiff)	
		13	12		24			
	7	1	3				(medium)	
		4	8		7			
22	8	7	5				DK. Gray f-m SAND, little Silty, tr. gravel (wet, compact, SP-SM)	
		12	17		17			
	9	13	6				Brn. f-c GRAVEL, little f-c sand, tr. silt (wet, v. compact, GW)	
		23	50	0.1				
							B.C. w/ ss Ref @ 24.6'	
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist
DRILLER: _____ DRILL RIG TYPE: _____
METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7-11-18
FINISH _____
SHEET 1 OF _____

SJB SERVICES, INC.
SUBSURFACE LOG



SPV-SD-0011
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: SPRINGVILLE DAM
PROJ. NO.: _____

LOCATION: 42° 28' 47.3"
-078° 41' 58.0"

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
5	1	WOH	1			Brn. f.-c GRAVEL, little f.-c Sand, tr. silt (wet, G.W.) loose	CREEK BOTTOM = 5.0' BELOW DECK
	2	2	3		5		WL = 0.8' BELOW DECK
	3	2	4				S-1 = 3"
	4	5	6		9		S-2 = 3"
10	5	3	5	8		Contains tr. sand	S-3 = 5"
	6	7	5		15		Trying piston sampler 9'-11'
	7	4	3	4		Contains f.-c Gravel, little - some f.-c Sand	after poor spoon rec.
	8	4	3		8		Applied 150-200 psi for 3 min. - sampler
	9	5	15	19			dit not advance
15	10	5	4		24		S-4 = 15"
	11	6	9	7		Brn. - gray Silt, CLAY, tr. sand (wet, stiff, ~~CL~~ CL)	S-5 = 4', 2nd attempt = 11" w/ clay @ bottom 0.2'
	12	9	12		16		S-6 = ~~12~~ 12"
	13	7	11	10		(v. stiff)	S-7 = 18"
	14	14	7		24		S-8 = 24"
20	15	8	WOH	1			S-9 = 15"
	16	1	2		1		Shale in shoe
	17	9	8	15			22.4 - 5.0 17.4
	18	50/0.4				B.C.W/ SS Ref @ 22.4'	
25	19						

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: _____

DRILL RIG TYPE: _____

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 7-11-18
FINISH _____
SHEET 1 OF

SJB SERVICES, INC.
SUBSURFACE LOG



SVD-SV-0012
HOLE NO. _____
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: SPRINGVILLE
PROJ. NO.: _____

LOCATION: N 42° 28' 46.0"
W 078° 41' 57.5"

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
3.0	1	1	1				Brn. f.-m GRAVEL, tr. sand (wet, loose, GP)	DECK IS 3.0' ABOVE CREEK BOTTOM. DECK IS 0.8' ABOVE WL S-1 = 4" Rec S-2 = 6" S-3 = 5" (GRAIN SIZE SAMPLE 3'-6' COMP.) S-4 = 3" S-5 = 3" ADVANCED CASING TO 13', COLLECTED MAT'L INSIDE CASING w/ SPOON 9'-10' BEFORE WASHING S-6 Rec = 0 2nd attempt S-7 = 15" S-8 = 24" S-9 = 16"
		2	4		3			
	2	3	6					
		7	6		13			
8.0	3	10	7				Contains little - some f.-c Sand	
		7	7		14		Contains tr. - little f.-c Sand	
	4	7	9					
		6	5		15			
	5	4	3					
13		2	1		5			
	6	8	5				Gray Silty CLAY, tr. sand (wet, medium, ML-CL)	
		5	6		10			
	7	4	3					
		3	3		6			
18	8	2	2				Brn. f.-m Sand, little Clayey Silt (wet, loose, SP-SM) B.C. w/ SS Ref @ 21.7'	
		2	2		4			
	9	well	1					
		2	2		3			
	10	18	50/0.2	Ref				21.7 - 3.0 ----- 18.7

21.7
- 3.0

18.7

23

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW
DRILLER: A. V. SKE
METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DRILL RIG TYPE: CMR-45
4" FJC

CLASSIFIED BY: Geologist

DATE
START
FINISH
SHEET

7/19/18
7/19/18
1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPY-SD013
SURF. ELEV
G.W. DEPTH See Notes

WL 81"

PROJECT: Springville Dam
PROJ. NO.:

LOCATION: 42 28 46.3
28 41 57.7

On 7/19/18

DEPTH FT	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N	Rec (Ft)		
8 1/2	1	WR	WR				Bm FIC GRAVEL, tr. sand, tr. silt (wet, v/loose, sw)	3.0 Ft from deck to bottom of creel
		1	1		1	0.1		
	2	9	10				Bm FIC SAND, some FIC gravel, tr. silt (wet, firm, sw)	0.8 Ft from deck to top of water
		9	6		19	0.4		
	3	10	7				contains little silt (sm)	S-1 3 split spoon 2 no recoveries
		6	5		13	0.6		
13 1/2	4	1	6				contains tr. silt (sw)	S-2 2 split spoon
		5	5		11	0.3		
	5	5	2				contains little FIC gravel	S-4 2 split spoon
		3	2		5	0.5		
	6	12	3					S-6
		3	4		6	0.5	Gray SILT, some F. Sand, tr. clay (wet, medium, m)	
18 1/2	7	6	3				Gray silty CLAY, little FIC sand (wet, medium, c)	S-7 Sand is probable wash
		3	3		6	0.3		
	8	2	3				contains tr. sand, occ. F. sand particles (moist)	
		2	3		5	2.0		
	9	WH	1				Gray F. SAND, some silt, tr. clay particles (wet, v/loose, sm)	
			2		1	2.0		
21	10	1	2				contains tr. wood	
22		59						
20					RF	0.4	Gray FIC GRAVEL, little FIC SAND, tr. silt (wet, v/loose, sw) possible weathered bedrock	

22.4
- 3.0

19.4

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER:

DRILL RIG TYPE:

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Split spoon Refused
at 22.4 Ft from top of deck

DATE
START 7/20/18
FINISH 7/20/18
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPY-SD014
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: Springville Dam
PROJ. NO.: _____

LOCATION: 42 28 49.6 80.5 ft
72 41 58.3 on 7/20/18

DEPTH FT. 8	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N	RF		
13 1/8	1	1	1				Gray FIC GRAVEL, some FIC Sand, little silt, tr. organics (wet, v. loose, sw)	2.8 ft deck to bottom of creek
		1	1		2	0.3		
	2	5	4				Contains tr. silt (loose)	0.8 ft deck to top of water
		3	2		7	0.6		
	3	4	3				Brn FIC SAND, little FIC Gravel, tr. silt (wet, loose, sw)	5-1 2 split spoons, 1 No recovery
18 1/8		2	2		5	1.3		
	4	9	3				Gray silty CLAY tr. sand (moist, stiff, cl)	
		6	7		9	0.7		
	5	10	10				Grades to Brn (v. stiff)	
		9	5		19	1.6	(v. stiff)	
23 1/8	6	1	5					
		6	9		11	1.5	(stiff)	
	7	2	3					
		3	5		6	1.4	Brn F SAND, some clayey silt (wet, loose, sm)	
	8	9	13				Brn FIC GRAVEL some FIC Sand, little clayey silt (compact, wet, Gm? possible/ weathered bedrock)	
25		23	26		36	0.5		
	9	13	23					
		26	34		RF	0.8		
26							Split spoon Refused at 25.8 ft below top of deck	59 Shale in Shallow Shoe
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: _____

DRILL RIG TYPE: _____

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE 7/20/18
START
FINISH 7/20/18
SHEET 1 OF 1

SJB SERVICES, INC. SUBSURFACE LOG



HOLE NO. SPY-SP015
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: Springville Dam
 PROJ. NO.:

LOCATION: 42 28 50.9
78 41 59.8

DEPTH FT. 16	SMPL NO.	BLOWS ON SAMPLER 22					SOIL OR ROCK CLASSIFICATION	NOTES
		0/5	5/12	12/18	N	(FT)		
	1	WH	2				Brn Fm SAND, tr. gravel, tr. silt (wet, loose, sp) Grades to FIC SAND	16 Ft from deck to bottom of creek 0.8 ft from deck to top of water
	2		3		4	0.6		
20 21x	2		15	28			Brn FIC GRAVEL, little FIC Sand, tr. silt, tr. wood (wet, compact, gw)	
			20	23		48		
							Bore Completed at 22 ft below top of deck, unable to drive casing beyond ~22 ft (possibly water)	22 - 16 ----- 6.0
10								
15								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER:

DRILL RIG TYPE :

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

off set

DATE
START 7/20/18
FINISH 7/20/18
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SPV-SD015
SURF. ELEV
G.W. DEPTH See Notes

PROJECT: Springville Dam
PROJ. NO.:

LOCATION: 42 28 30.9
28 41 59.7

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	-	N		
24.8	1	30	5 1/4			RF 0.3	Gra/Fine Sand to gravel, tr. silt (wet w/ compact, SP) Gra/Fine GRAVEL little fine sand tr. silt (wet w/ compact. Gw Possible weathered bedrock.	13 feet from deck to bottom of creek 0.8 ft from deck to top of water
10								
15								
20								

Split Spoon Refused
at 24.9 From Top of Dam

24.9
- 13.0

11.9

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

DRILLER:

DRILL RIG TYPE:

CLASSIFIED BY: Geologist

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS



SVD-SD001, 0-6 feet



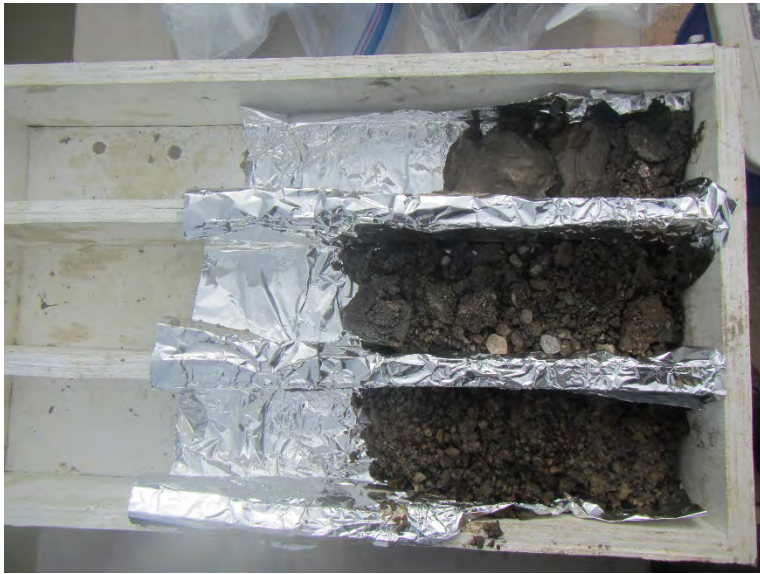
SVD-SD001, 6-12 feet



SVD-SD001, 12-18 feet



SVD-SD001, 18-23.7 feet



SVD-SD002, 0-6 feet



SVD-SD002, 6-12 feet



SVD-SD003, 2-6 feet (No 0-2 feet Recovery)



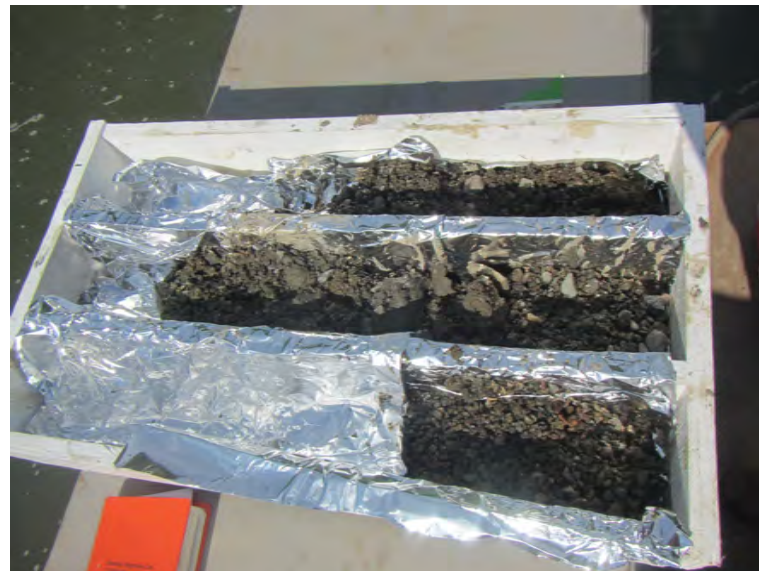
SVD-SD003, 6-12 feet



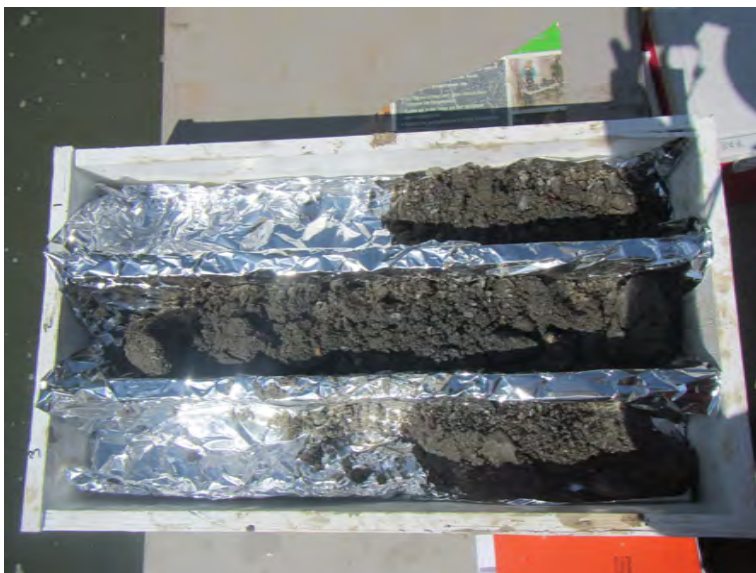
SVD-SD003, 12-18 feet



SVD-SD004, 0-6 feet



SVD-SD004, 6-12 feet



SVD-SD004, 12-18 feet



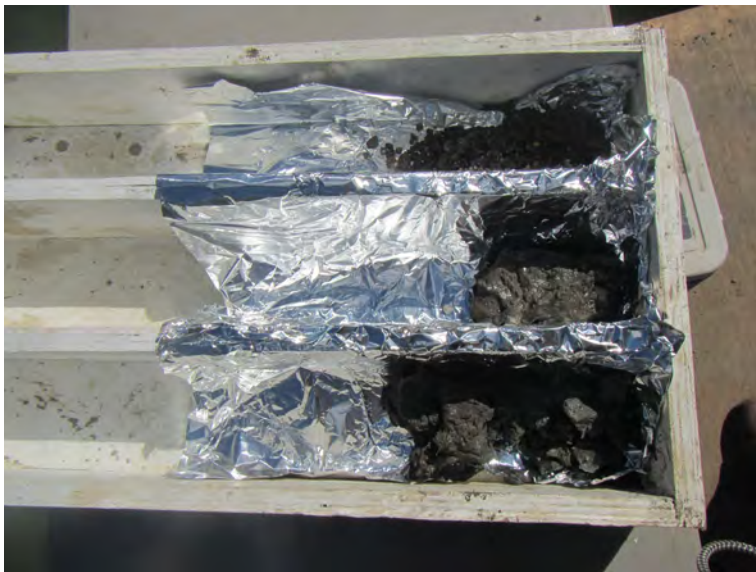
SVD-SD004, 18-22 feet



SVD-SD005, 2-6 feet



SVD-SD005, 6-12 feet



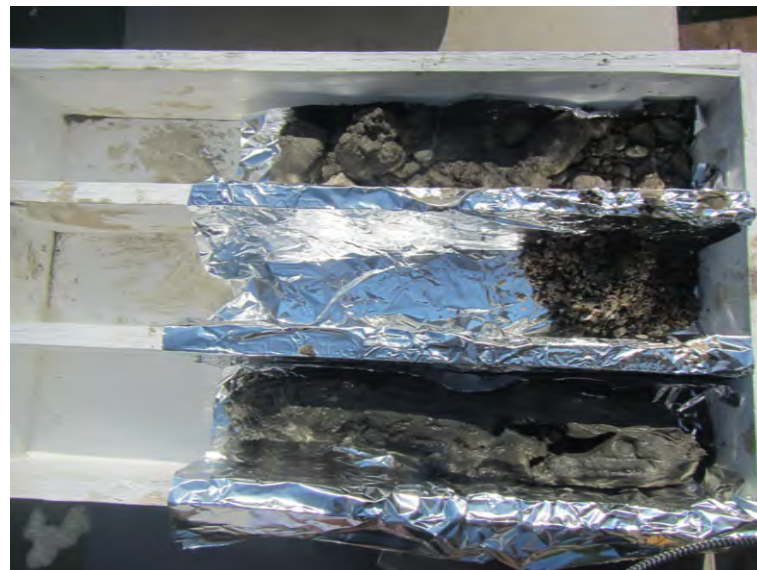
SVD-SD005, 12-18 feet



SVD-SD005, 18-18.5 feet - Shale



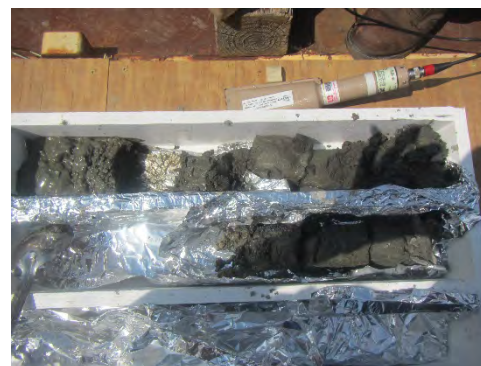
SVD-SD006, 0-6 feet



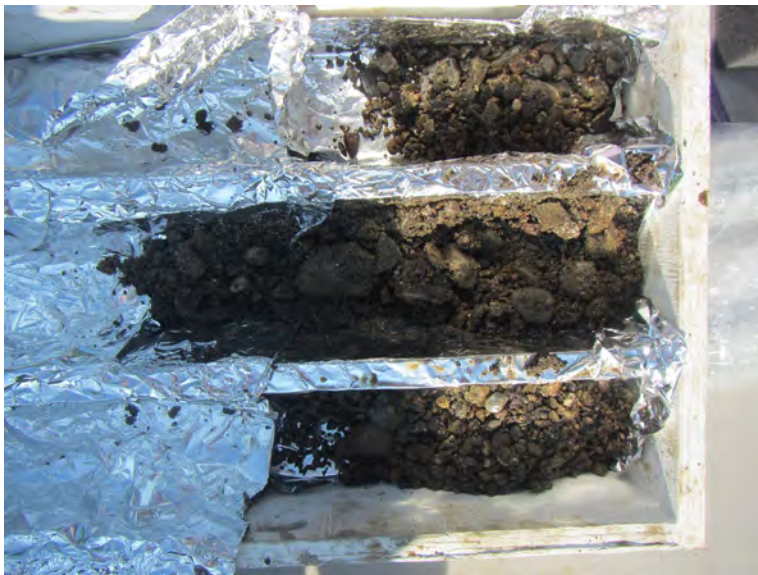
SVD-SD006, 0-6 feet Resample



SVD-SD006, 6-8 feet Resample



SVD-SD006, 6-9.1 feet – Shale in Sample



SVD-SD007, 0-6 feet



SVD-SD007, 6-12 feet



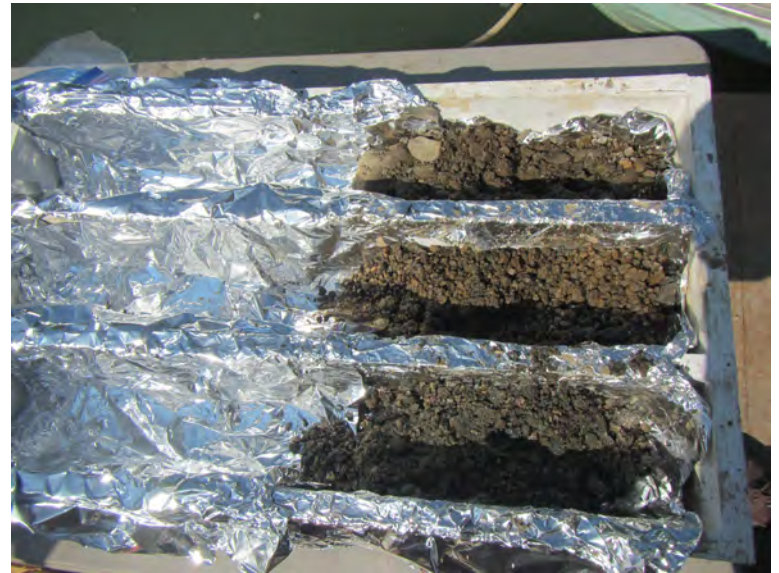
SVD-SD007, 12-18 feet



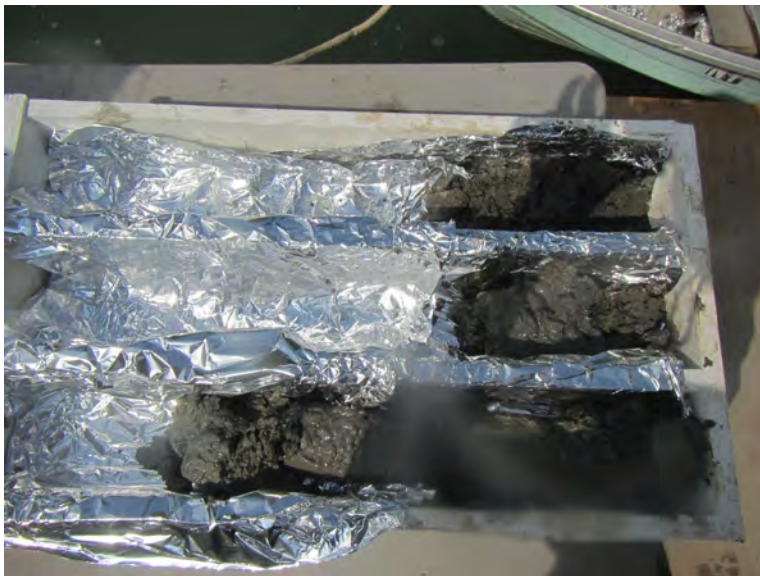
SVD-SD007, 18-20.7 feet



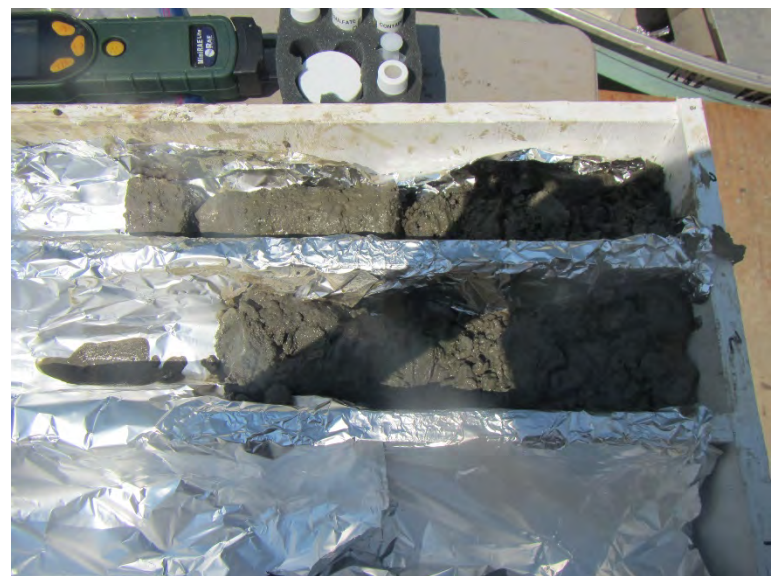
SVD-SD008, 0-6 feet



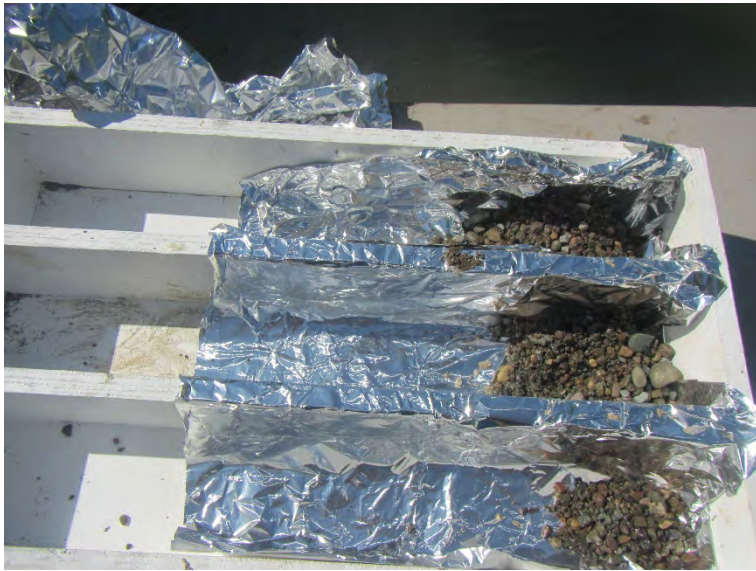
SVD-SD008, 6-12 feet



SVD-SD008, 12-18 feet



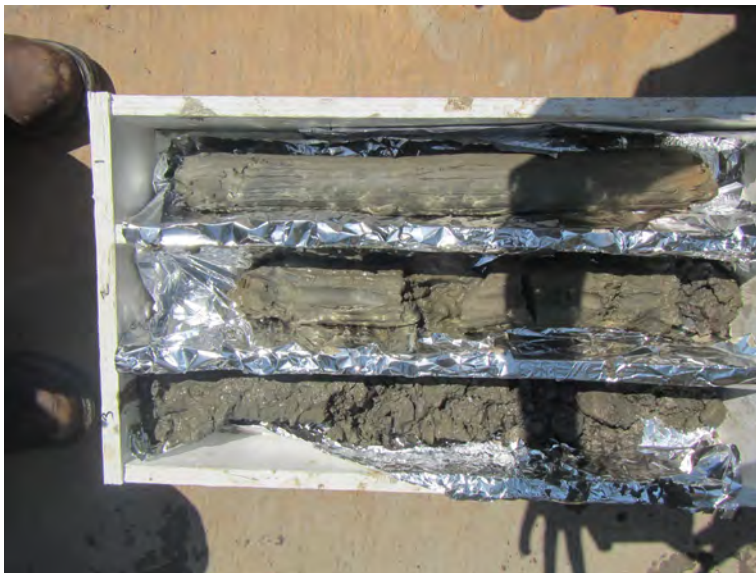
SVD-SD008, 18-20.6 feet



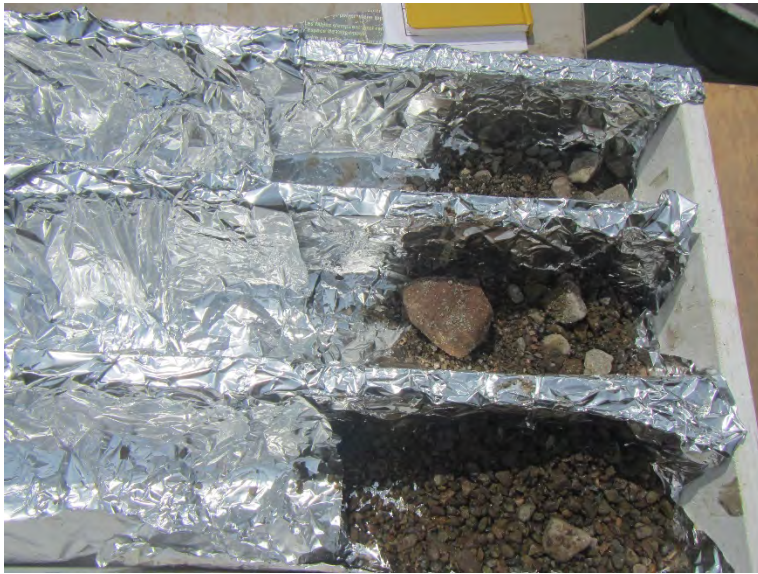
SVD-SD009, 0-6 feet



SVD-SD009, 6-12 feet



SVD-SD009, 12-18 feet

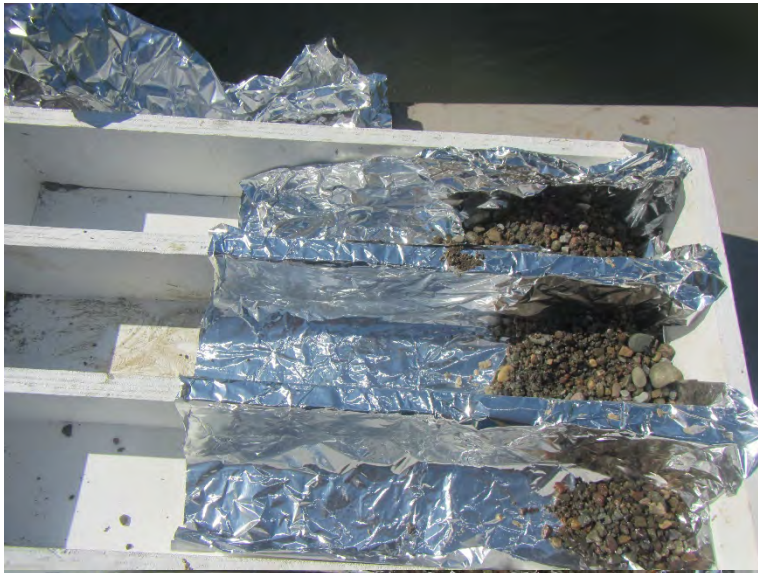


SVD-SD010, 6-12 feet



SVD-SD010, 12-17.4 feet

SVD-SD010, 0-6 feet
photo not taken



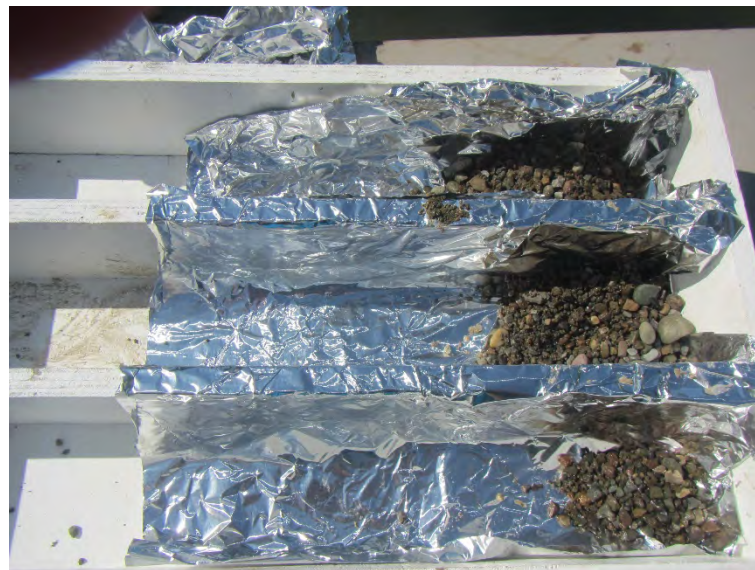
SVD-SD011, 0-6 feet



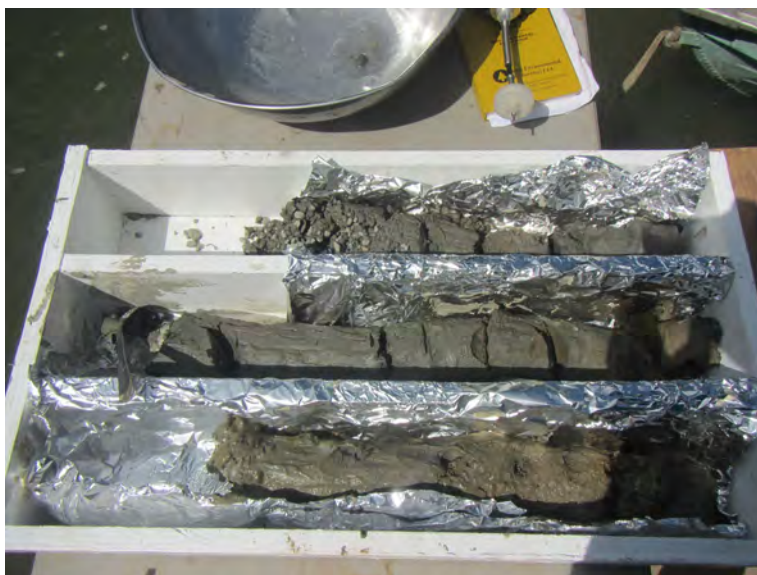
SVD-SD011, 6-12 feet



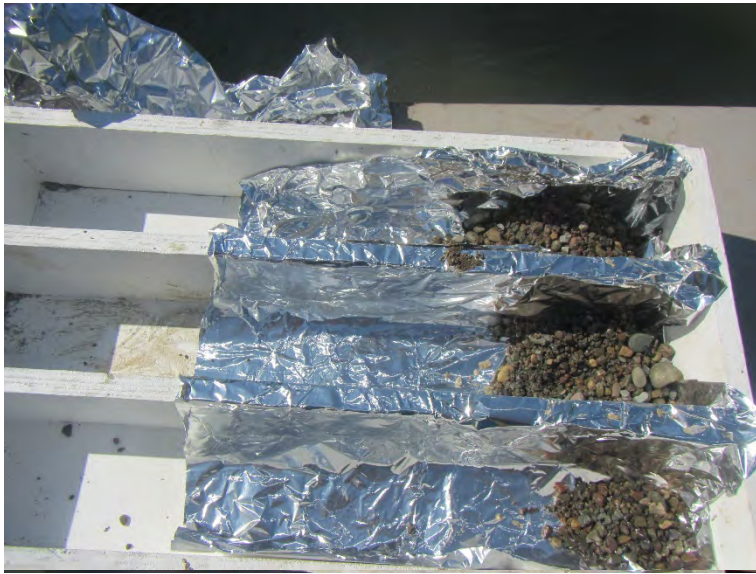
SVD-SD012, 0-6 feet



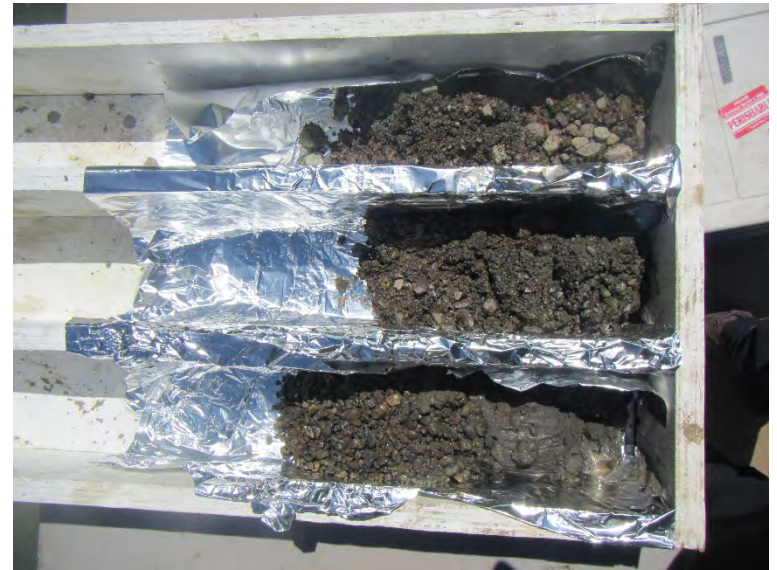
SVD-SD012, 6-12 feet



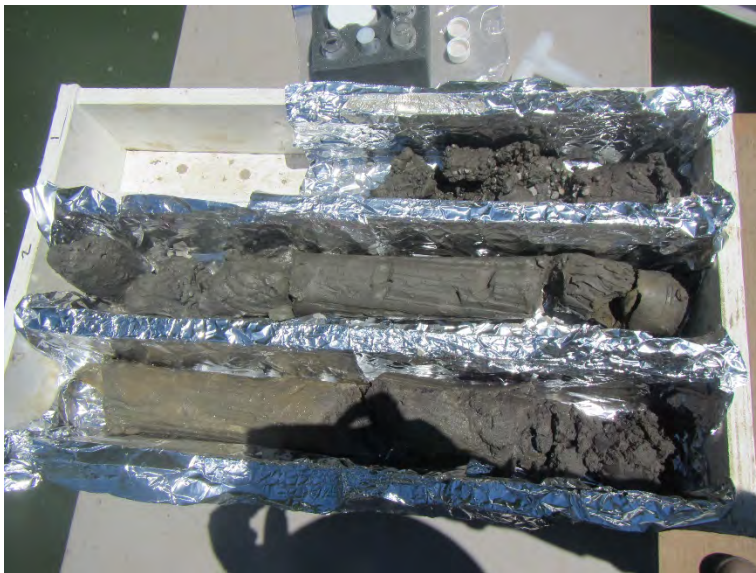
SVD-SD012, 12-18 feet



SVD-SD013, 0-6 feet



SVD-SD013, 6-12 feet



SVD-SD013, 12-18 feet



SVD-SD014, 6-12 feet



SVD-SD014, 12-17.5 feet

SVD-SD014, 0-6 feet
photo not taken

SVD-SD015 and -SD015A
photos not taken since
installed to just determine
bedrock depth

CONTENTS

[illegible]

Location SVD

Date 9 JUL 18

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Project / Client

0700 ARRIVE AT SITE.

WX: clear, sunny 72°F.

<u>Personnel</u>	Affiliation	On/off

S. MCCABE USAF 0700 1200

ART	SJB	0830	1200

Tom				STB	0830	1200

ANDY	STB	0830	1200

LARRY	WILSON GRANT	0845	1130

MARY L. USACM 0845- 1130

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Location SVD Date 9JUL18

Project / Client _____

0800 Meet Shawn Daley of Esch County Parks to put a lock on access gate.

0830 STB ARRIVES WITH FLAT BED TRUCK TOWING TRAILER RIG (CMR-45)

- Low boy TRACTOR TRAILER WITH pontoon / Barge.

0845 Wilson CRANE SERVICE OFFSITE TO LIFT Barge into Reservoir.

- MARK L. OFFSITE

0900 LIFT Barge onto ground. STB will install pontoons & decking prior to placing in the reservoir & placing drill rig on Barge.

1030 PLACE CMR-45 RIG onto barge.
- STB TO LINE UP RIG ON barge & SECURE to barge

1130 WILSON CRANE & MARK L OFFSITE
- STB PUTS ROBOAT w/ motor into reservoir

1200 S.M. & STB OFF SITE.

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Location SVD Date 10JUL18

Project / Client _____

0745 ARRIVE ON SITE

WEATHER: CLEAR SUNNY 75°F

Personnel:	Affiliation	on/off
Louisa Allen	USACE	0745/1600
Tim Izkovich	USACE	0715/1600
Mark Legeza	USACE	0740/1600
Dave Steiner	STB	0800/1600
Tyler M	STB	0800/1600
Aft K	STB	0800/1600

At Springville Dam to collect environmental and geotech samples/logs. STB on-site with dump and wash rig on barge.

Equipment:

MINIRAE LITE PPD M+PV

LCA

Rite in the Rain

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Location SVDDate 10 Jul 18

Project / Client _____

0815 Dave leads safety meeting.

Discussed safety while on barge and
near drill rig. Discussed procedures
for sampling.0835 Begin loading supplies onto barge
for sampling.0845 Crew ready on barge, put mast up
and remove anchors.0906 Split up at SVD-006, anchored
15.8' from deck to sediment
0.8' from deck to water

0930 0'-2' at SVD-SD006, PFD reading = 0.0

1005 Drive and wash method being
used to clear hole, casing is 4"

To collect samples 2' long, 3"

split spoon is being used. Samples
are being logged by Dave Steiner (SJB)
and will collect geotech samples for
grain size analyzes.Mark Legreza (USACE) is scanning
samples for Rad.1027 2'-4' split spoon at SVD-SD006 brought
up. Mark scanned for Rad.
~~Scanned with~~ Pool recoveryLocation SVDDate 10 Jul 18

Project / Client _____

Photo log

Photo #1: 10 Jul 18 0845, preparing
Barge for sampling.Photo #2: 10 Jul 18 1010, Drive and
wash at SVD-SD006 (photos 2-4)

Photo 101-0071: 10 Jul 18 1100,

SVD-SD-006 0'-2' (Top), 2'-4' (middle)
4'-6' (Bottom)

Photo 101-0072: 10 Jul 18 1133

SVD-SD-006 6'-8' (Top),
8'-9.1' (middle)

Photo 101-0073: 10 Jul 18 1145

Shale from bottom of 8'-9.1'
Spoon at SVD-SD-006

Photo 101-0074: 10 Jul 18 1343

SVD-SD-005 2'-4' (Top), 4'-6' (Bottom)

Photo 101-0075: 11 Jul 18 0903

SVD-SD-012 0'-2' (Top), 2'-4' (middle),
4'-6' (Bottom)

Photo 101-0076: 11 Jul 18 1020 SVD-SD012

6'-8' Top, 8'-10' Middle, 10'-12' (Bottom)

Photo 101-0077: 11 Jul 18 1117

SVD-SD012, 12'-14' (Top), 14'-16' (middle),
16'-18' (Bottom)

Rite in the Rain

Location SVD Date 11 Jul 18

Project / Client _____

- Photo 101-0078⁷⁹ 11 Jul 18 1435 SVD-SD011,
0'-2' (Top), 2'-4' (middle), 4'-6' (bottom)
Using 3" split spoon with basket
- Photo 101-0080 11 Jul 18 1553 SVD-SD011
6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)
Note: No Photo taken SVD-SD011, 12'-18'
- Photo 101-0081, 12 Jul 18 1000 SVD-SD006
0'-2' (Top), 2'-4' (middle), 4'-6' (bottom)
- Photo 101-0082, 12 Jul 18 1025 SVD-SD006
6'-8' (Top)
Note: No photo taken SVD-SD010, 0'-6'
- Photo 101-0083, 12 Jul 18 1345 SVD-SD010
6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)
- Photo 101-0084, 12 Jul 18 1440
Drilling at SVD-SD010.
- Photo 101-0085, 12 Jul 18 1452 SVD-SD010
12'-14' (Top), 14'-16' (middle), 16'-17.4' (bottom)
- Photo 101-0086, 13 Jul 18 0830 SVD-SD004
0'-2' (Top), 2'-4' (middle), 4'-6' (bottom)
- Photo 101-0087, 13 Jul 18 0935 SVD-SD004
6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)
- Photo 101-0088 13 Jul 18 1105 SVD-SD004
12'-14' (Top), 14'-16' (middle), 16'-18' (bottom)

Location SVD Date 10 Jul 18

Project / Client _____

- 1033 Dot to poor recovery on 2'-4'
at SVD-SD006, the split spoon
basket is being replaced with
a valve.
- 1050 Almost no recovery from 4'-6'
at SVD-SD006 with check
valve. Going to retry with
basket.
- 1100 Still got poor recovery from
4'-6' at SVD-SD006
- 1105 Good Recovery for 6'-8'
Bagged samples from 0'-6'
Mark scanned 6'-8' for Rad
- 1115 collected chem, cal samples
out of the 0'-2' bagged sample
- 1132 Hit bedrock at 9.1' from top
of sediment. collect split spoon
8'-9.1'. Mark scanned for Rad.
- 1135 6'-8' VOC reading ~~0.0~~ ^{ppm} 0.0 ~~ppb~~
8'-9.1' VOC reading 0.8 ~~ppb~~ ^{ppm}
- 1145 collected chem + rad sample
for 6'-9.1' from SVD-SD006. No
sample remained to be bagged
Not enough for grain size.

Location SVDDate 10 JUL 19

Project / Client _____

- 1145 6'-8' at ~75% recovery
 Refusal at shale at 9.1'
 0'-2' good recovery (70%)
 2'-4' and 4'-6' little to no recovery
 chemical samples collected from
 0'-2'.
 Not enough material for Rad or
 grain size sample collections.
- 1200 Break for lunch
- 1300 Set up at SVD-SDOOS
 5' from deck to sediment
 0.8' from deck to surface of water
- 1315 SVD-SDOOS 0'-2', No recovery
- 1324 SVD-SDOOS 2'-4', 30% recovery
 Mark scanned for Rad
 PID VOC reading - 0.0 ppm
- 1342 SVD-SDOOS 4'-6', poor recovery,
 mainly small pebbles
 Mark scanned for Rad
 PID VOC reading 0.0 ppm
- 1350 Bagged sediment from SVD-SDOOS
 2'-4' and 4'-6'. Not enough
 recovered to sample.

SVDDate 10 JUL 18

Project / Client _____

- 1350 SVD-SDOOS 6'-8' ~40% recovery
 Mark scanned for Rad
 PID VOC reading 0.2 ppm
- 1415 SVD-SDOOS, low recovery 8'-10'
 mainly gravel
 Mark scanned for rad
 PID VOC reading 0.0 ppm
- 1440 SVD-SDOOS, 10'-12' → No recovery
- 1500 SVD-SDOOS, 12'-14' → poor
 recovery (~20%)
 Due to poor recovery on all
 spoons 0'-14' at SVD-SDOOS
 drilling was paused. SJB
 was going to contact office
 to see if they have a piston
 sampling rod.
- 1505 Samples that were recovered
 from 6'-8', 8'-10', and 12'-14'
 were bagged.
- 1530 Barge rafted at shore
- 1550 SJB has new piston rod in
 Syracuse. Will be picked up at 9:30
 tomorrow. Meeting at 0730 tomorrow
- 1600 offsite

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Location SVDDate 11 Jul 18

Project / Client _____

0715 Arrive on site

Weather: Clear, sunny, 60°F

Personnel: Affiliation: On/off:

Scott McCabe USACE 0700/1745

Mark Legeza USACE 0700/1745

Linda Allen USACE 0715/1745

Dave Steiner STB 0715/1745

Art K STB 0715/1745

Tyler M STB 0730/1745

LKA

13

Location SVDDate 11 Jul 18

Project / Client _____

0730 White marking on lip on
Dam is 7.1 on water gauge

0750 Crew on Barge

0820 Barge set up at SVD-SD012

Depth from Deck to sediment
is 3 ft

Depth from Deck to water = 0.8'

Barge was moved/set as close
to point as possible but exact
location was too shallow.

0830 Drilling begins at SVD-SD012

Drive and wash method

Casing is 4"

2' long, 3" diameter split spools

0835 SVD-SD012 0'-2' poor recovery

0847 SVD-SD012 2'-4', poor recovery

0852 Second attempt SVD-SD012, 2'-4'

Better recovery ~40%.

0900 SVD-SD012 4'-6', ~25% Recovery

With Flapper valve

All intervals scanned with PID

↳ all readings 0.0 ppm

Mark scanned for Rod

Rite in the Rain

Location SVDDate 11 Jul 18

Project / Client _____

- 0910 VOC samples collect from 2'-4' interval (2.5'-3')
Rad and Chem samples collected from composite
Grain size sample collected
No material leftover from SVD-SDO12 0'-6' to be bagged
- 0925 SVD-SDO12 6'-8' no recovery
Repeat 6'-8' ~10% recovery
- 0933 SVD-SDO12 8'-10', poor recovery ~5% recovery
- 0938 Scott received e-mail from Michelle Barker that states that if samples are mainly sand and gravel, NVS may waive requirement for chemical analyses. If poor recovery and just sand/gravel collect TOC, rad, and grain size.
- 0945 Dave Steiner (SJB) collected grain size sample from additional split span SVD-SDO12 6'-10'
- 1015 SVD-SDO12 10'-12', 2 attempts with very little recovery

Location

SVDDate 11 Jul 18

Project / Client _____

- ~~1035~~ SVD-SDO12 6'-12' samples
1025 composited and samples collected for rad and TOC.
- 1038 SVD-SDO12 12'-14', 50% recovery
- 1045 SVD-SDO12 14'-16', full recovery
Mark scanned 12'-14' and 14'-16' for rad
PID readings 12'-14' and 14'-16' = 0.0ppm
- 1112 SVD-SDO12 16'-18', 75% recovery
Mark scanned for rad
PID reading = 0.0ppm
- 1135 Chem, Rad, grain size samples + Dup
VOC samples taken from 14'-16'
- 1140 ~~#1~~ Zepax at shale 18.8'
From top of sediment.
Rad sample and TOC collected from 18-18.8. Dave collected grain size sample
- 1200 Break for lunch and waiting for piston sampling

Location SVDDate 11 Jul 18

Project / Client _____

- 1336 Set up at SVD-SD011
Depth of water = 4.2'
- 1340 SVD-SD011 0'-2' ~~AE~~ recovery
Split spoon w/ basket 5%
(sand + gravel)
- 1405 SVD-SD011 2'-4', ~5% recovery
sand + gravel
- 1430 SVD-SD011 4'-6', ~10% recovery
Wash only
Scott spoke to Bill and Bill
wants us to try ~~to~~ the piston
sampler
Mark scanned all three for Rad
PID readings = 0.0ppm
- 1445 Piston sampler was attempted at
SVD-SD011 4'-6' with no recovery
- 1456 Second split spoon sample at
SVD-SD011 4'-6' recovered ~50%.
- 1500 Chemical, Rad, + Grain size samples
collected for SVD-SD011 0'-6'
VOC samples collected at 7.5'-5.5'
- 1505 SVD-SD011 6'-8', ~50% recovery
- 1530 SVD-SD011 8'-10', ~35% recovery
(sand + gravel)

Location SVDDate 11 Jul 18

Project / Client _____

- 1535 Second split spoon from
SVD-SD011 8'-10', 40% recovery
some clay, ~3'-4" at bottom
- 1555 SVD-SD011 10'-12', 50% recovery
~8 inch clay under 4 inches sand + gravel
(SD011)
- 1610 SVD-SD011 samples collected
Chem, Rad, TOC, grain size
VOC samples collected 11.5'-12'
- 1615 SVD-SD011 12'-14' Split spoon
clay ~65% recovery
- 1654 SVD-SD011 14'-16' Split spoon
100% recovery
~14'-15' silty clay
~15'-16' sandy silt
PID readings 12'-14' and 14'-16' = 0.0ppm
- 1705 SVD-SD011 16'-18' Split spoon
~50% recovery
shale pieces at 18'
- 1715 SVD-SD011 12'-18' samples
collected - Rad, Chem, grain size
VOC collected 15.5'-16'
Refusal at shale at 18'
from top of sediment

18 Location SVD Date 11 Jul 18
Project / Client _____

1745 * USACE and STB offsite.
Tomorrow dummy lock the
gate once everyone arrives as
a motorcycle had come in
past the gate as we were
preparing to leave.

LKA

Location SVD Date 12 Jul 18 19
Project / Client _____

Personnel:	Application:	On/off:
Laura Allen	USACE	0720/1530
Mark Legeza	USACE	0730/1530
Dave Steiner	STB	0715/1530
Art K	STB	0715/1530
Tyler M	STB	0730/1530

Weather: clear, sunny 59°F,

Predicted high 81°F

Sampling at Springville Dam
continues. Scott McCabe recommended
that drilling starts at a retry of
SVD-SD006 with the piston sampler.
Then move to SVD-SD010.

LKA

Rite in the Rain

Location SVDDate 12 JUL 18

Project / Client _____

0805 Set up at SVD-S0006
 Depth of water = 15 feet
 Due to low recovery at
 SVD-S0006 on 10 JUL 18, sampling
 is being vtry with piston
 sampler.

0838 push piston ~1 ft up but no
 sample was collected in sampler

0853 Split spoon sample SVD-S0006A 0'-2'
 very little recovery, ~5-10% sand & gravel

0902 2nd split spoon collected SVD-S0006B 0'-2'
 ~40% recovery, PID VOC = 0.0 ppm

0930 Split spoon SVD-S0006A 2'-4'
 low recovery ~15%, PID VOC = 0.0 ppm
 Second split spoon SVD-S0006A 2'-4'
 No recovery

0952 Split spoon SVD-S0006 4'-6'
 Good recovery ~75%, PID VOC = 0.0 ppm
 - Mark scanned all samples for Rad

1000 Sampled SVD-S0006A 0'-6'
 Rad, chem, grain size
 Grain size 4'-6'
 VOC samples 5'-5.5'
 No sample remained to be bagged

Location SVDDate 12 JUL 18

Project / Client _____

1000 Split spoon SVD-S0006A 6'-8'
 100% recovery, PID VOC = 0.0 ppm
 Shale at bottom

- Mark scanned for Rad
 1015 collected samples from
 SVD-S0006A 6'-8', Rad + chem
 VOC samples from 6.75'-7.25'
 Not enough material remained
 for grain size

1045 Break for lunch

1155 Set up at SVD-S0010
 Depth of water 6.5 feet

1204 SVD-S0010 0'-2'
 Poor recovery, second spoon
 at same interval
 Little recovery ~10%, PID VOC = 0.0 ppm

1230 SVD-S0010 2'-4'
 2 spoons, 1st no recovery
 2nd ~20% recovery, PID VOC = 0.0 ppm

1245 SVD-S0010 4'-6'
 65% recovery, PID VOC = 0.0 ppm
 - Mark scanned all 0'-6' sections
 for Rad

22 Location SVD Date 12 Jul 18
Project / Client _____

1300 Sampled SVD-SDO10 0.0-6.0
Rad, Chem, + Grain Size collect
2 grain size - 2'-4' and 4'-6'
VOC collected 5.5'-6.0'

1305 SVD-SDO10 6'-8' split spoon
80% Recovery
Clay, PID VOC = 0.0 ppm

1330 SVD-SDO10 8'-10' split spoon
90% Recovery
Clay, PID VOC = 0.0 ppm

1335 SVD-SDO10 10'-12' split spoon
100% Recovery, clay
PID VOC = 0.0 ppm

1400 Sampled SVD-SDO10 6.0-12.0
Rad, Chem, + Grain Size
Grain size: 8'-10'
VOC collected: 11'-11.5'

1400 SVD-SDO10 12'-14' split spoon
85% Recovery
Clay, PID VOC =

1410 SVD-SDO10 14'-16' split spoon
75% Recovery
Clay → sandy; PID VOC =

Location SVD Date 12 Jul 18 23
Project / Client _____

1440 Refusal at 17.6
1445 SVD-SDO10 12.0'-17.6' split spoon
50% Recovery
Sand, gravel

1500 SVD-SDO10 12.0'-17.6' Sampled
Rad, Chem, Grain Size
VOC Samples 15'-15.5'

1530 Offsite

LKA

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Location SVD Date 13 Jul 18

Project / Client _____

~~0730 Arrive on site~~

PERSONNEL: Application: on/off:

Laura Allen USAF 0730/

Mark Legeza USAF 0700/

Dave Steiner STB 0715/

Art K STB 0715/

Tyler M STB 0715/

Weather: Slightly cloudy, 75°F

LGA

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Location SVD Date 13 Jul 18

Project / Client _____

0730 Arrive on site

0750 Set up at SVD-SD004

2.7 feet water depth

- Had to set up to the east
due to shallow water

0750 Split spoon SVD-SD004 0'-2'

low recovery ~15%

- Second spoon SVD-SD004 0'-2'

25% recovery

- PID VOC = 0.0 ppm

0815 Split spoon SVD-SD004 2'-4'

Low recovery - 15%

- Second spoon SVD-SD004 2'-4'

~20% recovery

- PID VOC = 0.0 ppm

0825 Split spoon SVD-SD004 4'-6'

~50% recovery

- PID VOC = 0.0 ppm

0840 Samples collected SVD-SD004 0.0-6.0

Chem, Rad, grain size

Grain size = composite

VOC collected 5'-5.5'

Rite in the Rain

Location SVD Date 13 Jul 18

Project / Client _____

0845 Split Spoon SVD-SD004 6'-8'
 Recovery = ~20% (sand + gravel)

- Second Spoon SVD-SD004 6'-8'
 Recovery = ~20%

- Third Spoon SVD-SD004 6'-8'
 Recovery = ~20%

- PID VOC = 0.0 ppm

0900 Split Spoon SVD-SD004 8'-10'
 Recovery = ~15% (sand + gravel)

- Second Spoon SVD-SD004 10'-12'
 Recovery = ~50% (increase in silt)

- PID VOC = 0.0 ppm

0933 Split Spoon SVD-SD004 10'-12'
 ~40% recovery

- PID VOC = 0.0 ppm

0945 Samples collected SVD-SD004-6.0-12.0
 Rad, Chem + Grain Size

Grain Size = Composite

VOC collected from 9'-9.5'

0958 Split Spoon SVD-SD004 12'-14'
 low recovery ~10% (sand + gravel)

- Second Spoon SVD-SD004 12'-14'
 ~30% recovery

- PID VOC = 0.0 ppm

Location SVD Date 13 Jul 18 27

Project / Client _____

1015 Split Spoon SVD-SD004 14'-16'
 ~30% recovery, sand

- PID VOC = 0.0 ppm

1100 Split Spoon SVD-SD004 16'-18'
 ~30% recovery

- PID VOC = 0.0 ppm

1110 Sampled SVD-SD004-12.0-18.0

Rad, Chem, + Grain Size

Grain Size = Composite

VOC = 14.5'-15.0' (Grab)

1120 Split Spoon SVD-SD004 18'-20'

~30% recovery, PID VOC = 0.0 ppm

1128 Split Spoon SVD-SD004 20'-22'

~30% recovery, PID VOC = 0.0 ppm

1130 Refusal at 22.1' at Rock

1145 Sampled SVD-SD004-18.0-22.0

Rad, Chem, + Grain Size

Grain Size = Composite

VOC = 20.5'-21'

1200 Break for lunch

1255 Setup at SVD-SD009

Water Depth = 6.7 feet

1300 Split Spoon SVD-SD009 0'-2'

~35% recovery, PID VOC = 0.0 ppm

Location SVDDate 13 Jul 18

Project / Client _____

1300 second spoon SVD-SD009 0'-2'

No recovery

1325 split spoon SVD-SD009 2'-4'

- 20% Recovery

second spoon SVD-SD009 2'-4'

- 65% Recovery, Sand + gravel

- PID VOC = 0.0 ppm

1328 split spoon SVD-SD009 4'-6'

- 85% recovery, sand → clay

- PID VOC = 0.2 ppm 4'-5'

1345 sampled SVD-SD009 0.0-6.0

- Chem. Rod, grain size

- Grain size = 7'-6'

- VOC = 4.5'-5' (Grab)

1400 split spoon SVD-SD009 6'-8'

Zero actual recovery, recovered

gravel slough

1410 split spoon SVD-SD009 8'-10'

Clay, 50% recovery

- PID VOC = 0.0 ppm

1418 split spoon SVD-SD009 10'-12'

Clay, -65% recovery

- PID VOC = 0.0 ppm

Location SVDDate 13 Jul 18 29

Project / Client _____

Photo log

Photo 101-0089 13 Jul 18 1135 SVD-SD009

18'-20' (top), 20'-22' (middle)

Photo 101-0090 13 Jul 18 1331 SVD-SD009

0'-2' (top), 2'-4' (middle), 4'-6' (bottom)

Photo 101-0091 13 Jul 18 1420 SVD-SD009

8'-10' (middle), 10'-12' (top)

- Note: No recovery for 6'-8'

Photo 101-0092 13 Jul 18 1449 SVD-SD009

12'-14' (top), 14'-16' (middle), 16'-18' (bottom)

Photo 101-0093 16 Jul 18 0920 SVD-SD009

6'-8' (top), 8'-10' (middle), 10'-12' (bottom)

Photo 101-0094 16 Jul 18 1025 SVD-SD009

8'-10' (top), 10'-12' (middle), 12'-14' (bottom)

Photo 101-0095 16 Jul 18 1100 SVD-SD009

12'-14' (top), 14'-16' (middle), 16'-18' (bottom)

Photo 101-0096 16 Jul 18 SVD-SD009

18'-20' (top), 20'-22' (middle)

Photo 101-0097 16 Jul 18 SVD-SD009

0'-2' (top), 2'-4' (middle), 4'-6' (bottom)

Photo 101-0098 17 Jul 18 SVD-SD009

6'-8' (top), 8'-10' (middle), 10'-12' (bottom)

Photo 101-0099 17 Jul 18 0922 SVD-SD009

12'-14' (top), 14'-16' (middle), 16'-18' (bottom)

Rite in the Rain

Location SVDDate 17 JUL 18

Project / Client _____

Photo 101-100 17 JUL 18 0958 SVD-SD007

18'-20' (Top), 20 - 20.7 (middle)

Photo 101-101 17 JUL 18 1117 SVD-SD003

2'-4' (middle), 4'-6' (bottom)

Note: no sample collected 0'-2'

Photo 101-102 17 JUL 18 SVD-SD003

6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)

Photo 101-103 17 JUL 18 SVD-SD003

12'-14' (Top), 14'-16' (middle), 16'-16.9 (bottom)

Photo 101-104 17 JUL 18 1551 SVD-SD003

0'-2' (Top), 2'-4' (middle), 4'-6' (bottom)

Photo 101-105 17 JUL 18 1633 SVD-SD001

6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)

Photo 101-106 - SVD-SD001 16' 18', piece of

wood from old dam

Photo 101-107 18 JUL 18 0812 SVD-SD001

12'-14' (Top), 14'-16' (middle), 16'-18' (bottom)

Photo 101-108 18 JUL 18 0812, SVD-SD001 16-18

piece of wood from old dam

Photo 101-109 18 JUL 18 0933 SVD-SD002

0'-2' (Top), 2'-4' (middle), 4'-6' (bottom)

Photo 101-110 18 JUL 18 1043 SVD-SD002

6'-8' (Top), 8'-10' (middle), 10'-12' (bottom)

Note: No photo SVD-SD002 12'-17.5'

Location SVDDate 13 JUL 18 31

Project / Client _____

1430 Sampled SVD-SD009 = 8.0-12.0

(Note no sample recovered 6'-8')

Rad, Chem, grain size

Grain size = composite

VOC = 11'-11.5' grab

1435 SVD-SD009 12'-14' Split Spoon

100% recovery, clay

VOC PID = 0.0 ppm

1438 SVD-SD009 14'-16' Split Spoon

85% recovery, clay, sand

PID VOC = 0.0 ppm

1446 Split Spoon SVD-SD009 16'-18'

85% recovery, gravel, silt, sand

PID VOC = 0.0 ppm

1505 Sampled SVD-SD009-12.0-18.5

added bottom .5' to sample

Rad, Chem, Grain size

Grain size, 14.0-16.0, 16.0-18.5

VOC 14.5-15.0

1580 SIB offsite

1600 USACE offsite

LKA

Return the Rain

Location SVDDate 16 JUL 18

Project / Client _____

PERSONNEL:	Affiliation:	on/off:
Laura Allen	USACE	0800/1430
Zeddy Curry	USACE	0800/1430
Ait K	SJB	0730/1430
Ronny	SJB	0730/1430
Steve	SJB	0730/1430

Weather: Clear, Sunny, 75°F

LGA

Location SVD

Date _____

Project / Client _____

0823 Set up at SVD-SDO08
 - Depth of water = 4.4'

0835 Split Spoon SVD-SDO08 0'-2'
 - 1.1% recovery ~10%
 - Second Spoon SVD-SDO08 0'-2'
 - 1.1% recovery ~10%
 - Third Spoon SVD-SDO08 0'-2'
 - 1.1% recovery ~5%
 - PID VOC = 0.0 ppm

0843 Split Spoon SVD-SDO08 2'-4'
 - ~25% recovery, sand & gravel
 - Second Spoon SVD-SDO08 4'-6'
 - ~25% recovery 2'-4'
 - PID VOC = 0.0 ppm

0907 Split Spoon SVD-SDO08 4'-6'
 - ~10% recovery
 - Second Spoon SVD-SDO08 4'-6'
 - ~25% recovery
 - Third Split Spoon SVD-SDO08 4'-6'
 - ~10% recovery
 - PID VOC = 0.0 ppm

0920 Sampled SVD-SDO08 0'-6'
 - Grain Size = composite
 - VOC from 3.5' - 4'

Rite in the Rain

Location SVDDate 16 JUL 18

Project / Client _____

0927 Split spoon SVD-SD008 6'-8'
 ~20% Recovery

- Second spoon SVD-SD008 6'-8'

~20% Recovery

- PID VOC = 0.0ppm

0956 Split spoon SVD-SD008 8'-10'

~35% Recovery

- PID VOC = 0.0ppm

(second spoon no recovery)

1012 Split spoon SVD-SD008 10'-12'

No Recovery

Second spoon SVD-SD008 10'-12'

- No Recovery

Third spoon SVD-SD008 10'-12'

~35% Recovery

- PID VOC = 0.0ppm

1030 Sampled SVD-SD008-6.0-12.0

Rad, Chem, grain size

Grain size composite

VOC = 9.5'-10'

1035 Split spoon SVD-SD008 12'-14'

~25% Recovery (silty)

- PID VOC = 0.0ppm

Location SVDDate 16 JUL 18 35

Project / Client _____

1052 Split spoon SVD-SD008 14'-16'

~25% Recovery (silty)

- PID VOC = 0.0ppm

1100 Split spoon SVD-SD008 16'-18'

~80% Recovery (clay)

- PID VOC = 0.0ppm

1110 Sampled SVD-SD008-12.0-18.0

Chem, Rad, Grain size

Grain size = 16'-18'

VOC = 16.5'-17'

1122 Split spoon SVD-SD008 18'-20'

50% Recovery

PID VOC = 0.0ppm

LKA

1133 Refusal @ 20.6

1135 Split spoon 18'-20.6' SVD-SD008

100% Recovery, PID VOC = 0.0ppm

1140 Sampled SVD-SD008-18.0-20.6

Chem, rad, grain size

Grain size = composite

VOC = 19'-14.5'

1215 Break for lunch

1305 Setup at SVD-SD007

Depth of water 2.4

Location SUD Date 16 JUL 18

Project / Client _____

1310 SUD-SD007 Split Spoon 0'-2'

- NO RECOVERY

SUD-SD007 second spoon 0'-2'

- NO RECOVERY

Third spoon SUD-SD007 0'-2'

- poor recovery ~5%, PID VOC = 0.1

1330 Split spoon SUD-SD007 2'-4'

- little recovery, ~10%

- second spoon

~10% recovery

- third spoon

~20% recovery

- PID VOC = 0.0ppm

1342 Split spoon SUD-SD007 4'-6'

~40% recovery

- PID VOC = 0.0ppm

1400 weather update: rain, 65°F

~~1410~~ sampled SUD-SD007-0.0-6.0

1350 Rod, Chem, Grain size

Grain size = composite

VOC = 5'-5.5'

1410 Split spoon SUD-SD007 6'-8'

~30% recovery

- PID VOC = 0.0ppm

Location SUD Date 16 JUL 18

Project / Client _____

1417 Split spoon SUD-SD007 8'-10'

~30% recovery

- PID VOC = 0.0ppm

1430 Thunder storm requires crew

to go ashore

1445 STB and USACE offsite

- Barge was left set up at

SUD-SD007.

- samples from 6-8 and 8-10

were bagged and kept cold

to be sampled tomorrow

LKA

Location SVDDate 17 JUL 18

Project / Client _____

0720 Arrive on site

Weather: Cloudy, 70°F

Personnel: Affiliation: ON/OFF:

Lauva Aven USAFCE 0730/1710

Mavik Legeza USAFCE 0730/1710

Art K STB 0730/1710

Randy STB 0730/1710

Steve STB 0730/1710

Location SVDDate 17 JUL 18 39

Project / Client _____

0750 Crew reset on barge at

SVD-SD007

0819 SVD-SD007 10'-12' Split Spoon

- 30% Recovery

- PID VOC = 0.0 ppm

0830 Sampled SVD-SD007-6.0-12.0

Rad, chem, grain size

Grain size = composite

VOC = ~~8~~ 9-9.5

0843 Split Spoon SVD-SD007 12'-14'

- 25% Recovery

- PID VOC = 0.0 ppm

- Spread Spoon SVD-SD007 12'-14'

- 20% Recovery

0851 Split Spoon SVD-SD007 14'-16'

- 85% Recovery (sand)

- PID VOC = 0.0 ppm

0917 Split Spoon SVD-SD007 16'-18'

- 75% Recovery (sand)

- PID VOC = 0.0 ppm

0930 Sampled SVD-SD007-12.0-18.0

- Rad, chem, grain size

- 2 grain size samples, 14-16 & 16-18

- VOC 13.5-14'

Location SVDDate 17 JUL 18

Project / Client _____

0954 Refusal @ 23.9 (from top of Deck)
Sediment = 20.7

- Split Spoon SVD-SD007 20-20.7
~100% Recovery
- PID VOC = 0.0

1005 Sampled SVD-SD007-18.0-20.7

Rad + Chem, not enough material
for grain size

VOC = 19'-19.5'

1022 ~~Depth~~ Split up at ^{Deck} SVD-SD003

- Depth of water = 12.0 feet
- Deck to water = 0.8 feet
- Depth of water = 11.2 feet

1034 4 spoon attempts for SVD-SD003 0'-2'

- No recovery was able to be
obtained

1108 Split Spoon SVD-SD003 2'-4'

~50% Recovery
- PID VOC = 0.0 ppm

1113 Split Spoon SVD-SD003 4'-6'

~80% Recovery
- PID VOC = 0.0 ppm

1120 Sampled SVD-SD003-2.0-6.0

Grain size = composite

VOC = 3'-3.5'

Location SVDDate 17 JUL 18

Project / Client _____

1137 ~~Sampled~~

Split Spoon SVD-SD003 6'-8'

~75% Recovery, sand & gravel

- PID VOC = 0.0 ppm

1201 Split Spoon SVD-SD003 8'-10'

~65% Recovery, sand & gravel

- PID VOC = 0.0 ppm

1210 Split Spoon SVD-SD003 10'-12'

90% Recovery, sand & gravel

- PID VOC = 0.0 ppm

1220 Sampled SVD-SD003-6.0-12.0

Grain size = composite

VOC = 8.5'-9'

1230 Break for lunch

1315 Return to Barge at SVD-SD003

1402 Split Spoon SVD-SD003 12'-14'

~50% Recovery, ~3" clay beneath
sand & gravel, PID VOC = 0.1 ppm

1405 Split Spoon SVD-SD003 14'-16'

~65% Recovery

- PID VOC = 0.1 ppm

1435 Refusal @ Rock @ 16.9 ft

1437 Split Spoon SVD-SD003 16'-16.9'

~50% Recovery, PID VOC = 0.0 ppm

Rite in the Rain

Location SVD Date 17 JUL 18

Project / Client _____

1445 SAMPLED SVD-SD003-12.0-16.9

Grain size = composite

VOC = 15-15.5

1512 Setup at SVD-SD001

Depth 3.6' Deck to bottom

Water depth = 2.8'

1522 Split spoon SVD-SD001 0'-2'

~75% recovery

- PID VOC = 0.0 ppm

1531 Split spoon SVD-SD001 2'-4'

~50% recovery

- PID VOC = 0.0 ppm

1549 Split spoon SVD-SD001 4-6'

~30% recovery

second spoon → No recovery

- PID VOC = 0.0 ppm

1600 Sampled SVD-SD001 0.0-6.0

No grain size, not enough material

VOC = 1-1.5'

1605 Split spoon SVD-SD001 6-8'

~50% recovery

- PID VOC = 0.0 ppm

1613 Split spoon SVD-SD001 8-10'

~75% recovery

- PID VOC = 0.0 ppm

Location SVDDate 17 JUL 18 43

Project / Client _____

1630 Split spoon SVD-SD001 10'-12'

~50% recovery

- PID VOC = 0.0 ppm

1640 Sampled SVD-SD001 6.0-12.0

Grain size = 8'-10'

VOC = 7'-7.5'

1652 Split spoon SVD-SD001 12'-14'

~40% recovery

- PID VOC = 0.0 ppm

- Sample bagged for tomorrow

1710 STB + USACE OPS + E

LKA

Location SVDDate 18 JUL 19

Project / Client _____

0720 Arrive onsite
 Personnel: Application: ON/OFF:

Laura Allen USACE 0720/

Mark Legeza USACE 0715/

Art IL STB 0715/

Randy STB 0715/

Steve STB 0715/

Weather: patchy clouds & fog, 70°F

LKA

Location SVDDate 18 JUL 19

Project / Client _____

0740 Continue drilling at SVD-SD001

0752 SVD-SD001 Split Spoon 12'-14'

~30% Recovery

- PID VOC =

0803 SVD-SD001 Split Spoon 14'-16'

~75% Recovery

- PID VOC

- Piece of wood at bottom of
 spoon - possible piece of old
 wooden dam

0815 Sampled SVD-SD001-12.0-18.0

Grain size = composite

VOC = 17-17.5'

0817 Refusal @ Dam 22.6 from
 top of Deck

- 19 ft from top of sediment

- Split Spoon 18'-19' mainly
 wood from dam

0842 Setup at SVD-SD002

9.9' from deck to top of sediment

9.1' - Depth of water

0843 Setup Split Spoon SVD-SD002 0-2'

~10% Recovery

- Basket replaced

Rite in the Rain

Location SVD Date 18 JUL 18

Project / Client _____

0852 Second Spoon SVD-SD002 0'-2'

~20% Recovery

-PID VOC = 0.0ppm

0857 Split Spoon SVD-SD002 2'-4'

~40% Recovery

-PID VOC = 0.0ppm

0930 Split Spoon SVD-SD002 4'-6'

~40% Recovery

-PID VOC = 0.0ppm

0940 Sampled SVD-SD002-0.0-6.0

Grain size = composite

VOC = 3'-3.5'

0945 Split Spoon SVD-SD002 6'-8'

~50% Recovery

-PID VOC = 0.0ppm

1003 Split Spoon SVD-SD002 8'-10'

~20% Recovery

-Second Spoon SVD-SD002 8'-10'

~10% Recovery

-PID VOC = 0.0ppm

1035 Split Spoon SVD-SD002 10'-12'

~15% Recovery

-Second Spoon SVD-SD002 10'-12'

~40% Recovery

-PID VOC = 0.0ppm

Location SVDDate 19 JUL 18 47

Project / Client _____

1040 Split Spoon SVD-SD002 12'-14'

~50% Recovery

-PID VOC = 0.0ppm

1050 Sampled SVD-SD002-6.0-12.0

-Grain size = composite

-VOC = 11'-11.5'

1134 Refusal at 24.4' top of deck

= 14.5' from top of sediment

-think it's hitting the old dam again

-wood plug brought up in bottom of casing

1145 Break for lunch

-Spoke with Bill regarding hitting the old dam. He suggests stepping in some and trying to collect the remaining intervals + tagging rock.

1250 Setup to twin SVD-SD002

just to the south of the original location

1337 Split Spoon SVD-SD002 12'-14'

~50% Recovery

-PID VOC = 0.0ppm

Location SVDDate 18 JUL 18

27.4 Project / Client _____

- 1350 SVD-SD002 14-16'
 ~20% RECOVERY
 - WOOD FROM OLD DAM
 - PID VOC = 0.0ppm
- 1408 SVD-SD002 16-17.5'
 ~20% RECOVERY
 - WOOD DIRECTLY ON TOP OF
 SHALE
 - REFUSAL @ SHALE @ 27.4 FEET
 FROM TOP OF DECK
 - THICKNESS OF SEDIMENT = 17.5'
- 1415 SAMPLED SVD-SD002-12.0-17.5'
 ROD + CHEM, NO GRAIN SIZE
 VOC = 13'-13.5'
- 1445 SETUP TO TWIN SVD-SD001
 * JUST SOUTH OF ORIGINAL LOCATION
 - DAM WAS STILL BEING HIT
- 1500 MOVED SEVERAL FEET FURTHER SOUTH
 (STB HAS COORDINATES FOR ALL LOCATIONS)
- 1600 SVD-SD001 18'-20' SPLIT SPOON
 ~40% RECOVERY
 - PID VOC = 0.0
- 1607 SVD-SD001 20-22 SPLIT SPOON
 ~40% RECOVERY, PIECE OF WOOD @ BOTTOM
 - PID VOC = 0.0

Location SVDDate 18 JUL 18

Project / Client _____

- 1632 REFUSAL @ ROCK @ 27.3' TOP OF DECK
- 1635 SPLIT SPOON SVD-SD001 22'-23.7'
 ~15% RECOVERY
 PID VOC = 0.0
 - SEDIMENT THICKNESS = 23.7'
- 1645 SAMPLED ~~SVD-SD001-22'~~
 SVD-SD001-18.0-23.7'
 NO GRAIN SIZE
 VOC = 19-19.5
- 1700 STB AND USAGE OFFSITE

UKIA

Rite in the Rain

Location _____ Date _____

Project / Client _____

Location SVDDate 18 JUL 18

Project / Client _____

Photo log

Photo 101-111 18 JUL 18 1635 SVD-SD001
18'-20' (top), 20-22 (middle), 22-23.7 (bottom)

Note: No photo SVD-005 0'-6'

Photo 101-112 19 JUL 18 0903 Riely
doing Rod scanning of sample from
SVD-SD005 6'-8'

Photo 101-113 19 JUL 18 0920 SVD-SD005
6'-8' (top), 8'-10' (middle), 10'-12' (bottom)

Photo 101-114 19 JUL 18 0920 Sampling
SVD-SD005 6.0-12.0

Photo 101-115 19 JUL 18 0959 inserting
Spoon into casing SVD-SD005

Photo 101-116 19 JUL 18 1010 Riely
scanning for Rod SVD-SD005-12.0-18.0

Photo 101-117 19 JUL 18 1012 SVD-SD005
12-14 (top), 14-16 (middle), 16-18 (bottom)

Photo 101-118 19 JUL 18 1028 Spoon from
SVD-SD005 18-18.5 (refusal)

Photo 101-119 19 JUL 18 1123 SVD-SD013
0-2 (top), 2-4 (middle), 4-6 (bottom)

Photo 101-120 19 JUL 18 ¹²⁰⁵~~1105~~ SVD-SD013
6-8 (top), 8-10 (middle), 10-12 (bottom)

LKA

Location _____ Date _____

Project / Client _____

Photo 101-0121 19JUL18 1405 SVD-SD013
 12-14(Top), 14-16(Middle), 16-18 (bottom)

Location SVD Date 19JUL18

Project / Client _____

0720	Arrive	on Site	
Weather: Clear, Sunny, 55°F			
Personal:	Application:	on/off	
Laura Allen	USACE	0720	
	USACE		
Art K	STB	0715	
Steve	STB	0715	
Randy	STB	0715	

Location SVDDate 19 Jul 18

Project / Client _____

- 0804 Setup at SVD-SDOOS
 6.2' from Deck to Sediment
 - Water depth = 5.4'
 - Retry of SVD-SDOOS - poor recovery 10 Jul
- 0808 Split Spoon SVD-SDOOS 0'-2'
 ~15% Recovery
 - Second spoon SVD-SDOOS 0'-2'
 ~65% Recovery
 - Very wat sample
 - PID VOC = 0.2 ppm
- 0823 Split Spoon SVD-SDOOS 2'-4'
 ~60% Recovery, sand
 - PID VOC = 0.0 ppm
- 0839 Split Spoon SVD-SDOOS 4'-6'
 ~25% Recovery, gravel
 - PID VOC = 0.0 ppm
 - Second spoon SVD-SDOOS 4'-6'
 ~25% Recovery
- 0845 Sampled SVD-SDOOS-0.0-6.0
 Grain size = 4'-6'
 VOC = 3' 3.5'
- 0847 Split Spoon SVD-SDOOS 6-8
 ~60% Recovery, sand & gravel
 - PID VOC = 0.1 ppm

Location SVDDate 19 Jul 18

Project / Client _____

- 0912 Split Spoon SVD-SDOOS 8'-10'
 ~30% Recovery, PID VOC = 0.1 ppm
- 0918 Split Spoon SVD-SDOOS 10'-12'
 ~30% Recovery, PID VOC = 0.1 ppm
- 0925 Sampled SVD-SDOOS-6.0-12.0
 - Grain size = composite
 - VOC = 11.5'-12'
- 0936 Split Spoon SVD-SDOOS 12-14
 - Little recovery ~10%, PID VOC =
 - Tried 2 additional spoons - no recovery
- 0957 2 Split Spoon Attempts SVD-SDOOS
 14-16 w/ no recovery
 - Trying Flapper Valve instead of basket
 ~10% Recovery
- 1010 SVD-SDOOS Split Spoon 16'-18'
 low recovery, ~10%
- 1015 Sampled SVD-SDOOS-12.0-18.0
 - only enough material for
 VOC & Rad
 VOC = 15.5-16
- 1020 Refusal @ 24.7 from top of deck @ Rock
 - sediment thickness = 18.5

Location SVDDate 19 Jul 18

Project / Client _____

1046 SPT UP SVD-SD0013

Deck to bottom = 3 feet

Water depth = 2.2 feet

- Location approx. halfway between SVD-SD0011 and SVD-SD0012

- SJTB marked location with GPS

1103 Three attempts at split spoons for SVD-SD0013 0'-2'

- little to no recovery

1108 Split spoon SVD-SD0013 2'-4'

~20% recovery

- Second spoon SVD-SD0013 2'-4'

~20% recovery

- PID VOC = 0.0 ppm

1115 Split spoon SVD-SD0013 4'-6'

~50% recovery, sand + gravel

- PID VOC = 0.0 ppm

1120 Sampled SVD-SD0013-0.0-6.0

- Grain size = composite

- VOC = 3-3.5

1135 Split spoon SVD-SD0013 6'-8'

- low recovery ~15%

- Second spoon ~50% recovery

- PID VOC = 0.0 ppm

Location SVDDate 19 Jul 18 57

Project / Client _____

1142 Split spoon SVD-SD0013 8'-10'

~50% recovery, sand + gravel

- PID VOC = 0.0 ppm

1204 Split spoon SVD-SD0013 10'-12'

~20% recovery, clay at bottom

- PID VOC = 0.0 ppm

1210 Sampled SVD-SD0013-6.0-12.0

VOC = 9-9.5

Grain size = composite

1230 Break for lunch

1333 Split spoon SVD-SD0013-12'-14'

~15% recovery, clay

- PID VOC = 0.0

- Second spoon SVD-SD0013 12'-14'

~25% recovery

1340 Split spoon SVD-SD0013 14'-16'

~100% recovery, clay, PID VOC = 0.0

1402 Split spoon SVD-SD0013 16'-18'

~100% recovery, clay, PID VOC = 0.0

1420 Sampled SVD-SD0013-12.0-18.0

- 2 Grain size from 14-16 and 16-18

- VOC 15-15.5

1450 Refusal @ Rock

Sediment thickness 19.6'

Location SVDDate 19 JUL 18

Project / Client _____

1450 SAMPLED SVD-SD013-18.0-19.6

Grain size = composite

VOC = 18.0-19.6

1515 OFF SITE

Location SVDDate 20 JUL 18

Project / Client _____

0700 ARRIVE AT SITE

Wx: clear, sunny, 72°F.

Personnel AFFILIATION: ON/OFF

S.M. USACR 0700 1800

R.C. USACR 0730 1500

Randy STB 0700 1500

Steve STB 0700 1500

Tyler STB 0700 1500

0800 SET UP ON SVD SD014

DEPTH OF WATER = 7.0'

0815 sample SVD SD014 w/ SS (?).

0-2' 25% REC, PID = 0.1 ppm

0835 split spoon SVD SD014 2-4'

30% REC PID = 0.0 ppm

- 2nd SS SVD SD014 2-4'

25% REC PID = 0.0 ppm

0845 Split spoon SVD SD014 4-6'

100% REC PID = 0.1 ppm

clayey silt @ 5.5'

VOC sample 5.5-6.0'

Composite 0-6.0' & grain size

Time 0850

Location SUD Date 20 JUL 18

Project / Client _____

0915 Split Spoon SUD SD014 6-8'
40% REC. , PID = 0.1 ppm

0920 Split Spoon SUD SD014 8-10'
75% REC. , PID = 0.1 ppm

0950 Split Spoon SUD SD014 10-12'
75% REC. , PID = 0.1 ppm

PHOTO 101-0122 6-12' SUD SD014

VOC 9-9.5'

Composite & grain size R.

1015 Split Spoon SUD SD014 12-14'
75% REC. , PID = 0.1 ppm

1125 Split Spoon SUD SD014 14-16'
100% REC. , PID = 0.2 ppm

A 16.5'

1135 Split Spoon SUD SD014 16.-17.8'
100% REC. , PID = 0.2 ppm

VOC 13.5-14.0

Composite & grain size R.

PHOTO 101-0123 12-17.5' SUD SD014

1100 GFF SUD SD014. will drop off
RC to return to district w/ ENVV samples

1115-1145 DEWANS TAKE LUNCH

1145 MOVE TO SET UP ON
SUD-SD015.

Location SUD Date 20 JUL 18

Project / Client _____

1200 Setup on SUD SD-015.

Depth of water 15.2'

Will sample interval water TOR.

Split Spoon 0-2' (gravel R.C.)

Split Spoon 5-7' (wood fragments)

CASING REFUSED on wood 21'

MOVE 10' SOUTH.

1320 Setup on SUD SD015A

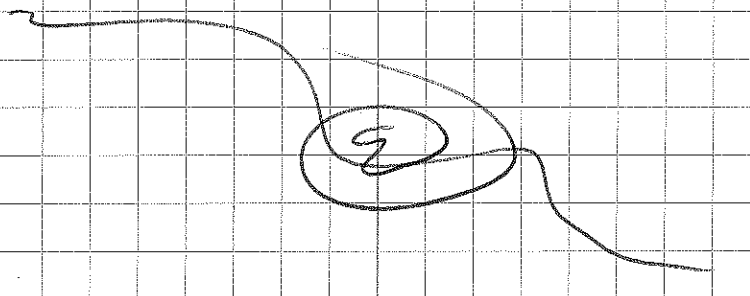
Depth of water 13.2'

Spoon REFUSED @ 24.1' Below

water

1445. Complete removal of casing
at SUD SD015A. SUN calls WTF
TO SEE IF data is good enough
OR IF HE WANTS ANOTHER
LOCATION. OK TO STOP.

1500 OFF SITE



APPENDIX E

Table E-1: Summary of Detected VOCs

Table E-2: Summary of Detected SVOCs

Table E-3: Summary of Detected Radionuclides

Table E-4: Summary of Detected Pesticides, Herbicides, and PCBs

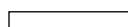
Table E-5: Summary of Detected Metals

Table E-6: Summary of Detected Miscellaneous Analytes

Comprehensive Table of All Sediment Analytical Results

APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)	SVD-SD002 (3-3.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	17.0-17.5	18.0-23.7	3.0-3.5
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63				0.0014 J	
1,2,4-TRICHLOROBENZENE	MG/KG	24	24				0.0024 J	
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1				0.00089 J	
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4				0.0015 J	
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8				0.0016 J	
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	100	0.05	0.0107 J		0.0496	0.0219 J	
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	770	850		0.0023 J	0.0043	0.0032 J	
CHLOROBENZENE	MG/KG	100	1.1				0.00058 J	
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500					0.001 J
ETHYLBENZENE	MG/KG	30	1				0.00067 J	
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	550	560				0.0018 J	



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)	SVD-SD002 (3-3.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	17.0-17.5	18.0-23.7	3.0-3.5
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1					
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12			0.0084 J		
METHYLCYCLOHEXANE	MG/KG	-	-		0.0015 J		0.0036 J	0.0152
METHYLENE CHLORIDE	MG/KG	51	0.05	0.0036 J		0.0101	0.005 J	
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3				0.001 J	
TOLUENE	MG/KG	100	0.7	0.0088			0.0025 J	
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6				0.0023 J	



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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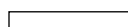
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APPENDIX E-1

SUMMARY OF DETECTED VOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (11-11.5)	SVD-SD002 (13-13.5)	SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				11.0-11.5	13.0-13.5	2.0-6.0	6.0-12.0	12.0-16.9
Date of Sample :				07/18/18	07/18/18	07/17/18	07/17/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24		0.0019 J			
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1		0.00069 J			
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4		0.0011			
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8		0.0012			
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	100	0.05					
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	770	850		0.0016 J			
CHLOROBENZENE	MG/KG	100	1.1		0.00039 J			
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500		0.0014 J			
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	550	560		0.0013			



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

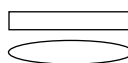
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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (11-11.5)	SVD-SD002 (13-13.5)	SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				11.0-11.5	13.0-13.5	2.0-6.0	6.0-12.0	12.0-16.9
Date of Sample :				07/18/18	07/18/18	07/17/18	07/17/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1					
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12					
METHYLCYCLOHEXANE	MG/KG	-	-		0.0062			
METHYLENE CHLORIDE	MG/KG	51	0.05		0.0052 J		0.0077	
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3		0.0006 J			
TOLUENE	MG/KG	100	0.7		0.00058 J			
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6		0.0017			



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

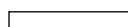
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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-004	SD-004	SD-004	SD-004	SD-005A
Field Sample Identifier :				SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)	SVD-SD004 (18-22)	SVD-SD005 (3-3.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-22.0	3.0-3.5
Date of Sample :				07/13/18	07/13/18	07/13/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63			0.0021 J		
1,2,4-TRICHLOROBENZENE	MG/KG	24	24			0.0029 J		
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6			0.0037		Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1			0.00099 J		
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4			0.0018 J		Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4			0.0015		
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8			0.0017		
2-CHLOROTOLUENE	MG/KG	1600	0.23			0.0008 J		Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24			0.0014 J		Not Analyzed
ACETONE	MG/KG	100	0.05			0.122	0.0946	
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290			0.00059 J		Not Analyzed
CARBON DISULFIDE	MG/KG	770	850			0.0024	0.0085	
CHLOROBENZENE	MG/KG	100	1.1			0.00054 J		
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4			0.0021 J		Not Analyzed
M+P-XYLENE	MG/KG	550	560			0.0017		



Concentration Exceeds Criteria ¹

Flags assigned during chemistry validation are shown.



Concentration Exceeds Criteria ²

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

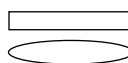
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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-004	SD-004	SD-004	SD-004	SD-005A
Field Sample Identifier :				SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)	SVD-SD004 (18-22)	SVD-SD005 (3-3.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-22.0	3.0-3.5
Date of Sample :				07/13/18	07/13/18	07/13/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12				0.0133	
METHYLCYCLOHEXANE	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	
METHYLENE CHLORIDE	MG/KG	51	0.05		0.0036 J		0.0033 J	
NAPHTHALENE	MG/KG	100	12					Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39			0.0021 J		Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9			0.001 J		Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-			0.0014 J		Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11			0.00074 J		Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3			0.00094 J		0.0014 J
TOLUENE	MG/KG	100	0.7			0.00066 J		
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6			0.0017		



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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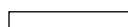
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APPENDIX E-1

SUMMARY OF DETECTED VOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-005A	SD-005A	SD-006A	SD-006A	SD-007
Field Sample Identifier :				SVD-SD005 (11.5-12)	SVD-SD005 (15.5-16)	SVD-SD006 (5-5.5)	SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				11.5-12.0	15.5-16.0	5.0-5.5	6.8-7.3	0.0-6.0
Date of Sample :				07/19/18	07/19/18	07/12/18	07/12/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed			Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed			Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4		0.00064 J			
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8		0.00073 J			
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed			Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed			Not Analyzed
ACETONE	MG/KG	100	0.05	0.073	0.14	0.042	0.022 J	
BENZENE	MG/KG	2.9	0.06		0.00085	0.00029 J		
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed			Not Analyzed
CARBON DISULFIDE	MG/KG	770	850	0.0024	0.0036	0.001		
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500			Not Analyzed	Not Analyzed	
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed			Not Analyzed
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

Advanced Selection: SE VOC:
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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-005A	SD-005A	SD-006A	SD-006A	SD-007
Field Sample Identifier :				SVD-SD005 (11.5-12)	SVD-SD005 (15.5-16)	SVD-SD006 (5-5.5)	SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				11.5-12.0	15.5-16.0	5.0-5.5	6.8-7.3	0.0-6.0
Date of Sample :				07/19/18	07/19/18	07/12/18	07/12/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1		0.0739	Not Analyzed	Not Analyzed	
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12	0.0119	0.028		0.0032 J	
METHYLCYCLOHEXANE	MG/KG	-	-			Not Analyzed	Not Analyzed	
METHYLENE CHLORIDE	MG/KG	51	0.05	0.0063	0.0088			
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed	0.00035 J		Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed			Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed			Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed			Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed			Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3	0.00081 J	0.0016 J			0.0044 J
TOLUENE	MG/KG	100	0.7		0.00067 J	0.00033 J		
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

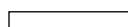
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APPENDIX E-1

SUMMARY OF DETECTED VOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-007	SD-007	SD-007	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (6-12)	SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4					
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8					
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	100	0.05	0.0191	0.0105			
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	770	850	0.0015 J	0.002 J	0.0031		0.0036 J
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500					0.0012 J
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-007	SD-007	SD-007	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (6-12)	SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1					
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12					
METHYLCYCLOHEXANE	MG/KG	-	-					0.0052 J
METHYLENE CHLORIDE	MG/KG	51	0.05		0.0087	0.0135		0.0036 J
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3					0.00059 J
TOLUENE	MG/KG	100	0.7					
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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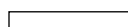
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APPENDIX E-1

SUMMARY OF DETECTED VOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-008	SD-008	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (12-18)	SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5
Date of Sample :				07/16/18	07/16/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed			
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed			
1,3-DICHLOROBENZENE	MG/KG	17	2.4					
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8					
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed			
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed			
ACETONE	MG/KG	100	0.05	0.105 J	0.104 J	0.172	0.191	0.0545
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed			
CARBON DISULFIDE	MG/KG	770	850	0.0044 J	0.0012 J		0.0024 J	
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500	0.00056 J		Not Analyzed	Not Analyzed	Not Analyzed
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed			
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

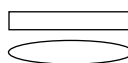
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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-008	SD-008	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (12-18)	SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5
Date of Sample :				07/16/18	07/16/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1		0.005 J	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12	0.02 J	0.0074 J		0.0325	0.0055 J
METHYLCYCLOHEXANE	MG/KG	-	-	0.0024 J		Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	51	0.05		0.0039 J			
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed			
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed			
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed			
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed			
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed			
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3	0.00072 J	0.004 J			
TOLUENE	MG/KG	100	0.7					
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47		0.0011 J			
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

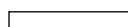
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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-009	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier :				SVD-SD009 (12-18.5)-D	SVD-SD010 (5.5-6)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (15-15.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.5	5.5-6.0	6.0-12.0	11.0-11.5	15.0-15.5
Date of Sample :				07/13/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)		Field Duplicate (1-1)		
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6					
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4					
1,3-DICHLOROBENZENE	MG/KG	17	2.4					
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8					
2-CHLOROTOLUENE	MG/KG	1600	0.23					
4-CHLOROTOLUENE	MG/KG	1600	0.24					
ACETONE	MG/KG	100	0.05	0.0514				0.06
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290					
CARBON DISULFIDE	MG/KG	770	850					0.0039
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4					
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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APPENDIX E-1
SUMMARY OF DETECTED VOCs IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-009	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier :				SVD-SD009 (12-18.5)-D	SVD-SD010 (5.5-6)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (15-15.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.5	5.5-6.0	6.0-12.0	11.0-11.5	15.0-15.5
Date of Sample :				07/13/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)		Field Duplicate (1-1)		
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12					0.0081 J
METHYLCYCLOHEXANE	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	51	0.05		0.1 J	0.068 J		
NAPHTHALENE	MG/KG	100	12					0.00029 J
N-BUTYLBENZENE	MG/KG	39	39					
N-PROPYLBENZENE	MG/KG	100	3.9					
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-					
SEC-BUTYLBENZENE	MG/KG	100	11					
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3					
TOLUENE	MG/KG	100	0.7					
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

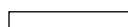
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APPENDIX E-1
SUMMARY OF DETECTED VOCs IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (5-5.5)	SVD-SD011 (11.5-12)	SVD-SD011 (15.5-16)	SVD-SD012 (2.5-3)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				5.0-5.5	11.5-12.0	15.5-16.0	2.5-3.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (2-2)
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6					
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4					
1,3-DICHLOROBENZENE	MG/KG	17	2.4					
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8					
2-CHLOROTOLUENE	MG/KG	1600	0.23					
4-CHLOROTOLUENE	MG/KG	1600	0.24					
ACETONE	MG/KG	100	0.05	0.049 J	0.068 J	0.069 J	0.05 J	
BENZENE	MG/KG	2.9	0.06	0.0019 J			0.0015 J	
BROMOBENZENE	MG/KG	630	290					
CARBON DISULFIDE	MG/KG	770	850	0.01 J		0.0009 J	0.018 J	
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37	0.0036 J	0.0027 J	0.0026 J		
CYCLOHEXANE	MG/KG	6500	6500	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4					
M+P-XYLENE	MG/KG	550	560				0.00065 J	



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (5-5.5)	SVD-SD011 (11.5-12)	SVD-SD011 (15.5-16)	SVD-SD012 (2.5-3)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				5.0-5.5	11.5-12.0	15.5-16.0	2.5-3.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (2-2)
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12			0.0066 J		
METHYLCYCLOHEXANE	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	51	0.05	0.0024 J				
NAPHTHALENE	MG/KG	100	12		0.00098 J	0.00073 J	0.00068 J	
N-BUTYLBENZENE	MG/KG	39	39					
N-PROPYLBENZENE	MG/KG	100	3.9					
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-					
SEC-BUTYLBENZENE	MG/KG	100	11					
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3					
TOLUENE	MG/KG	100	0.7				0.0014 J	
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6				0.00065 J	



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

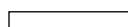
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

Advanced Selection: SE VOC:
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APPENDIX E-1
SUMMARY OF DETECTED VOCs IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-012	SD-012	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD900	SVD-SD012 (14.5-15)	SVD-SD013 (3-3.5)	SVD-SD013 (9-9.5)	SVD-SD013 (15-15.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	14.5-15.0	3.0-3.5	9.0-9.5	15.0-15.5
Date of Sample :				07/11/18	07/11/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)				
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6			Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1					
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4			Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4			0.00044 J		
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8			0.00047 J		
2-CHLOROTOLUENE	MG/KG	1600	0.23			Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24			Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	100	0.05	0.029 J	0.032 J			0.189
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290			Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	770	850	0.0012 J	0.0029 J		0.0013 J	0.0032
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500	Not Analyzed	Not Analyzed			
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4			Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

Advanced Selection: SE VOC:
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APPENDIX E-1 **SUMMARY OF DETECTED VOCs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-012	SD-012	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD900	SVD-SD012 (14.5-15)	SVD-SD013 (3-3.5)	SVD-SD013 (9-9.5)	SVD-SD013 (15-15.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	14.5-15.0	3.0-3.5	9.0-9.5	15.0-15.5
Date of Sample :				07/11/18	07/11/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)				
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1	Not Analyzed	Not Analyzed			
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12					0.0265
METHYLCYCLOHEXANE	MG/KG	-	-	Not Analyzed	Not Analyzed		0.0018 J	
METHYLENE CHLORIDE	MG/KG	51	0.05	0.0038 J			0.0052 J	0.0061 J
NAPHTHALENE	MG/KG	100	12		0.00034 J	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39			Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9			Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-			Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11			Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3				0.00073 J	0.00076 J
TOLUENE	MG/KG	100	0.7					
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

Advanced Selection: SE VOC:
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APPENDIX E-1
SUMMARY OF DETECTED VOCs IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)	SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (13-14)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				15.0-15.5	18.0-19.6	5.5-6.0	9.0-9.5	13.0-14.0
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)				
VOLATILE ORGANIC ANALYSES								
1,2,3-TRICHLOROBENZENE	MG/KG	63	63					
1,2,4-TRICHLOROBENZENE	MG/KG	24	24					
1,2,4-TRIMETHYLBENZENE	MG/KG	47	3.6	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	100	1.1				0.00047 J	
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	47	8.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	17	2.4				0.00071 J	0.00047 J
1,4-DICHLOROBENZENE	MG/KG	9.8	1.8				0.00081 J	0.00054 J
2-CHLOROTOLUENE	MG/KG	1600	0.23	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	1600	0.24	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	100	0.05	0.278	0.0462	0.379	0.186	0.0808
BENZENE	MG/KG	2.9	0.06					
BROMOBENZENE	MG/KG	630	290	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	770	850	0.0025 J	0.012	0.0026 J	0.005	
CHLOROBENZENE	MG/KG	100	1.1					
CHLOROFORM	MG/KG	10	0.37					
CYCLOHEXANE	MG/KG	6500	6500					
ETHYLBENZENE	MG/KG	30	1					
HEXACHLOROBUTADIENE	MG/KG	1.2	1.4	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	550	560					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-1

SUMMARY OF DETECTED VOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)	SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (13-14)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				15.0-15.5	18.0-19.6	5.5-6.0	9.0-9.5	13.0-14.0
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)				
VOLATILE ORGANIC ANALYSES								
METHYL ACETATE	MG/KG	78000	4.1					
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	100	0.12	0.0409		0.0847	0.0277	0.005 J
METHYLCYCLOHEXANE	MG/KG	-	-					
METHYLENE CHLORIDE	MG/KG	51	0.05	0.0063 J	0.0059 J	0.0063 J	0.008	0.0089
NAPHTHALENE	MG/KG	100	12	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	39	39	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	100	3.9	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	-	-	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	100	11	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	5.5	1.3	0.00088 J	0.0012 J	0.0013 J		
TOLUENE	MG/KG	100	0.7					
TRICHLOROETHYLENE (TCE)	MG/KG	10	0.47					
XYLENES, TOTAL	MG/KG	100	1.6					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

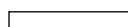
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7	0.047 J	0.053 J			
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3		0.056 J			
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1	0.051 J	0.051 J			
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000	0.075 J	0.093 J			
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000		0.05 J			
PYRENE	MG/KG	100	1000	0.056 J	0.075 J			



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

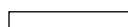
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	0.0-6.0	12.0-18.0	18.0-22.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19				0.2	
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98				0.2	
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-				0.055 J	
CHRYSENE	MG/KG	1	1					
DIBENZOFURAN	MG/KG	73	0.15				0.047 J	
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000					
FLUORENE	MG/KG	100	386				0.14 J	
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	0.0-6.0	12.0-18.0	18.0-22.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000					
PYRENE	MG/KG	100	1000					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

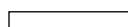
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-003	SD-003	SD-003	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				2.0-6.0	6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					0.011 J
ANTHRACENE	MG/KG	100	1000	0.057 J				0.029 J
BENZO(A)ANTHRACENE	MG/KG	1	1	0.17 J				0.065 J
BENZO(A)PYRENE	MG/KG	1	22	0.13 J				0.054 J
BENZO(B)FLUORANTHENE	MG/KG	1	1.7	0.16 J				0.088 J
BENZO(G,H,I)PERYLENE	MG/KG	100	1000	0.07 J				0.021 J
BENZO(K)FLUORANTHENE	MG/KG	1	1.7	0.11 J				0.028 J
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1	0.14 J				0.068 J
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000	0.45				0.19 J
FLUORENE	MG/KG	100	386					0.015 J
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2	0.064 J				0.017 J
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

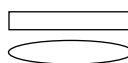
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-003	SD-003	SD-003	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				2.0-6.0	6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000	0.25				0.12 J
PYRENE	MG/KG	100	1000	0.35				0.14 J



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

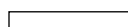
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-005A	SD-006A	SD-006A	SD-007	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)	SVD-SD007 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	0.0-6.0	6.0-8.0	0.0-6.0	6.0-12.0
Date of Sample :				07/19/18	07/12/18	07/12/18	07/16/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1					
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000					
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-005A	SD-006A	SD-006A	SD-007	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)	SVD-SD007 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	0.0-6.0	6.0-8.0	0.0-6.0	6.0-12.0
Date of Sample :				07/19/18	07/12/18	07/12/18	07/16/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000	0.0095 J				
PYRENE	MG/KG	100	1000					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

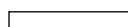
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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-007	SD-007	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/17/18	07/17/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1					
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000					
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹

Flags assigned during chemistry validation are shown.



Concentration Exceeds Criteria ²

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-007	SD-007	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/17/18	07/17/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000					
PYRENE	MG/KG	100	1000					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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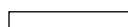
Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-008	SD-009	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5
Date of Sample :				07/16/18	07/13/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1					
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000					
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-008	SD-009	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5
Date of Sample :				07/16/18	07/13/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000					
PYRENE	MG/KG	100	1000					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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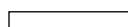
Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-011
Field Sample Identifier :				SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (12-17.6)	SVD-SD011 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	6.0-12.0	12.0-17.6	0.0-6.0
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1					
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					0.011 J
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1					
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000					
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-011
Field Sample Identifier :				SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (12-17.6)	SVD-SD011 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	6.0-12.0	12.0-17.6	0.0-6.0
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000					
PYRENE	MG/KG	100	1000					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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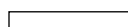
Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (12-18)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	12.0-18.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5					
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1			0.015 J		
BENZO(A)PYRENE	MG/KG	1	22					
BENZO(B)FLUORANTHENE	MG/KG	1	1.7					
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1			0.023 J		
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000			0.035 J		
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (12-18)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	12.0-18.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					
PHENANTHRENE	MG/KG	100	1000			0.021 J		
PYRENE	MG/KG	100	1000			0.03 J		



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (0-6)	SVD-SD013 (6-12)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (18-19.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	12.0-18.0	18.0-19.6
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
SEMI-VOLATILE ORGANIC ANALYSES								
2-METHYLNAPHTHALENE	MG/KG	240	0.19					
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5			0.33 J		
ACENAPHTHENE	MG/KG	100	98					
ANTHRACENE	MG/KG	100	1000					
BENZO(A)ANTHRACENE	MG/KG	1	1			0.018 J		
BENZO(A)PYRENE	MG/KG	1	22			0.019 J		
BENZO(B)FLUORANTHENE	MG/KG	1	1.7			0.036 J		
BENZO(G,H,I)PERYLENE	MG/KG	100	1000					
BENZO(K)FLUORANTHENE	MG/KG	1	1.7					
BENZYL ALCOHOL	MG/KG	7800	6300					
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3					
CARBAZOLE	MG/KG	-	-					
CHRYSENE	MG/KG	1	1			0.039 J		
DIBENZOFURAN	MG/KG	73	0.15					
DI-N-OCTYLPHTHALATE	MG/KG	630	57					
FLUORANTHENE	MG/KG	100	1000			0.051 J		
FLUORENE	MG/KG	100	386					
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2					
NAPHTHALENE	MG/KG	100	12					



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (0-6)	SVD-SD013 (6-12)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (18-19.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	12.0-18.0	18.0-19.6
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
SEMI-VOLATILE ORGANIC ANALYSES								
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067					0.011 J
PHENANTHRENE	MG/KG	100	1000			0.036 J		0.016 J
PYRENE	MG/KG	100	1000			0.041 J		



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

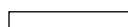
Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²			
SEMI-VOLATILE ORGANIC ANALYSES						
2-METHYLNAPHTHALENE	MG/KG	240	0.19			
4-METHYLPHENOL (P-CRESOL)	MG/KG	6300	1.5			
ACENAPHTHENE	MG/KG	100	98			
ANTHRACENE	MG/KG	100	1000			
BENZO(A)ANTHRACENE	MG/KG	1	1	0.014 J		
BENZO(A)PYRENE	MG/KG	1	22	0.011 J		
BENZO(B)FLUORANTHENE	MG/KG	1	1.7	0.021 J		
BENZO(G,H,I)PERYLENE	MG/KG	100	1000			
BENZO(K)FLUORANTHENE	MG/KG	1	1.7			
BENZYL ALCOHOL	MG/KG	7800	6300			
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	39	1.3			
CARBAZOLE	MG/KG	-	-			
CHRYSENE	MG/KG	1	1	0.022 J		
DIBENZOFURAN	MG/KG	73	0.15			
DI-N-OCTYLPHTHALATE	MG/KG	630	57		0.14 J	
FLUORANTHENE	MG/KG	100	1000	0.034 J		
FLUORENE	MG/KG	100	386			
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.5	8.2			
NAPHTHALENE	MG/KG	100	12	0.0093 J		



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-2

SUMMARY OF DETECTED SVOCs IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²			
SEMI-VOLATILE ORGANIC ANALYSES						
N-NITROSODIPHENYLAMINE	MG/KG	110	0.067			
PHENANTHRENE	MG/KG	100	1000	0.021 J		
PYRENE	MG/KG	100	1000	0.027 J		



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.377	0.337	0.392	0.157	0.256
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	10.3	8.98	4.99	7.53	14.5
GROSS BETA	PCI/G	19.8	33.8	14.8	14.4	15.5	10.3	8.6
PLUTONIUM-238	PCI/G	0.0298	0.012					
PLUTONIUM-239/240	PCI/G	0.0288	0.0335			0.037 J		
POTASSIUM-40	PCI/G	15.2	11.9	12.589	15.243	10.424	12.107	12.8
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239			0.08 J	0.095 J	
URANIUM-234	PCI/G	0.661	0.92	0.382	0.808	0.474	0.612	0.553
URANIUM-235	PCI/G	0.0961	0.0741	0.05 J				
URANIUM-238	PCI/G	0.644	1.14	0.653	0.701	0.46	0.687	0.499



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.311	0.211	0.258	0.082	0.32
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	9.84	9.46	9.34	8.5	11.2
GROSS BETA	PCI/G	19.8	33.8	8.91	7.79	13.8	14.6	13.9
PLUTONIUM-238	PCI/G	0.0298	0.012		0.077 J			
PLUTONIUM-239/240	PCI/G	0.0288	0.0335					
POTASSIUM-40	PCI/G	15.2	11.9	10.449	9.619	11.805	11.984	12.118
STRONTIUM-90	PCI/G	0.02505	0.0752	1.13				
URANIUM-232	PCI/G	0.0552	0.0239				0.16 J	
URANIUM-234	PCI/G	0.661	0.92	0.514	0.452	0.624	0.605	0.624
URANIUM-235	PCI/G	0.0961	0.0741					0.07 J
URANIUM-238	PCI/G	0.644	1.14	0.492	0.518	0.384	0.556	0.566



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-003	SD-003	SD-004	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/13/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.258	0.382	0.283	0.221	0.617
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	10.6	7.44	14.7	9.65	16.7
GROSS BETA	PCI/G	19.8	33.8	10	10	7	11.4	13.4
PLUTONIUM-238	PCI/G	0.0298	0.012					
PLUTONIUM-239/240	PCI/G	0.0288	0.0335			0.017 J		
POTASSIUM-40	PCI/G	15.2	11.9	11.603	10.047	11.114	8.996	14.173
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239		0.104 J			0.044 J
URANIUM-234	PCI/G	0.661	0.92	0.465	0.387	0.7	0.838	0.46
URANIUM-235	PCI/G	0.0961	0.0741	0.112 J	0.153 J	0.128 J	0.186 J	0.15 J
URANIUM-238	PCI/G	0.644	1.14	0.395	0.524	0.598	0.558	0.525



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

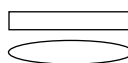
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-005A	SD-005A	SD-006A	SD-006A	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD005 (12-18)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	6.0-8.0	0.0-6.0
Date of Sample :				07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.151		0.083		0.213
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	4.58	9.15	15.4	8.88	6.31 J
GROSS BETA	PCI/G	19.8	33.8	9.87	9.38	15.3	15.7	13.3
PLUTONIUM-238	PCI/G	0.0298	0.012		0.068 J			
PLUTONIUM-239/240	PCI/G	0.0288	0.0335				0.039 J	
POTASSIUM-40	PCI/G	15.2	11.9	9.34	12.651	14.681	14.314	10.662
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239					
URANIUM-234	PCI/G	0.661	0.92	0.689	0.701	0.756	0.776	0.49 J
URANIUM-235	PCI/G	0.0961	0.0741		0.121 J	0.166 J	0.188 J	
URANIUM-238	PCI/G	0.644	1.14	0.414	0.702	0.972	0.763 J	0.497 J



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

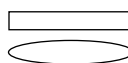
Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-007	SD-007	SD-007	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (6-12)	SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.215			0.682	0.215
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	5.47	6.32		12.2	11.2
GROSS BETA	PCI/G	19.8	33.8	9.49	13.4	13.4	9.52	9.01
PLUTONIUM-238	PCI/G	0.0298	0.012		0.063 J			
PLUTONIUM-239/240	PCI/G	0.0288	0.0335	0.044 J				
POTASSIUM-40	PCI/G	15.2	11.9	9.404	11.711	11.822	9.304	10.447
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239	0.104 J	0.05 J	0.066 J		0.087 J
URANIUM-234	PCI/G	0.661	0.92	0.572	0.669	0.55	0.548 J	0.738
URANIUM-235	PCI/G	0.0961	0.0741		0.057 J	0.1 J	0.171 J	0.108 J
URANIUM-238	PCI/G	0.644	1.14	0.438	0.642	0.52	0.545 J	0.482 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-008	SD-008	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (12-18)	SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5
Date of Sample :				07/16/18	07/16/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.172		0.178		
COBALT-60	PCI/G	0.0164	0.0266				0.048	
GROSS ALPHA	PCI/G	15.1	32.1	14.9	12.8	7.99 J	15.7	8.61
GROSS BETA	PCI/G	19.8	33.8	13	12.4	8.62	27.2	17
PLUTONIUM-238	PCI/G	0.0298	0.012		0.175 J			
PLUTONIUM-239/240	PCI/G	0.0288	0.0335					
POTASSIUM-40	PCI/G	15.2	11.9	12.356	12.622	14.254	25.357	16.218
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239		0.129 J			
URANIUM-234	PCI/G	0.661	0.92	0.654 J	0.94	0.551 J	1.28	0.844
URANIUM-235	PCI/G	0.0961	0.0741	0.183 J	0.132 J	0.072 J	0.136 J	0.208 J
URANIUM-238	PCI/G	0.644	1.14	0.818 J	0.863 J	0.516 J	1.06	1.08



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-009	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier :				SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD010 (12-17.6)	SVD-SD010 (12-17.6)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.5	0.0-6.0	6.0-12.0	12.0-17.6	12.0-17.6
Date of Sample :				07/13/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²	Field Duplicate (1-1)				Field Duplicate (1-1)
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408		0.344			
COBALT-60	PCI/G	0.0164	0.0266		0.093			
GROSS ALPHA	PCI/G	15.1	32.1	13.3	10.2	15.4	10.6	11.6
GROSS BETA	PCI/G	19.8	33.8	15.3	14.2	26	14.9	18.7
PLUTONIUM-238	PCI/G	0.0298	0.012	0.042 J				
PLUTONIUM-239/240	PCI/G	0.0288	0.0335					
POTASSIUM-40	PCI/G	15.2	11.9	15.413	14.167	27.165	16.756	17.113
STRONTIUM-90	PCI/G	0.02505	0.0752			0.188 J		
URANIUM-232	PCI/G	0.0552	0.0239					
URANIUM-234	PCI/G	0.661	0.92	1.19	0.815	0.936	1	0.898
URANIUM-235	PCI/G	0.0961	0.0741	0.157 J	0.16 J	0.161 J	0.225 J	0.151 J
URANIUM-238	PCI/G	0.644	1.14	1.09	0.812 J	1.12	0.778 J	0.752 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (0-6)	SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	0.0-6.0	6.0-12.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408	0.196	0.283		0.243	0.2
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	12.2	9.64	8.11	5.79 J	6.22 J
GROSS BETA	PCI/G	19.8	33.8	9.42	14.1	17.5	9.44	16.2
PLUTONIUM-238	PCI/G	0.0298	0.012	0.058 J				
PLUTONIUM-239/240	PCI/G	0.0288	0.0335				0.022 J	
POTASSIUM-40	PCI/G	15.2	11.9	9.016	14.687	15.906	10.99	8.69
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239					
URANIUM-234	PCI/G	0.661	0.92	0.616 J	0.784	1	0.55 J	0.538 J
URANIUM-235	PCI/G	0.0961	0.0741		0.191 J	0.105 J	0.109 J	0.137 J
URANIUM-238	PCI/G	0.644	1.14	0.461 J	0.71 J	0.865 J	0.522 J	0.803 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-3 **SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-012	SD-012	SD-012	SD-013	SD-013
Field Sample Identifier :				SVD-SD012 (12-18)	SVD-SD900	SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	12.0-18.0	18.0-18.8	0.0-6.0	6.0-12.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²		Field Duplicate (1-1)			
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408				0.313	0.252
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	18.1	15.4	2.99 J	7.42	8.24
GROSS BETA	PCI/G	19.8	33.8	16.7	13.2	4.52 J	11.6	9.56
PLUTONIUM-238	PCI/G	0.0298	0.012					
PLUTONIUM-239/240	PCI/G	0.0288	0.0335					
POTASSIUM-40	PCI/G	15.2	11.9	14.766	14.325	14.573	11.765	11.065
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239	0.121 J	0.087 J			
URANIUM-234	PCI/G	0.661	0.92	1.05	0.828	0.629 J	0.655	0.738
URANIUM-235	PCI/G	0.0961	0.0741	0.153 J	0.094 J	0.124 J	0.113 J	0.058 J
URANIUM-238	PCI/G	0.644	1.14	0.85 J	0.595 J	0.42 J	0.695	0.51



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-3

SUMMARY OF DETECTED RADIONUCLIDES IN SEDIMENT

SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD013 (12-18)	SVD-SD013 (18-19.6)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-19.6	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²					
RADIONUCLIDES								
CESIUM-137	PCI/G	0.06	0.408			0.319		
COBALT-60	PCI/G	0.0164	0.0266					
GROSS ALPHA	PCI/G	15.1	32.1	12.3	10	18.5	11	12.1
GROSS BETA	PCI/G	19.8	33.8	13	8.2	18.1	20.5	15.2
PLUTONIUM-238	PCI/G	0.0298	0.012		0.075 J			
PLUTONIUM-239/240	PCI/G	0.0288	0.0335					
POTASSIUM-40	PCI/G	15.2	11.9	18.609	14.383	14.04	25.91	16.14
STRONTIUM-90	PCI/G	0.02505	0.0752					
URANIUM-232	PCI/G	0.0552	0.0239		0.076 J		0.101 J	0.092 J
URANIUM-234	PCI/G	0.661	0.92	0.675	0.429	0.807	1.15	0.739
URANIUM-235	PCI/G	0.0961	0.0741	0.077 J		0.142	0.055 J	0.163
URANIUM-238	PCI/G	0.644	1.14	0.938	0.509	0.525	0.96	0.683



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17		0.00064 J			
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

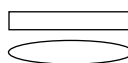
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	0.0-6.0	12.0-18.0	18.0-22.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-003	SD-003	SD-003	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				2.0-6.0	6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17		0.0008 J			
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136		0.0016			
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-005A	SD-006A	SD-006A	SD-007	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)	SVD-SD007 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	0.0-6.0	6.0-8.0	0.0-6.0	6.0-12.0
Date of Sample :				07/19/18	07/12/18	07/12/18	07/16/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8	0.0059				



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-007	SD-007	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/17/18	07/17/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

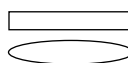
Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-008	SD-009	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5
Date of Sample :				07/16/18	07/13/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-011
Field Sample Identifier :				SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (12-17.6)	SVD-SD011 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	6.0-12.0	12.0-17.6	0.0-6.0
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (12-18)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	12.0-18.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17			0.0027		
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (0-6)	SVD-SD013 (6-12)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (18-19.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	12.0-18.0	18.0-19.6
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
PESTICIDES								
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17					
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136					
HERBICIDES								
PENTACHLOROPHENOL	MG/KG	2.4	0.8					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-4 **SUMMARY OF DETECTED PESTICIDES, HERBICIDES AND PCBs IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²			
PESTICIDES						
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	1.8	17			
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	1.7	136			
HERBICIDES						
PENTACHLOROPHENOL	MG/KG	2.4	0.8			



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
ALUMINUM	MG/KG	10000	10000	6,440	9,900	4,490	5,440	6,010
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	6.7	10.1	6	6	6.4
BARIUM	MG/KG	350	820	41.3	81.7	30	38.1	44.6
BERYLLIUM	MG/KG	14	47	0.3	0.49	0.21 J	0.25	0.26
CADMIUM	MG/KG	2.5	7.5	0.12 J	0.32 J	0.092 J		
CALCIUM	MG/KG	10000	10000	9,750	18,600	3,690	6,160	6,880
CHROMIUM, TOTAL	MG/KG	36	12000	8.7	13.7	5.6	7.2	7.6
COBALT	MG/KG	50	30	5.3 J	8.5	4.1 J	4.6 J	5.1 J
COPPER	MG/KG	270	1720	13.7	22.8	10.6	11.7	13.1
IRON	MG/KG	2000	2000	14,800	22,500	11,300	14,500	14,300
LEAD	MG/KG	400	450	9	14.9	5.4	5.5	6.7
MAGNESIUM	MG/KG	-	-	4,330	7,090	2,370	2,480	3,000
MANGANESE	MG/KG	2000	2000	314	518	161	314	288
MERCURY	MG/KG	0.81	0.73	0.014 J	0.014 J	0.0041 J		0.0031 J
NICKEL	MG/KG	140	130	14	21.5	10	12.6	13.3
POTASSIUM	MG/KG	-	-	1,050 J	1,690	641 J	587 J	868 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3	0.25 J	0.55 J			



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-001	SD-001	SD-001	SD-001B	SD-002
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (18-23.7)	SVD-SD002 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	18.0-23.7	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
SODIUM	MG/KG	-	-					
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	11.6	16.4	7.8	8.6	9.6
ZINC	MG/KG	2200	2480	49.6	70	40.5	49.4	48.3



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	0.0-6.0	12.0-18.0	18.0-22.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
ALUMINUM	MG/KG	10000	10000	3,830	5,400	8,000	6,200	9,400
ANTIMONY	MG/KG	2	12			5.5	4.4	6
ARSENIC	MG/KG	16	16	6.2	5.7	12	6.6	6.2
BARIUM	MG/KG	350	820	34	42.7	49	33	48
BERYLLIUM	MG/KG	14	47	0.19 J	0.2 J	0.31	0.21 J	0.3
CADMIUM	MG/KG	2.5	7.5					
CALCIUM	MG/KG	10000	10000	2,210	2,000	4,200	4,500	7,200
CHROMIUM, TOTAL	MG/KG	36	12000	5.1	5.4	9.4	9.3	12
COBALT	MG/KG	50	30	3.3 J	4.2 J	6	4.8	6.5
COPPER	MG/KG	270	1720	8.3	18.8	18	14	15
IRON	MG/KG	2000	2000	11,100	14,700	19,000	13,000	18,000
LEAD	MG/KG	400	450	5.1	5.1	8.2	5.7	7.3
MAGNESIUM	MG/KG	-	-	1,810	2,250	3,000	3,200	4,100
MANGANESE	MG/KG	2000	2000	176	240	330	210	250
MERCURY	MG/KG	0.81	0.73	0.0032 J		0.0031 J	0.0052 J	0.0044 J
NICKEL	MG/KG	140	130	8.4	11.8	16	13	17
POTASSIUM	MG/KG	-	-	555 J	536 J	1,200	1,300	1,500
SELENIUM	MG/KG	36	4			0.22 J		0.24 J
SILVER	MG/KG	36	8.3					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-002	SD-002A	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (6-12)	SVD-SD002 (12-17.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-17.5	0.0-6.0	12.0-18.0	18.0-22.0
Date of Sample :				07/18/18	07/18/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
SODIUM	MG/KG	-	-	115 J		140	110	130
THALLIUM	MG/KG	5.1	5			0.8 J		
VANADIUM	MG/KG	33	100	6.4	7.3	13	15	18
ZINC	MG/KG	2200	2480	32.5	45.7	57	46	50



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

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Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-003	SD-003	SD-003	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				2.0-6.0	6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
ALUMINUM	MG/KG	10000	10000	6,770	5,650	6,040	6,100	6,700
ANTIMONY	MG/KG	2	12				4.4	
ARSENIC	MG/KG	16	16	9.1	6.7	6.1	5	6.8
BARIUM	MG/KG	350	820	48.6	45.3	51	34	51.5
BERYLLIUM	MG/KG	14	47	0.29	0.26	0.3	0.21 J	0.32
CADMIUM	MG/KG	2.5	7.5	0.086 J	0.081 J			
CALCIUM	MG/KG	10000	10000	3,970	8,860	3,850	3,700	10,300
CHROMIUM, TOTAL	MG/KG	36	12000	8.3	6.8	6.7	7.1	8.5
COBALT	MG/KG	50	30	7.6	4.6 J	5.1 J	5	5.6 J
COPPER	MG/KG	270	1720	27.2	13.5	13.2	13	13.1
IRON	MG/KG	2000	2000	18,600	14,500	15,100	15,000	16,600
LEAD	MG/KG	400	450	11.2	6.4	5.9	3.4 J	8.3
MAGNESIUM	MG/KG	-	-	3,200	3,350	2,910	2,500	3,530
MANGANESE	MG/KG	2000	2000	409	374	389	210	371
MERCURY	MG/KG	0.81	0.73	0.002 J	0.003 J	0.0016 J	0.0031 J	0.0088 J
NICKEL	MG/KG	140	130	15.3	12.4	13.2	13	14.4
POTASSIUM	MG/KG	-	-	828 J	740 J	712 J	890	1,120 J
SELENIUM	MG/KG	36	4				0.15 J	
SILVER	MG/KG	36	8.3	0.27 J	0.18 J	0.18 J	0.065 J	



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-003	SD-003	SD-003	SD-004	SD-005A
Field Sample Identifier :				SVD-SD003 (2-6)	SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				2.0-6.0	6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0
Date of Sample :				07/17/18	07/17/18	07/17/18	07/13/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
SODIUM	MG/KG	-	-			116 J	130	
THALLIUM	MG/KG	5.1	5				0.93 J	
VANADIUM	MG/KG	33	100	10.7	8.6	9.2	10	11.1
ZINC	MG/KG	2200	2480	130	47.9	56.2	41	51.8



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

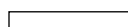
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-005A	SD-006A	SD-006A	SD-007	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)	SVD-SD007 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	0.0-6.0	6.0-8.0	0.0-6.0	6.0-12.0
Date of Sample :				07/19/18	07/12/18	07/12/18	07/16/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
ALUMINUM	MG/KG	10000	10000	5,570	7,680	6,960	6,190	6,140
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	7.4	5.4	6.7	7.9	6.6
BARIUM	MG/KG	350	820	35.2	44.6	62.5	47	47.6
BERYLLIUM	MG/KG	14	47	0.24	0.41	0.38	0.29	0.28
CADMIUM	MG/KG	2.5	7.5					0.078 J
CALCIUM	MG/KG	10000	10000	26,400	2,900	1,180	4,940	4,270
CHROMIUM, TOTAL	MG/KG	36	12000	6.4	9.6	9.2	7.6	7.9
COBALT	MG/KG	50	30	4.7 J	5.9	7.4	5.3 J	4.6 J
COPPER	MG/KG	270	1720	20.1	14.9	16.3	13.7	14.3
IRON	MG/KG	2000	2000	16,200	16,000	17,000	17,300	17,900
LEAD	MG/KG	400	450	8.3	8.1	8.2	7.6	6.1
MAGNESIUM	MG/KG	-	-	2,610	2,650	2,330	3,170	3,280
MANGANESE	MG/KG	2000	2000	349	280	388	268	247
MERCURY	MG/KG	0.81	0.73		0.012	0.01 J	0.0082 J	0.0023 J
NICKEL	MG/KG	140	130	12.8	15	16.1	14.1	12.7
POTASSIUM	MG/KG	-	-	757 J			733 J	802 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3	0.81				0.22 J



Concentration Exceeds Criteria ¹

Flags assigned during chemistry validation are shown.



Concentration Exceeds Criteria ²

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

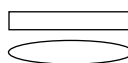
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-005A	SD-006A	SD-006A	SD-007	SD-007
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD006 (0-6)	SVD-SD006 (6-8)	SVD-SD007 (0-6)	SVD-SD007 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	0.0-6.0	6.0-8.0	0.0-6.0	6.0-12.0
Date of Sample :				07/19/18	07/12/18	07/12/18	07/16/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
SODIUM	MG/KG	-	-					
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	8.2	12.5	12.2	2.6 J	10.3
ZINC	MG/KG	2200	2480	57.7	52.1	53	51.1	47.7



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-007	SD-007	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/17/18	07/17/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
ALUMINUM	MG/KG	10000	10000	5,690	5,580	5,150	5,460	4,910
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	5.1	4.5	6.6	6.7	4.5
BARIUM	MG/KG	350	820	37.5	29	35	45.3	33.1
BERYLLIUM	MG/KG	14	47	0.29	0.24	0.24	0.24	0.23
CADMIUM	MG/KG	2.5	7.5					
CALCIUM	MG/KG	10000	10000	6,430	3,620	5,140	4,400	3,330
CHROMIUM, TOTAL	MG/KG	36	12000	7.5	6.5	6.3	6.8	6.2
COBALT	MG/KG	50	30	4.9 J	4.4 J	4.6 J	4.7 J	4.1 J
COPPER	MG/KG	270	1720	11.4	10.9	16	12.3	12.1
IRON	MG/KG	2000	2000	13,300	12,000	14,000	14,800	12,600
LEAD	MG/KG	400	450	7.5	5.9	6.4	7	6.6
MAGNESIUM	MG/KG	-	-	3,370	2,450	2,630	3,370	2,430
MANGANESE	MG/KG	2000	2000	257	181	294	336	205
MERCURY	MG/KG	0.81	0.73	0.0043 J	0.0025 J	0.0017 J	0.0042 J	0.002 J
NICKEL	MG/KG	140	130	12.4	11.4	11.7	11.9	10.7
POTASSIUM	MG/KG	-	-	988 J	861 J	605 J	670 J	686 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3	0.29 J	0.26 J			



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-007	SD-007	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (12-18)	SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/17/18	07/17/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
METALS								
SODIUM	MG/KG	-	-		134 J			
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	10.9	9.1	0.89 J		4.5 J
ZINC	MG/KG	2200	2480	42.5	40.9	42.7	42.2	39.4



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-008	SD-009	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5
Date of Sample :				07/16/18	07/13/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
METALS								
ALUMINUM	MG/KG	10000	10000	6,840	16,000	28,000	17,000	13,000
ANTIMONY	MG/KG	2	12		8.6	12	9.6	8.8
ARSENIC	MG/KG	16	16	4.8	7.2	13	9.9	5.5
BARIUM	MG/KG	350	820	39.3	90	130	88	64
BERYLLIUM	MG/KG	14	47	0.31	0.63	1.1	0.79	0.49
CADMIUM	MG/KG	2.5	7.5					
CALCIUM	MG/KG	10000	10000	2,500	2,800	2,800	2,300	2,000
CHROMIUM, TOTAL	MG/KG	36	12000	9	20	34	21	18
COBALT	MG/KG	50	30	6.1	9.4	14	10	9.5
COPPER	MG/KG	270	1720	14.6	16	27	23	20
IRON	MG/KG	2000	2000	17,100	23,000	39,000	29,000	21,000
LEAD	MG/KG	400	450	6.7	9.8	14	11	9
MAGNESIUM	MG/KG	-	-	2,930	4,400	7,200	4,600	4,000
MANGANESE	MG/KG	2000	2000	218	330	510	390	220
MERCURY	MG/KG	0.81	0.73	0.0052 J	0.012	0.024	0.011	0.0094 J
NICKEL	MG/KG	140	130	15.4	23	40	28	25
POTASSIUM	MG/KG	-	-	977 J	3,400	6,000	3,600	2,700
SELENIUM	MG/KG	36	4		0.29 J	0.6 J	0.49 J	0.38 J
SILVER	MG/KG	36	8.3					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-008	SD-009	SD-009	SD-009	SD-009
Field Sample Identifier :				SVD-SD008 (18-20.6)	SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.6	0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5
Date of Sample :				07/16/18	07/13/18	07/13/18	07/13/18	07/13/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
METALS								
SODIUM	MG/KG	-	-		110 J	140 J	110 J	110 J
THALLIUM	MG/KG	5.1	5		1.1 J	1.8 J	1.1 J	
VANADIUM	MG/KG	33	100	7.1	28	47	31	28
ZINC	MG/KG	2200	2480	58.6	59	90	76	75



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-011
Field Sample Identifier :				SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (12-17.6)	SVD-SD011 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	6.0-12.0	12.0-17.6	0.0-6.0
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
METALS								
ALUMINUM	MG/KG	10000	10000	7,040	17,400	15,700	9,310	5,360
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	7.4	9.9	9.9	5.7	6.6
BARIUM	MG/KG	350	820	43.2	82.3	79.5	48.5	36.4
BERYLLIUM	MG/KG	14	47	0.36	0.9	0.85	0.44	0.25
CADMIUM	MG/KG	2.5	7.5					
CALCIUM	MG/KG	10000	10000	5,850	9,140	9,950	1,320	6,510
CHROMIUM, TOTAL	MG/KG	36	12000	9.5	22.9	20.7	12.3	6.7
COBALT	MG/KG	50	30	6.9	12.1	15.8	7.5	4.4 J
COPPER	MG/KG	270	1720	14.7	26.2	24	13.8	13.9
IRON	MG/KG	2000	2000	17,500	30,900	29,000	18,000	15,600
LEAD	MG/KG	400	450	7.7	14.3	15.8	9.7	6.3
MAGNESIUM	MG/KG	-	-	3,730	7,790	7,630	3,070	2,890
MANGANESE	MG/KG	2000	2000	357	459	709	223	319
MERCURY	MG/KG	0.81	0.73	0.0027 J	0.018	0.013	0.021	0.002 J
NICKEL	MG/KG	140	130	16.1	35.8	35.9	18.4	11.7
POTASSIUM	MG/KG	-	-		2,840	2,540	1,260	671 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-011
Field Sample Identifier :				SVD-SD010 (0-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (12-17.6)	SVD-SD011 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	6.0-12.0	12.0-17.6	0.0-6.0
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
METALS								
SODIUM	MG/KG	-	-					
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	11.5	27.3	25.2	16.6	0.37 J
ZINC	MG/KG	2200	2480	48.8	73.7	69.9	46.6	53.2



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (12-18)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	12.0-18.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
METALS								
ALUMINUM	MG/KG	10000	10000	15,600	11,700	5,150	12,000	8,450
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	7.6	5	7	8.1	7.1
BARIUM	MG/KG	350	820	78.6	64.3	40.9	65.7	45.9
BERYLLIUM	MG/KG	14	47	0.7	0.56	0.24	0.56	0.42
CADMIUM	MG/KG	2.5	7.5	0.1 J	0.084 J			
CALCIUM	MG/KG	10000	10000	3,050	1,800	15,800	1,510	1,790
CHROMIUM, TOTAL	MG/KG	36	12000	18.7	13.5	8	14.4	11.1
COBALT	MG/KG	50	30	10.1	6.9	4.2 J	9	6.2
COPPER	MG/KG	270	1720	20.8	17.3	27.2	18.7	18.6
IRON	MG/KG	2000	2000	27,700	18,400	14,500	22,400	19,100
LEAD	MG/KG	400	450	13	11.5	8	12.3	10.6
MAGNESIUM	MG/KG	-	-	4,740	3,380	8,850	3,330	2,750
MANGANESE	MG/KG	2000	2000	341	139	413	291	315
MERCURY	MG/KG	0.81	0.73	0.012	0.015	0.003 J	0.031	0.011 J
NICKEL	MG/KG	140	130	28.3	19.4	10.6	21	15.9
POTASSIUM	MG/KG	-	-	1,990	1,080 J	661 J	1,310	1,120 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

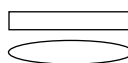
Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (6-12)	SVD-SD011 (12-18)	SVD-SD012 (0-6)	SVD-SD012 (12-18)	SVD-SD900
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-18.0	0.0-6.0	12.0-18.0	12.0-18.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
METALS								
SODIUM	MG/KG	-	-					
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	13.8	15.1		12.4	8
ZINC	MG/KG	2200	2480	65.5	61	58.9	58.3	54



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (0-6)	SVD-SD013 (6-12)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (18-19.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	12.0-18.0	18.0-19.6
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
METALS								
ALUMINUM	MG/KG	10000	10000	5,160	7,090	12,500	11,800	7,180
ANTIMONY	MG/KG	2	12					
ARSENIC	MG/KG	16	16	6.6	5.5	9.5	6.6	6.9
BARIUM	MG/KG	350	820	34.7	52.6	62.7	56.2	32
BERYLLIUM	MG/KG	14	47	0.25	0.31	0.54	0.54	0.35
CADMIUM	MG/KG	2.5	7.5		0.089 J			0.23 J
CALCIUM	MG/KG	10000	10000	4,090	2,360	1,820	1,670	1,720
CHROMIUM, TOTAL	MG/KG	36	12000	6.7	9.3	14.5	14.3	9.4
COBALT	MG/KG	50	30	4.7 J	5.9	9.1	7.9	7.8
COPPER	MG/KG	270	1720	11.9	13.6	25.5	18.7	16.9
IRON	MG/KG	2000	2000	14,600	15,600	25,200	23,900	13,200
LEAD	MG/KG	400	450	7.2	8	40.5	11	9.1
MAGNESIUM	MG/KG	-	-	2,570	2,620	3,280	3,210	2,370
MANGANESE	MG/KG	2000	2000	251	254	420	276	121
MERCURY	MG/KG	0.81	0.73		0.0043 J	0.022	0.012 J	0.0068 J
NICKEL	MG/KG	140	130	11.5	15.2	22.4	21.5	18
POTASSIUM	MG/KG	-	-	786 J	1,010 J	1,550	1,690	1,240 J
SELENIUM	MG/KG	36	4					
SILVER	MG/KG	36	8.3					



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (0-6)	SVD-SD013 (6-12)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (18-19.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	12.0-18.0	18.0-19.6
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
METALS								
SODIUM	MG/KG	-	-					
THALLIUM	MG/KG	5.1	5					
VANADIUM	MG/KG	33	100	10.1	11.7	18.3	19.6	13.5
ZINC	MG/KG	2200	2480	45.7	54.7	69.3	65.7	57.9



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

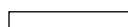
Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²			
METALS						
ALUMINUM	MG/KG	10000	10000	5,790	16,500	9,650
ANTIMONY	MG/KG	2	12			
ARSENIC	MG/KG	16	16	6.3	14.6	7.7
BARIUM	MG/KG	350	820	35.3	79.4	49
BERYLLIUM	MG/KG	14	47	0.26	0.75	0.44
CADMIUM	MG/KG	2.5	7.5			
CALCIUM	MG/KG	10000	10000	7,540	2,250	1,440
CHROMIUM, TOTAL	MG/KG	36	12000	6.7	20.1	11.1
COBALT	MG/KG	50	30	4.7 J	12.3	8
COPPER	MG/KG	270	1720	11.4	26.2	17.6
IRON	MG/KG	2000	2000	14,200	34,000	22,400
LEAD	MG/KG	400	450	8.5	14.3	11.7
MAGNESIUM	MG/KG	-	-	3,120	4,840	2,760
MANGANESE	MG/KG	2000	2000	330	440	235
MERCURY	MG/KG	0.81	0.73	0.0036 J	0.022	0.0095 J
NICKEL	MG/KG	140	130	11.8	31.9	19.8
POTASSIUM	MG/KG	-	-	845 J	2,420	1,310
SELENIUM	MG/KG	36	4			
SILVER	MG/KG	36	8.3			



Concentration Exceeds Criteria ¹



Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-5 **SUMMARY OF DETECTED METALS IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Type:				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample :				07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²			
METALS						
SODIUM	MG/KG	-	-			
THALLIUM	MG/KG	5.1	5			
VANADIUM	MG/KG	33	100	9.1	24.4	16.2
ZINC	MG/KG	2200	2480	41	81.6	65.1



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier :				SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample :				07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40		3.5	1.2 J	Not Analyzed	
PERCENT MOISTURE	PERCENT	-	-	29	23	17	10	7
TOTAL ORGANIC CARBON	MG/KG	-	-	10,000	14,000	4,100 J	Not Analyzed	2,100 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier :				SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample :				07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40		Not Analyzed		Not Analyzed	
PERCENT MOISTURE	PERCENT	-	-	19	7.5	7	8	9
TOTAL ORGANIC CARBON	MG/KG	-	-	6,100	Not Analyzed	2,600 J	Not Analyzed	4,000



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier :				SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample :				07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40	Not Analyzed				
PERCENT MOISTURE	PERCENT	-	-	7.6	8.8	17	17	14
TOTAL ORGANIC CARBON	MG/KG	-	-	Not Analyzed	3,500	2,800 J	6,000	2,200 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-003	SD-003	SD-004	SD-005A	SD-005A
Field Sample Identifier :				SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (6-12)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	12.0-16.9	6.0-12.0	0.0-6.0	3.0-3.5
Date of Sample :				07/17/18	07/17/18	07/13/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40					Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	Not Analyzed	19	17	20	20
TOTAL ORGANIC CARBON	MG/KG	-	-	1,200 J	2,600 J	12,000	6,900	Not Analyzed



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-005A	SD-005A	SD-005A	SD-006A	SD-006A
Field Sample Identifier :				SVD-SD005 (6-12)	SVD-SD005 (11.5-12)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-12.0	11.5-12.0	15.5-16.0	0.0-6.0	5.0-5.5
Date of Sample :				07/19/18	07/19/18	07/19/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40		Not Analyzed	Not Analyzed		Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	7.2	16	30	16	17
TOTAL ORGANIC CARBON	MG/KG	-	-	2,400 J	Not Analyzed	Not Analyzed	9,500	Not Analyzed



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

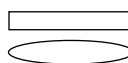
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-006A	SD-006A	SD-007	SD-007	SD-007
Field Sample Identifier :				SVD-SD006 (6-8)	SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				6.0-8.0	6.8-7.3	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample :				07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40		Not Analyzed			
PERCENT MOISTURE	PERCENT	-	-	18	18	8.4	16	21
TOTAL ORGANIC CARBON	MG/KG	-	-	5,000	Not Analyzed	2,200 J	3,400	6,000



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

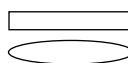
Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier :				SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample :				07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40					
PERCENT MOISTURE	PERCENT	-	-	22	7.8	12	16	22
TOTAL ORGANIC CARBON	MG/KG	-	-	2,200 J	2,600 J	1,800 J	2,900 J	6,600



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6 **SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT** **SPRINGVILLE DAM**

Location Identifier :				SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier :				SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample :				07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²				Field Duplicate (1-1)	
MISCELLANEOUS								
CYANIDE	MG/KG	27	40					
PERCENT MOISTURE	PERCENT	-	-	18	23	14	23	7.7
TOTAL ORGANIC CARBON	MG/KG	-	-	8,600	11,000	4,900	4,600	2,500 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier :				SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample :				07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units	Criteria ¹	Criteria ²			Field Duplicate (1-1)		
MISCELLANEOUS								
CYANIDE	MG/KG	27	40	Not Analyzed			Not Analyzed	
PERCENT MOISTURE	PERCENT	-	-	21	24	25	21	20
TOTAL ORGANIC CARBON	MG/KG	-	-	Not Analyzed	3,600	8,900	Not Analyzed	5,400



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-010	SD-011	SD-011	SD-011	SD-011
Field Sample Identifier :				SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)	SVD-SD011 (11.5-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0	11.5-12.0
Date of Sample :				07/12/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40	Not Analyzed		Not Analyzed		Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	20	7	19	20	25
TOTAL ORGANIC CARBON	MG/KG	-	-	Not Analyzed	1,700 J	Not Analyzed	10,000	Not Analyzed



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-011	SD-011	SD-012	SD-012	SD-012
Field Sample Identifier :				SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)	SVD-SD012 (6-12)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0	6.0-12.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Criteria ¹	Criteria ²					
MISCELLANEOUS								
CYANIDE	MG/KG	27	40		Not Analyzed		Not Analyzed	Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	22	25	14	9.2	7.3
TOTAL ORGANIC CARBON	MG/KG	-	-	4,900	Not Analyzed	2,000 J	Not Analyzed	1,000 J



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-012	SD-012	SD-012	SD-012	SD-013
Field Sample Identifier :				SVD-SD012 (12-18)	SVD-SD900	SVD-SD012 (14.5-15)	SVD-SD012 (18-18.8)	SVD-SD013 (0-6)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				12.0-18.0	12.0-18.0	14.5-15.0	18.0-18.8	0.0-6.0
Date of Sample :				07/11/18	07/11/18	07/11/18	07/11/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²		Field Duplicate (1-1)			
MISCELLANEOUS								
CYANIDE	MG/KG	27	40			Not Analyzed	Not Analyzed	
PERCENT MOISTURE	PERCENT	-	-	17	19	20	14	12
TOTAL ORGANIC CARBON	MG/KG	-	-	5,200	6,100	Not Analyzed	2,000 J	5,200



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier :				SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)	SVD-SD013 (12-18)	SVD-SD013 (12-18)-D
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				3.0-3.5	6.0-12.0	9.0-9.5	12.0-18.0	12.0-18.0
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²					Field Duplicate (1-1)
MISCELLANEOUS								
CYANIDE	MG/KG	27	40	Not Analyzed		Not Analyzed		
PERCENT MOISTURE	PERCENT	-	-	14	15	11	23	25
TOTAL ORGANIC CARBON	MG/KG	-	-	Not Analyzed	8,300	Not Analyzed	7,700	6,900



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-013	SD-013	SD-013	SD-014	SD-014
Field Sample Identifier :				SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)	SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)
Sample Type:				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				15.0-15.5	15.0-15.5	18.0-19.6	5.5-6.0	9.0-9.5
Date of Sample :				07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units	Criteria ¹	Criteria ²		Field Duplicate (1-1)			
MISCELLANEOUS								
CYANIDE	MG/KG	27	40	Not Analyzed	Not Analyzed		Not Analyzed	Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	24	22	24	34	25
TOTAL ORGANIC CARBON	MG/KG	-	-	Not Analyzed	Not Analyzed	4,000	Not Analyzed	Not Analyzed



Concentration Exceeds Criteria ¹
Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

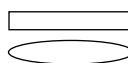
U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

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APPENDIX E-6
SUMMARY OF DETECTED MISCELLANEOUS ANALYTES IN SEDIMENT
SPRINGVILLE DAM

Location Identifier :				SD-014	SD-014	SD-014	SD-014
Field Sample Identifier :				SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)	SVD-SD014 (13-14)
Sample Type:				Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-6.0	6.0-12.0	12.0-17.8	13.0-14.0
Date of Sample :				07/20/18	07/20/18	07/20/18	07/20/18
Parameter	Units	Criteria ¹	Criteria ²				
MISCELLANEOUS							
CYANIDE	MG/KG	27	40				Not Analyzed
PERCENT MOISTURE	PERCENT	-	-	7.1	24	15	20
TOTAL ORGANIC CARBON	MG/KG	-	-	6,300	7,100	3,100 J	Not Analyzed



Concentration Exceeds Criteria ¹

Concentration Exceeds Criteria ²

Flags assigned during chemistry validation are shown.

Criteria ¹ - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Residential Protection (a).

Criteria ² - PAL: Project Action Limit, 6 NYCRR Part 375-6.8(b): Restricted Use Soil Cleanup Objectives Groundwater Protection (a) or CP-51, Soil Cleanup Guidance Policy (2010).

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

Only Detected Results Reported.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00048 U	0.00048 UJ	Not Analyzed	0.00043 U	0.00041 UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00094 U	0.00094 UJ	Not Analyzed	0.00083 U	0.00081 UJ
1,1,2-TRICHLOROETHANE	MG/KG	0.00042 U	0.00042 UJ	Not Analyzed	0.00037 U	0.00036 UJ
1,1-DICHLOROETHANE	MG/KG	0.00047 U	0.00047 UJ	Not Analyzed	0.00042 U	0.00041 UJ
1,1-DICHLOROETHENE	MG/KG	0.00081 U	0.00081 UJ	Not Analyzed	0.00072 U	0.0007 UJ
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0012 U	0.0012 UJ	Not Analyzed	0.0011 U	0.0014 J
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0012 U	0.0012 UJ	Not Analyzed	0.0011 U	0.0024 J
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.001 U	0.001 UJ	Not Analyzed	0.00091 U	0.00089 UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.0004 U	0.0004 UJ	Not Analyzed	0.00036 U	0.00035 UJ
1,2-DICHLOROBENZENE	MG/KG	0.00038 U	0.00037 UJ	Not Analyzed	0.00033 U	0.00089 J
1,2-DICHLOROETHANE	MG/KG	0.00058 U	0.00058 UJ	Not Analyzed	0.00051 U	0.0005 UJ
1,2-DICHLOROPROPANE	MG/KG	0.0005 U	0.0005 UJ	Not Analyzed	0.00044 U	0.00043 UJ
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00044 U	0.00044 UJ	Not Analyzed	0.00039 U	0.0015 J
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00042 U	0.00042 UJ	Not Analyzed	0.00038 U	0.0016 J
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.0016 U	0.0016 UJ	Not Analyzed	0.0014 U	0.0013 UJ
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.0107 J	0.0061 UJ	Not Analyzed	0.0496	0.0219 J
BENZENE	MG/KG	0.00046 U	0.00046 UJ	Not Analyzed	0.00041 U	0.0004 UJ
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00053 U	0.00053 UJ	Not Analyzed	0.00047 U	0.00046 UJ
BROMODICHLOROMETHANE	MG/KG	0.00055 U	0.00054 UJ	Not Analyzed	0.00048 U	0.00047 UJ
BROMOFORM	MG/KG	0.0005 U	0.0005 UJ	Not Analyzed	0.00044 U	0.00043 UJ
BROMOMETHANE	MG/KG	0.0012 U	0.0012 UJ	Not Analyzed	0.0011 U	0.0011 UJ
CARBON DISULFIDE	MG/KG	0.0011 U	0.0023 J	Not Analyzed	0.0043	0.0032 J
CARBON TETRACHLORIDE	MG/KG	0.00068 U	0.00068 UJ	Not Analyzed	0.0006 U	0.00058 UJ
CHLOROBENZENE	MG/KG	0.00044 U	0.00043 UJ	Not Analyzed	0.00039 U	0.00058 J
CHLOROETHANE	MG/KG	0.00085 U	0.00084 UJ	Not Analyzed	0.00075 U	0.00073 UJ
CHLOROFORM	MG/KG	0.00046 U	0.00046 UJ	Not Analyzed	0.00041 U	0.0004 UJ
CHLOROMETHANE	MG/KG	0.0024 U	0.0024 UJ	Not Analyzed	0.0021 U	0.0021 UJ
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0012 U	0.0012 UJ	Not Analyzed	0.001 U	0.001 UJ
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00043 U	0.00043 UJ	Not Analyzed	0.00038 U	0.00037 UJ
CYCLOHEXANE	MG/KG	0.0005 U	0.0005 UJ	Not Analyzed	0.00044 U	0.00043 UJ
DIBROMOCHLOROMETHANE	MG/KG	0.00042 U	0.00042 UJ	Not Analyzed	0.00037 U	0.00036 UJ
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00078 U	0.00078 UJ	Not Analyzed	0.00069 U	0.00067 UJ
ETHYLBENZENE	MG/KG	0.00068 U	0.00068 UJ	Not Analyzed	0.0006 U	0.00067 J
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00086 U	0.00086 UJ	Not Analyzed	0.00076 U	0.00074 UJ
M+P-XYLENE	MG/KG	0.00092 U	0.00092 UJ	Not Analyzed	0.00082 U	0.0018 J
METHYL ACETATE	MG/KG	0.0017 U	0.0017 UJ	Not Analyzed	0.0015 U	0.0015 UJ
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0046 U	0.0046 UJ	Not Analyzed	0.0084 J	0.004 UJ
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0019 U	0.0019 UJ	Not Analyzed	0.0017 U	0.0017 UJ
METHYLCYCLOHEXANE	MG/KG	0.00087 U	0.0015 J	Not Analyzed	0.00077 U	0.0036 J
METHYLENE CHLORIDE	MG/KG	0.0036 J	0.0031 UJ	Not Analyzed	0.0101	0.005 J
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00072 U	0.00072 UJ	Not Analyzed	0.00064 U	0.00062 UJ
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00071 U	0.00071 UJ	Not Analyzed	0.00063 U	0.00061 UJ
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00043 U	0.00043 UJ	Not Analyzed	0.00038 U	0.00037 UJ
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00057 U	0.00057 UJ	Not Analyzed	0.0005 U	0.001 J
TOLUENE	MG/KG	0.0088	0.00046 UJ	Not Analyzed	0.00041 U	0.0025 J

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00082 U	0.00082 UJ	Not Analyzed	0.00073 U	0.00071 UJ
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.0004 U	0.0004 UJ	Not Analyzed	0.00036 U	0.00035 UJ
TRICHLOROETHANE	MG/KG	0.00052 U	0.00052 UJ	Not Analyzed	0.00047 U	0.00045 UJ
TRICHLOROETHYLENE (TCE)	MG/KG	0.00094 U	0.00094 UJ	Not Analyzed	0.00083 U	0.00081 UJ
TRICHLOROFLUOROMETHANE	MG/KG	0.00084 U	0.00084 UJ	Not Analyzed	0.00074 U	0.00072 UJ
VINYL CHLORIDE	MG/KG	0.00058 U	0.00058 UJ	Not Analyzed	0.00051 U	0.0005 UJ
XYLENES, TOTAL	MG/KG	0.00072 U	0.00072 UJ	Not Analyzed	0.00064 U	0.0023 J
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.013 U	0.012 U	0.011 U	Not Analyzed	0.0098 U
2,4,5-TRICHLOROPHENOL	MG/KG	0.023 U	0.021 U	0.02 U	Not Analyzed	0.017 U
2,4,6-TRICHLOROPHENOL	MG/KG	0.026 U	0.023 U	0.022 U	Not Analyzed	0.02 U
2,4-DICHLOROPHENOL	MG/KG	0.04 U	0.036 U	0.034 U	Not Analyzed	0.03 U
2,4-DIMETHYLPHENOL	MG/KG	0.044 U	0.04 U	0.038 U	Not Analyzed	0.034 U
2,4-DINITROPHENOL	MG/KG	0.13 U	0.12 U	0.11 U	Not Analyzed	0.1 U
2,4-DINITROTOLUENE	MG/KG	0.02 U	0.018 U	0.017 U	Not Analyzed	0.015 U
2,6-DINITROTOLUENE	MG/KG	0.022 U	0.02 U	0.019 U	Not Analyzed	0.017 U
2-CHLORONAPHTHALENE	MG/KG	0.015 U	0.014 U	0.013 U	Not Analyzed	0.012 U
2-CHLOROPHENOL	MG/KG	0.048 U	0.044 U	0.042 U	Not Analyzed	0.037 U
2-METHYLNAPHTHALENE	MG/KG	0.011 U	0.01 U	0.0097 U	Not Analyzed	0.0086 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.05 U	0.045 U	0.043 U	Not Analyzed	0.038 U
2-NITROANILINE	MG/KG	0.011 U	0.01 U	0.0097 U	Not Analyzed	0.0085 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.057 U	0.052 U	0.049 U	Not Analyzed	0.043 U
3,3'-DICHLOROBENZIDINE	MG/KG	0.59 U	0.53 U	0.51 U	Not Analyzed	0.45 U
3-NITROANILINE	MG/KG	0.016 U	0.015 U	0.014 U	Not Analyzed	0.012 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.067 U	0.06 U	0.057 U	Not Analyzed	0.05 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.059 U	0.053 U	0.051 U	Not Analyzed	0.045 U
4-CHLORO-3-METHYLPHENOL	MG/KG	0.024 U	0.022 U	0.021 U	Not Analyzed	0.018 U
4-CHLOROANILINE	MG/KG	0.035 U	0.032 U	0.03 U	Not Analyzed	0.026 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.014 U	0.013 U	0.012 U	Not Analyzed	0.011 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.082 U	0.074 U	0.071 U	Not Analyzed	0.062 U
4-NITROANILINE	MG/KG	0.033 U	0.03 U	0.029 U	Not Analyzed	0.025 U
4-NITROPHENOL	MG/KG	0.33 U	0.3 U	0.29 U	Not Analyzed	0.25 U
ACENAPHTHENE	MG/KG	0.01 U	0.0093 U	0.0088 U	Not Analyzed	0.0078 U
ACENAPHTHYLENE	MG/KG	0.0099 U	0.0089 U	0.0085 U	Not Analyzed	0.0075 U
ANTHRACENE	MG/KG	0.011 U	0.01 U	0.0097 U	Not Analyzed	0.0085 U
BENZO(A)ANTHRACENE	MG/KG	0.015 U	0.014 U	0.013 U	Not Analyzed	0.012 U
BENZO(A)PYRENE	MG/KG	0.014 U	0.013 U	0.012 U	Not Analyzed	0.011 U
BENZO(B)FLUORANTHENE	MG/KG	0.047 J	0.053 J	0.011 U	Not Analyzed	0.0095 U
BENZO(G,H,I)PERYLENE	MG/KG	0.016 U	0.015 U	0.014 U	Not Analyzed	0.012 U
BENZO(K)FLUORANTHENE	MG/KG	0.024 U	0.022 U	0.021 U	Not Analyzed	0.018 U
BENZOIC ACID	MG/KG	0.19 U	0.17 U	0.16 U	Not Analyzed	0.14 U
BENZYL ALCOHOL	MG/KG	0.011 U	0.01 U	0.0096 U	Not Analyzed	0.0084 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.027 U	0.025 U	0.023 U	Not Analyzed	0.021 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0096 U	0.0087 U	0.0083 U	Not Analyzed	0.0073 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.025 U	0.022 U	0.021 U	Not Analyzed	0.019 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.011 U	0.0095 U	0.0091 U	Not Analyzed	0.008 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.034 U	0.056 J	0.029 U	Not Analyzed	0.026 U
CARBAZOLE	MG/KG	0.016 U	0.014 U	0.014 U	Not Analyzed	0.012 U
CHRYSENE	MG/KG	0.051 J	0.051 J	0.011 U	Not Analyzed	0.0099 U
DIBENZ(A,H)ANTHRACENE	MG/KG	0.037 U	0.033 U	0.032 U	Not Analyzed	0.028 U
DIBENZOFURAN	MG/KG	0.012 U	0.011 U	0.01 U	Not Analyzed	0.0089 U
DIETHYL PHTHALATE	MG/KG	0.017 U	0.015 U	0.015 U	Not Analyzed	0.013 U
DIMETHYL PHTHALATE	MG/KG	0.015 U	0.014 U	0.013 U	Not Analyzed	0.012 U
DI-N-BUTYL PHTHALATE	MG/KG	0.025 U	0.023 U	0.021 U	Not Analyzed	0.019 U
DI-N-OCTYLPHTHALATE	MG/KG	0.016 U	0.014 U	0.014 U	Not Analyzed	0.012 U
FLUORANTHENE	MG/KG	0.075 J	0.093 J	0.019 U	Not Analyzed	0.017 U
FLUORENE	MG/KG	0.013 U	0.012 U	0.011 U	Not Analyzed	0.0099 U
HEXACHLOROBENZENE	MG/KG	0.013 U	0.011 U	0.011 U	Not Analyzed	0.0095 U
HEXACHLOROBUTADIENE	MG/KG	0.021 U	0.019 U	0.018 U	Not Analyzed	0.016 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.053 UR	0.048 UR	0.046 UR	Not Analyzed	0.04 UR
HEXACHLOROETHANE	MG/KG	0.011 U	0.0096 U	0.0092 U	Not Analyzed	0.0081 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.012 U	0.011 U	0.01 U	Not Analyzed	0.009 U
ISOPHORONE	MG/KG	0.0096 U	0.0087 U	0.0082 U	Not Analyzed	0.0073 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.009 U	0.0081 U	0.0077 U	Not Analyzed	0.0068 U
NITROBENZENE	MG/KG	0.014 U	0.013 U	0.012 U	Not Analyzed	0.011 U
N-NITROSODIMETHYLAMINE	MG/KG	0.011 U	0.01 U	0.0097 U	Not Analyzed	0.0085 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.013 U	0.012 U	0.011 U	Not Analyzed	0.0097 U
N-NITROSODIPHENYLAMINE	MG/KG	0.011 U	0.01 U	0.0096 U	Not Analyzed	0.0085 U
PENTACHLOROPHENOL	MG/KG	0.087 U	0.079 U	0.075 U	Not Analyzed	0.066 U
PHENANTHRENE	MG/KG	0.012 U	0.05 J	0.011 U	Not Analyzed	0.0092 U
PHENOL	MG/KG	0.05 U	0.045 U	0.043 U	Not Analyzed	0.038 U
PYRENE	MG/KG	0.056 J	0.075 J	0.012 U	Not Analyzed	0.011 U
PESTICIDES						
ALDRIN	MG/KG	0.00047 U	0.00043 U	0.0004 U	Not Analyzed	0.00036 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00041 U	0.00038 U	0.00035 U	Not Analyzed	0.00031 U
ALPHA ENDOSULFAN	MG/KG	0.00052 U	0.00048 U	0.00045 U	Not Analyzed	0.0004 U
ALPHA-CHLORDANE	MG/KG	0.00052 U	0.00048 U	0.00045 U	Not Analyzed	0.0004 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.0005 U	0.00046 U	0.00043 U	Not Analyzed	0.00038 U
BETA ENDOSULFAN	MG/KG	0.00052 U	0.00048 U	0.00045 U	Not Analyzed	0.00039 U
BETA-CHLORDANE	MG/KG	0.00052 U	0.00048 U	0.00045 U	Not Analyzed	0.0004 U
CHLORDANE	MG/KG	0.0049 U	0.0045 U	0.0042 U	Not Analyzed	0.0037 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.00076 U	0.0007 U	0.00065 U	Not Analyzed	0.00057 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.00044 U	0.00064 J	0.00038 U	Not Analyzed	0.00033 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.00049 U	0.00045 U	0.00042 U	Not Analyzed	0.00037 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00041 U	0.00038 U	0.00035 U	Not Analyzed	0.00031 U
DIELDRIN	MG/KG	0.0005 U	0.00046 U	0.00043 U	Not Analyzed	0.00038 U
ENDOSULFAN SULFATE	MG/KG	0.00052 U	0.00048 U	0.00045 U	Not Analyzed	0.0004 U
ENDRIN	MG/KG	0.0027 U	0.0025 U	0.00046 U	Not Analyzed	0.00041 U
ENDRIN ALDEHYDE	MG/KG	0.0027 U	0.0025 U	0.00047 U	Not Analyzed	0.00041 U
ENDRIN KETONE	MG/KG	0.0026 U	0.0024 U	0.00044 U	Not Analyzed	0.00039 U
GAMMA BHC (LINDANE)	MG/KG	0.00043 U	0.00039 U	0.00036 U	Not Analyzed	0.00032 U
HEPTACHLOR	MG/KG	0.00051 U	0.00047 U	0.00044 U	Not Analyzed	0.00039 U
HEPTACHLOR EPOXIDE	MG/KG	0.00052 U	0.00048 U	0.00044 U	Not Analyzed	0.00039 U
METHOXYCHLOR	MG/KG	0.0027 U	0.0025 U	0.00046 U	Not Analyzed	0.00041 U
TOXAPHENE	MG/KG	0.007 U	0.0065 U	0.006 U	Not Analyzed	0.0053 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0041 U	0.0038 U	0.0035 U	Not Analyzed	0.0031 U
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0042 U	0.0039 U	0.0036 U	Not Analyzed	0.0032 U
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0042 U	0.0039 U	0.0036 U	Not Analyzed	0.0032 U
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0063 U	0.0058 U	0.0054 U	Not Analyzed	0.0048 U
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0052 U	0.0048 U	0.0045 U	Not Analyzed	0.0039 U
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0049 U	0.0045 U	0.0042 U	Not Analyzed	0.0037 U
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0059 U	0.0054 U	0.0051 U	Not Analyzed	0.0045 U
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0041 U	0.0038 U	0.0035 U	Not Analyzed	0.0031 U
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0041 U	0.0038 U	0.0035 U	Not Analyzed	0.0031 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.0034 U	0.0031 U	0.0029 U	Not Analyzed	0.0026 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.084 U	-0.21 U	-0.139 U	Not Analyzed	-0.257 U
CESIUM-137	PCI/G	0.377	0.337	0.392	Not Analyzed	0.157
COBALT-60	PCI/G	0.037 U	0.112 U	0.007 U	Not Analyzed	0.105 U
GROSS ALPHA	PCI/G	10.3	8.98	4.99	Not Analyzed	7.53
GROSS BETA	PCI/G	14.8	14.4	15.5	Not Analyzed	10.3
PLUTONIUM-238	PCI/G	0.014 U	0.031 U	-0.005 U	Not Analyzed	0.025 U
PLUTONIUM-239/240	PCI/G	-0.003 U	0.023 U	0.037 J	Not Analyzed	-0.016 U
POTASSIUM-40	PCI/G	12.589	15.243	10.424	Not Analyzed	12.107
STRONTIUM-90	PCI/G	-0.084 U	0.169 U	0.06 U	Not Analyzed	-0.011 U
URANIUM-232	PCI/G	0.047 U	0.021 U	0.08 J	Not Analyzed	0.095 J
URANIUM-234	PCI/G	0.382	0.808	0.474	Not Analyzed	0.612
URANIUM-235	PCI/G	0.05 J	-0.013 U	0.034 U	Not Analyzed	0.018 U
URANIUM-238	PCI/G	0.653	0.701	0.46	Not Analyzed	0.687
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.194 U	0.34 U	0.17 U	Not Analyzed	0.313 U
URANIUM-238	PCI/G	1.048 U	0.693 U	0.811 U	Not Analyzed	1.309 U
METALS						
ALUMINUM	MG/KG	6,440	9,900	4,490	Not Analyzed	5,440
ANTIMONY	MG/KG	0.54 U	0.59 U	0.47 U	Not Analyzed	0.41 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	6.7	10.1	6	Not Analyzed	6
BARIUM	MG/KG	41.3	81.7	30	Not Analyzed	38.1
BERYLLIUM	MG/KG	0.3	0.49	0.21 J	Not Analyzed	0.25
CADMIUM	MG/KG	0.12 J	0.32 J	0.092 J	Not Analyzed	0.071 U
CALCIUM	MG/KG	9,750	18,600	3,690	Not Analyzed	6,160
CHROMIUM, TOTAL	MG/KG	8.7	13.7	5.6	Not Analyzed	7.2
COBALT	MG/KG	5.3 J	8.5	4.1 J	Not Analyzed	4.6 J
COPPER	MG/KG	13.7	22.8	10.6	Not Analyzed	11.7
IRON	MG/KG	14,800	22,500	11,300	Not Analyzed	14,500
LEAD	MG/KG	9	14.9	5.4	Not Analyzed	5.5
MAGNESIUM	MG/KG	4,330	7,090	2,370	Not Analyzed	2,480
MANGANESE	MG/KG	314	518	161	Not Analyzed	314
MERCURY	MG/KG	0.014 J	0.014 J	0.0041 J	Not Analyzed	0.0016 U
NICKEL	MG/KG	14	21.5	10	Not Analyzed	12.6
POTASSIUM	MG/KG	1,050 J	1,690	641 J	Not Analyzed	587 J
SELENIUM	MG/KG	0.86 U	0.93 U	0.75 U	Not Analyzed	0.66 U
SILVER	MG/KG	0.25 J	0.55 J	0.2 U	Not Analyzed	0.17 U
SODIUM	MG/KG	100 U	110 U	90 U	Not Analyzed	79 U
THALLIUM	MG/KG	0.76 U	0.83 U	0.67 U	Not Analyzed	0.59 U
VANADIUM	MG/KG	11.6	16.4	7.8	Not Analyzed	8.6
ZINC	MG/KG	49.6	70	40.5	Not Analyzed	49.4

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-001	SD-001	SD-001	SD-001	SD-001B
Field Sample Identifier		SVD-SD001 (0-6)	SVD-SD001 (6-12)	SVD-SD001 (12-18)	SVD-SD001 (17-17.5)	SVD-SD001 (18-23.7)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	6.0-12.0	12.0-18.0	17.0-17.5	18.0-23.7
Date of Sample		07/17/18	07/17/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	0.013 U	0.012 U	0.01 U	Not Analyzed	0.0096 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.002 U	0.0019 U	0.0016 U	Not Analyzed	0.0015 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.015 U	0.014 U	0.012 U	Not Analyzed	0.011 U
DALAPON	MG/KG	0.004 U	0.0037 U	0.0032 U	Not Analyzed	0.003 U
DICAMBA	MG/KG	0.0032 U	0.0029 U	0.0025 U	Not Analyzed	0.0024 U
DICHLOROPROP	MG/KG	0.013 U	0.012 U	0.01 U	Not Analyzed	0.0096 U
DINOSEB	MG/KG	0.0087 U	0.008 U	0.007 U	Not Analyzed	0.0065 U
MCPA	MG/KG	2 U	1.8 U	1.6 U	Not Analyzed	1.5 U
MCPP	MG/KG	2 U	1.9 U	1.6 U	Not Analyzed	1.5 U
PENTACHLOROPHENOL	MG/KG	0.0016 U	0.0015 U	0.0013 U	Not Analyzed	0.0012 U
SILVEX (2,4,5-TP)	MG/KG	0.0038 U	0.0035 U	0.003 U	Not Analyzed	0.0028 U
MISCELLANEOUS						
CYANIDE	MG/KG	0.46 U	3.5	1.2 J	Not Analyzed	0.36 U
PERCENT MOISTURE	PERCENT	29	23	17	10	7
TOTAL ORGANIC CARBON	MG/KG	10,000	14,000	4,100 J	Not Analyzed	2,100 J

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00042 U	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	0.00082 U	Not Analyzed	0.00083 U	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00037 U	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00042 U	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	0.00071 U	Not Analyzed	0.00071 U	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	0.0011 U	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	0.0011 U	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	0.0009 U	Not Analyzed	0.00091 U	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00035 U	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00033 U	Not Analyzed	0.00033 U	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	0.00051 U	Not Analyzed	0.00051 U	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00044 U	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00039 U	Not Analyzed	0.00039 U	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00037 U	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.0014 U	Not Analyzed
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	Not Analyzed	0.0054 U	Not Analyzed	0.0054 U	Not Analyzed
BENZENE	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00041 U	Not Analyzed
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00047 U	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	0.00048 U	Not Analyzed	0.00048 U	Not Analyzed
BROMOFORM	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00044 U	Not Analyzed
BROMOMETHANE	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	0.0011 U	Not Analyzed
CARBON DISULFIDE	MG/KG	Not Analyzed	0.001 U	Not Analyzed	0.001 U	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	0.00059 U	Not Analyzed	0.0006 U	Not Analyzed
CHLOROBENZENE	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00038 U	Not Analyzed
CHLOROETHANE	MG/KG	Not Analyzed	0.00074 U	Not Analyzed	0.00075 U	Not Analyzed
CHLOROFORM	MG/KG	Not Analyzed	0.0004 U	Not Analyzed	0.0004 U	Not Analyzed
CHLOROMETHANE	MG/KG	Not Analyzed	0.0021 U	Not Analyzed	0.0021 U	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	0.001 U	Not Analyzed	0.001 U	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00038 U	Not Analyzed
CYCLOHEXANE	MG/KG	Not Analyzed	0.001 J	Not Analyzed	0.00044 U	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00037 U	Not Analyzed
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	0.00069 U	Not Analyzed	0.00069 U	Not Analyzed
ETHYLBENZENE	MG/KG	Not Analyzed	0.0006 U	Not Analyzed	0.0006 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	0.00075 U	Not Analyzed	0.00076 U	Not Analyzed
M+P-XYLENE	MG/KG	Not Analyzed	0.00081 U	Not Analyzed	0.00081 U	Not Analyzed
METHYL ACETATE	MG/KG	Not Analyzed	0.0015 U	Not Analyzed	0.0015 U	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	0.004 U	Not Analyzed	0.0041 U	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	0.0017 U	Not Analyzed	0.0017 U	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	0.0152	Not Analyzed	0.00077 U	Not Analyzed
METHYLENE CHLORIDE	MG/KG	Not Analyzed	0.0027 U	Not Analyzed	0.0027 U	Not Analyzed
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	0.00063 U	Not Analyzed	0.00063 U	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	Not Analyzed	0.00062 U	Not Analyzed	0.00063 U	Not Analyzed
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00038 U	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	0.0005 U	Not Analyzed	0.0005 U	Not Analyzed
TOLUENE	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00041 U	Not Analyzed

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	0.00072 U	Not Analyzed	0.00073 U	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00036 U	Not Analyzed
TRICHLOROETHANE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00046 U	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	0.00082 U	Not Analyzed	0.00083 U	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	0.00074 U	Not Analyzed	0.00074 U	Not Analyzed
VINYL CHLORIDE	MG/KG	Not Analyzed	0.00051 U	Not Analyzed	0.00051 U	Not Analyzed
XYLENES, TOTAL	MG/KG	Not Analyzed	0.00063 U	Not Analyzed	0.00063 U	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.011 U	Not Analyzed	0.0098 U	Not Analyzed	0.01 U
2,4,5-TRICHLOROPHENOL	MG/KG	0.02 U	Not Analyzed	0.017 U	Not Analyzed	0.018 U
2,4,6-TRICHLOROPHENOL	MG/KG	0.023 U	Not Analyzed	0.02 U	Not Analyzed	0.02 U
2,4-DICHLOROPHENOL	MG/KG	0.035 U	Not Analyzed	0.03 U	Not Analyzed	0.031 U
2,4-DIMETHYLPHENOL	MG/KG	0.039 U	Not Analyzed	0.034 U	Not Analyzed	0.035 U
2,4-DINITROPHENOL	MG/KG	0.12 UJ	Not Analyzed	0.1 U	Not Analyzed	0.1 U
2,4-DINITROTOLUENE	MG/KG	0.018 U	Not Analyzed	0.015 U	Not Analyzed	0.016 U
2,6-DINITROTOLUENE	MG/KG	0.019 U	Not Analyzed	0.017 U	Not Analyzed	0.017 U
2-CHLORONAPHTHALENE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.012 U
2-CHLOROPHENOL	MG/KG	0.043 U	Not Analyzed	0.037 U	Not Analyzed	0.038 U
2-METHYLNAPHTHALENE	MG/KG	0.01 U	Not Analyzed	0.0086 U	Not Analyzed	0.0089 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.044 U	Not Analyzed	0.038 U	Not Analyzed	0.039 U
2-NITROANILINE	MG/KG	0.0099 U	Not Analyzed	0.0085 U	Not Analyzed	0.0088 U

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.051 U	Not Analyzed	0.043 U	Not Analyzed	0.045 U
3,3'-DICHLOROBENZIDINE	MG/KG	0.52 U	Not Analyzed	0.45 U	Not Analyzed	0.47 U
3-NITROANILINE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.013 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.059 U	Not Analyzed	0.05 U	Not Analyzed	0.052 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.052 U	Not Analyzed	0.045 U	Not Analyzed	0.046 U
4-CHLORO-3-METHYLPHENOL	MG/KG	0.021 U	Not Analyzed	0.018 U	Not Analyzed	0.019 U
4-CHLOROANILINE	MG/KG	0.031 U	Not Analyzed	0.026 U	Not Analyzed	0.027 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.012 U	Not Analyzed	0.011 U	Not Analyzed	0.011 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.073 U	Not Analyzed	0.063 U	Not Analyzed	0.065 U
4-NITROANILINE	MG/KG	0.029 U	Not Analyzed	0.025 U	Not Analyzed	0.026 U
4-NITROPHENOL	MG/KG	0.29 U	Not Analyzed	0.25 U	Not Analyzed	0.26 U
ACENAPHTHENE	MG/KG	0.0091 U	Not Analyzed	0.0078 U	Not Analyzed	0.0081 U
ACENAPHTHYLENE	MG/KG	0.0087 U	Not Analyzed	0.0075 U	Not Analyzed	0.0077 U
ANTHRACENE	MG/KG	0.0099 U	Not Analyzed	0.0086 U	Not Analyzed	0.0089 U
BENZO(A)ANTHRACENE	MG/KG	0.013 U	Not Analyzed	0.012 U	Not Analyzed	0.012 U
BENZO(A)PYRENE	MG/KG	0.012 U	Not Analyzed	0.011 U	Not Analyzed	0.011 U
BENZO(B)FLUORANTHENE	MG/KG	0.011 U	Not Analyzed	0.0096 U	Not Analyzed	0.0099 U
BENZO(G,H,I)PERYLENE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.013 U
BENZO(K)FLUORANTHENE	MG/KG	0.021 U	Not Analyzed	0.018 U	Not Analyzed	0.019 U
BENZOIC ACID	MG/KG	0.16 U	Not Analyzed	0.14 U	Not Analyzed	0.15 U
BENZYL ALCOHOL	MG/KG	0.0098 U	Not Analyzed	0.0085 U	Not Analyzed	0.0088 U

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U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.024 U	Not Analyzed	0.021 U	Not Analyzed	0.021 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0085 U	Not Analyzed	0.0073 U	Not Analyzed	0.0076 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.022 U	Not Analyzed	0.019 U	Not Analyzed	0.02 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.0093 U	Not Analyzed	0.008 U	Not Analyzed	0.0083 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.03 U	Not Analyzed	0.026 U	Not Analyzed	0.027 U
CARBAZOLE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.013 U
CHRYSENE	MG/KG	0.012 U	Not Analyzed	0.0099 U	Not Analyzed	0.01 U
DIBENZ(A,H)ANTHRACENE	MG/KG	0.032 U	Not Analyzed	0.028 U	Not Analyzed	0.029 U
DIBENZOFURAN	MG/KG	0.01 U	Not Analyzed	0.0089 U	Not Analyzed	0.0093 U
DIETHYL PHTHALATE	MG/KG	0.015 U	Not Analyzed	0.013 U	Not Analyzed	0.013 U
DIMETHYL PHTHALATE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.012 U
DI-N-BUTYL PHTHALATE	MG/KG	0.022 U	Not Analyzed	0.019 U	Not Analyzed	0.02 U
DI-N-OCTYLPHTHALATE	MG/KG	0.014 U	Not Analyzed	0.012 U	Not Analyzed	0.012 U
FLUORANTHENE	MG/KG	0.02 U	Not Analyzed	0.017 U	Not Analyzed	0.017 U
FLUORENE	MG/KG	0.012 U	Not Analyzed	0.0099 U	Not Analyzed	0.01 U
HEXACHLOROBENZENE	MG/KG	0.011 U	Not Analyzed	0.0095 U	Not Analyzed	0.0099 U
HEXACHLOROBUTADIENE	MG/KG	0.019 U	Not Analyzed	0.016 U	Not Analyzed	0.017 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.047 UR	Not Analyzed	0.041 UR	Not Analyzed	0.042 UR
HEXACHLOROETHANE	MG/KG	0.0094 U	Not Analyzed	0.0081 U	Not Analyzed	0.0084 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.01 U	Not Analyzed	0.009 U	Not Analyzed	0.0094 U
ISOPHORONE	MG/KG	0.0085 U	Not Analyzed	0.0073 U	Not Analyzed	0.0075 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.0079 U	Not Analyzed	0.0068 U	Not Analyzed	0.0071 U
NITROBENZENE	MG/KG	0.013 U	Not Analyzed	0.011 U	Not Analyzed	0.011 U
N-NITROSODIMETHYLAMINE	MG/KG	0.0099 U	Not Analyzed	0.0085 U	Not Analyzed	0.0088 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.011 U	Not Analyzed	0.0098 U	Not Analyzed	0.01 U
N-NITROSODIPHENYLAMINE	MG/KG	0.0099 U	Not Analyzed	0.0085 U	Not Analyzed	0.0088 U
PENTACHLOROPHENOL	MG/KG	0.077 U	Not Analyzed	0.066 U	Not Analyzed	0.068 U
PHENANTHRENE	MG/KG	0.011 U	Not Analyzed	0.0093 U	Not Analyzed	0.0096 U
PHENOL	MG/KG	0.044 U	Not Analyzed	0.038 U	Not Analyzed	0.039 U
PYRENE	MG/KG	0.012 U	Not Analyzed	0.011 U	Not Analyzed	0.011 U
PESTICIDES						
ALDRIN	MG/KG	0.00041 U	Not Analyzed	0.00035 U	Not Analyzed	0.00037 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00036 U	Not Analyzed	0.00031 U	Not Analyzed	0.00032 U
ALPHA ENDOSULFAN	MG/KG	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U
ALPHA-CHLORDANE	MG/KG	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00044 U	Not Analyzed	0.00038 U	Not Analyzed	0.00039 U
BETA ENDOSULFAN	MG/KG	0.00045 U	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U
BETA-CHLORDANE	MG/KG	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U
CHLORDANE	MG/KG	0.0042 U	Not Analyzed	0.0037 U	Not Analyzed	0.0038 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.00066 U	Not Analyzed	0.00057 U	Not Analyzed	0.00059 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.00039 U	Not Analyzed	0.00033 U	Not Analyzed	0.00034 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.00043 U	Not Analyzed	0.00037 U	Not Analyzed	0.00038 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00036 U	Not Analyzed	0.00031 U	Not Analyzed	0.00032 U
DIELDRIN	MG/KG	0.00044 U	Not Analyzed	0.00038 U	Not Analyzed	0.00039 U
ENDOSULFAN SULFATE	MG/KG	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U
ENDRIN	MG/KG	0.00047 U	Not Analyzed	0.0004 U	Not Analyzed	0.00042 U
ENDRIN ALDEHYDE	MG/KG	0.00048 U	Not Analyzed	0.00041 U	Not Analyzed	0.00043 U
ENDRIN KETONE	MG/KG	0.00045 U	Not Analyzed	0.00038 U	Not Analyzed	0.0004 U
GAMMA BHC (LINDANE)	MG/KG	0.00037 U	Not Analyzed	0.00032 U	Not Analyzed	0.00033 U
HEPTACHLOR	MG/KG	0.00045 U	Not Analyzed	0.00038 U	Not Analyzed	0.0004 U
HEPTACHLOR EPOXIDE	MG/KG	0.00045 U	Not Analyzed	0.00039 U	Not Analyzed	0.0004 U
METHOXYCHLOR	MG/KG	0.00047 U	Not Analyzed	0.0004 U	Not Analyzed	0.00042 U
TOXAPHENE	MG/KG	0.0061 U	Not Analyzed	0.0053 U	Not Analyzed	0.0055 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed	0.0032 U
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0037 U	Not Analyzed	0.0032 U	Not Analyzed	0.0033 U
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0037 U	Not Analyzed	0.0031 U	Not Analyzed	0.0033 U
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0055 U	Not Analyzed	0.0047 U	Not Analyzed	0.0049 U
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0045 U	Not Analyzed	0.0039 U	Not Analyzed	0.0041 U
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0043 U	Not Analyzed	0.0037 U	Not Analyzed	0.0038 U
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0052 U	Not Analyzed	0.0044 U	Not Analyzed	0.0046 U
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed	0.0032 U
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed	0.0032 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.003 U	Not Analyzed	0.0026 U	Not Analyzed	0.0027 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.091 U	Not Analyzed	-0.048 U	Not Analyzed	-0.071 U
CESIUM-137	PCI/G	0.256	Not Analyzed	0.311	Not Analyzed	0.211
COBALT-60	PCI/G	0.113 U	Not Analyzed	0.023 U	Not Analyzed	0.058 U
GROSS ALPHA	PCI/G	14.5	Not Analyzed	9.84	Not Analyzed	9.46
GROSS BETA	PCI/G	8.6	Not Analyzed	8.91	Not Analyzed	7.79
PLUTONIUM-238	PCI/G	0.008 U	Not Analyzed	0.003 U	Not Analyzed	0.077 J
PLUTONIUM-239/240	PCI/G	0.032 U	Not Analyzed	-0.005 U	Not Analyzed	0.006 U
POTASSIUM-40	PCI/G	12.8	Not Analyzed	10.449	Not Analyzed	9.619
STRONTIUM-90	PCI/G	0.06 U	Not Analyzed	1.13	Not Analyzed	-0.003 U
URANIUM-232	PCI/G	0.023 U	Not Analyzed	-0.045 U	Not Analyzed	0.012 U
URANIUM-234	PCI/G	0.553	Not Analyzed	0.514	Not Analyzed	0.452
URANIUM-235	PCI/G	0.02 U	Not Analyzed	0.019 U	Not Analyzed	0.022 U
URANIUM-238	PCI/G	0.499	Not Analyzed	0.492	Not Analyzed	0.518
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.201 U	Not Analyzed	0 U	Not Analyzed	0.164 U
URANIUM-238	PCI/G	0.786 U	Not Analyzed	1.323	Not Analyzed	0.345 U
METALS						
ALUMINUM	MG/KG	6,010	Not Analyzed	3,830	Not Analyzed	5,400
ANTIMONY	MG/KG	0.51 U	Not Analyzed	0.43 U	Not Analyzed	0.45 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	6.4	Not Analyzed	6.2	Not Analyzed	5.7
BARIUM	MG/KG	44.6	Not Analyzed	34	Not Analyzed	42.7
BERYLLIUM	MG/KG	0.26	Not Analyzed	0.19 J	Not Analyzed	0.2 J
CADMIUM	MG/KG	0.087 U	Not Analyzed	0.073 U	Not Analyzed	0.077 U
CALCIUM	MG/KG	6,880	Not Analyzed	2,210	Not Analyzed	2,000
CHROMIUM, TOTAL	MG/KG	7.6	Not Analyzed	5.1	Not Analyzed	5.4
COBALT	MG/KG	5.1 J	Not Analyzed	3.3 J	Not Analyzed	4.2 J
COPPER	MG/KG	13.1	Not Analyzed	8.3	Not Analyzed	18.8
IRON	MG/KG	14,300	Not Analyzed	11,100	Not Analyzed	14,700
LEAD	MG/KG	6.7	Not Analyzed	5.1	Not Analyzed	5.1
MAGNESIUM	MG/KG	3,000	Not Analyzed	1,810	Not Analyzed	2,250
MANGANESE	MG/KG	288	Not Analyzed	176	Not Analyzed	240
MERCURY	MG/KG	0.0031 J	Not Analyzed	0.0032 J	Not Analyzed	0.0016 U
NICKEL	MG/KG	13.3	Not Analyzed	8.4	Not Analyzed	11.8
POTASSIUM	MG/KG	868 J	Not Analyzed	555 J	Not Analyzed	536 J
SELENIUM	MG/KG	0.81 U	Not Analyzed	0.68 U	Not Analyzed	0.71 U
SILVER	MG/KG	0.21 U	Not Analyzed	0.18 U	Not Analyzed	0.19 U
SODIUM	MG/KG	97 U	Not Analyzed	115 J	Not Analyzed	85 U
THALLIUM	MG/KG	0.72 U	Not Analyzed	0.61 U	Not Analyzed	0.63 U
VANADIUM	MG/KG	9.6	Not Analyzed	6.4	Not Analyzed	7.3
ZINC	MG/KG	48.3	Not Analyzed	32.5	Not Analyzed	45.7

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002	SD-002	SD-002	SD-002	SD-002A
Field Sample Identifier		SVD-SD002 (0-6)	SVD-SD002 (3-3.5)	SVD-SD002 (6-12)	SVD-SD002 (11-11.5)	SVD-SD002 (12-17.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	3.0-3.5	6.0-12.0	11.0-11.5	12.0-17.5
Date of Sample		07/18/18	07/18/18	07/18/18	07/18/18	07/18/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	0.011 U	Not Analyzed	0.01 U	Not Analyzed	0.0096 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.0018 U	Not Analyzed	0.0016 U	Not Analyzed	0.0015 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.013 U	Not Analyzed	0.012 U	Not Analyzed	0.011 U
DALAPON	MG/KG	0.0035 U	Not Analyzed	0.0032 U	Not Analyzed	0.003 U
DICAMBA	MG/KG	0.0027 U	Not Analyzed	0.0025 U	Not Analyzed	0.0024 U
DICHLOROPROP	MG/KG	0.011 U	Not Analyzed	0.01 U	Not Analyzed	0.0097 U
DINOSEB	MG/KG	0.0075 U	Not Analyzed	0.007 U	Not Analyzed	0.0065 U
MCPA	MG/KG	1.7 U	Not Analyzed	1.6 U	Not Analyzed	1.5 U
MCPP	MG/KG	1.8 U	Not Analyzed	1.6 U	Not Analyzed	1.5 U
PENTACHLOROPHENOL	MG/KG	0.0014 U	Not Analyzed	0.0013 U	Not Analyzed	0.0012 U
SILVEX (2,4,5-TP)	MG/KG	0.0033 U	Not Analyzed	0.003 U	Not Analyzed	0.0028 U
MISCELLANEOUS						
CYANIDE	MG/KG	0.4 U	Not Analyzed	0.35 U	Not Analyzed	0.37 U
PERCENT MOISTURE	PERCENT	19	7.5	7	8	9
TOTAL ORGANIC CARBON	MG/KG	6,100	Not Analyzed	2,600 J	Not Analyzed	4,000

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00042 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00046 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00082 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0009 U
1,1,2-TRICHLOROETHANE	MG/KG	0.00037 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0004 U
1,1-DICHLOROETHANE	MG/KG	0.00042 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00046 U
1,1-DICHLOROETHENE	MG/KG	0.00071 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00078 U
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0011 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0012 U
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0019 J	Not Analyzed	Not Analyzed	Not Analyzed	0.0012 U
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.0009 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00099 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00035 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00038 U
1,2-DICHLOROBENZENE	MG/KG	0.00069 J	Not Analyzed	Not Analyzed	Not Analyzed	0.00036 U
1,2-DICHLOROETHANE	MG/KG	0.00051 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00056 U
1,2-DICHLOROPROPANE	MG/KG	0.00044 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00048 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.0011	Not Analyzed	Not Analyzed	Not Analyzed	0.00042 U
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.0012	Not Analyzed	Not Analyzed	Not Analyzed	0.00041 U
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.0014 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0015 U
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.0054 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0059 U
BENZENE	MG/KG	0.00041 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00045 U
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00047 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00051 U
BROMODICHLOROMETHANE	MG/KG	0.00048 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00052 U
BROMOFORM	MG/KG	0.00044 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00048 U
BROMOMETHANE	MG/KG	0.0011 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0012 U
CARBON DISULFIDE	MG/KG	0.0016 J	Not Analyzed	Not Analyzed	Not Analyzed	0.0011 U
CARBON TETRACHLORIDE	MG/KG	0.0006 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00065 U
CHLOROBENZENE	MG/KG	0.00039 J	Not Analyzed	Not Analyzed	Not Analyzed	0.00042 U
CHLOROETHANE	MG/KG	0.00074 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00081 U
CHLOROFORM	MG/KG	0.0004 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00044 U
CHLOROMETHANE	MG/KG	0.0021 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0023 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.001 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0011 U
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00038 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00042 U
CYCLOHEXANE	MG/KG	0.0014 J	Not Analyzed	Not Analyzed	Not Analyzed	0.00048 U
DIBROMOCHLOROMETHANE	MG/KG	0.00037 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0004 U
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00069 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00075 U
ETHYLBENZENE	MG/KG	0.0006 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00065 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00075 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00082 U
M+P-XYLENE	MG/KG	0.0013	Not Analyzed	Not Analyzed	Not Analyzed	0.00088 U
METHYL ACETATE	MG/KG	0.0015 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0016 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.004 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0044 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0017 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0018 U
METHYLCYCLOHEXANE	MG/KG	0.0062	Not Analyzed	Not Analyzed	Not Analyzed	0.00084 U
METHYLENE CHLORIDE	MG/KG	0.0052 J	Not Analyzed	Not Analyzed	Not Analyzed	0.003 U
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00063 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00069 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00062 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00068 U
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00038 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00042 U
TETRACHLOROETHYLENE(PCE)	MG/KG	0.0006 J	Not Analyzed	Not Analyzed	Not Analyzed	0.00055 U
TOLUENE	MG/KG	0.00058 J	Not Analyzed	Not Analyzed	Not Analyzed	0.00044 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00072 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00079 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00035 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00039 U
TRICHLOROETHANE	MG/KG	0.00046 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0005 U
TRICHLOROETHYLENE (TCE)	MG/KG	0.00082 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0009 U
TRICHLOROFLUOROMETHANE	MG/KG	0.00074 U	Not Analyzed	Not Analyzed	Not Analyzed	0.0008 U
VINYL CHLORIDE	MG/KG	0.00051 U	Not Analyzed	Not Analyzed	Not Analyzed	0.00055 U
XYLENES, TOTAL	MG/KG	0.0017	Not Analyzed	Not Analyzed	Not Analyzed	0.00069 U
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.01 U	0.011 U	0.011 U	0.01 U
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.018 U	0.02 U	0.02 U	0.018 U
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.02 U	0.022 U	0.022 U	0.02 U
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.031 U	0.034 U	0.034 U	0.031 U
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.035 U	0.038 U	0.038 U	0.035 U
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.1 U	0.11 U	0.11 U	0.1 U
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.016 U	0.017 U	0.017 U	0.016 U
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.017 U	0.019 U	0.019 U	0.017 U
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.012 U	0.013 U	0.013 U	0.012 U
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.038 U	0.041 U	0.041 U	0.038 U
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.0088 U	0.2	0.0097 U	0.009 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.039 U	0.043 U	0.043 U	0.039 U
2-NITROANILINE	MG/KG	Not Analyzed	0.0088 U	0.0096 U	0.0097 U	0.0089 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.045 U	0.049 U	0.049 U	0.045 U
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.46 U	0.51 U	0.51 U	0.47 U
3-NITROANILINE	MG/KG	Not Analyzed	0.013 U	0.014 U	0.014 U	0.013 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.052 U	0.057 U	0.057 U	0.053 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.046 U	0.05 U	0.051 U	0.047 U
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.019 U	0.021 U	0.021 U	0.019 U
4-CHLOROANILINE	MG/KG	Not Analyzed	0.027 U	0.03 U	0.03 U	0.028 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.011 U	0.012 U	0.012 U	0.011 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.064 U	0.07 U	0.071 U	0.065 U
4-NITROANILINE	MG/KG	Not Analyzed	0.026 U	0.028 U	0.029 U	0.026 U
4-NITROPHENOL	MG/KG	Not Analyzed	0.26 U	0.28 U	0.29 U	0.26 U
ACENAPHTHENE	MG/KG	Not Analyzed	0.008 U	0.2	0.0088 U	0.0082 U
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0077 U	0.0084 U	0.0085 U	0.0078 U
ANTHRACENE	MG/KG	Not Analyzed	0.0088 U	0.0096 U	0.0097 U	0.057 J
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.012 U	0.013 U	0.013 U	0.17 J
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.011 U	0.012 U	0.012 U	0.13 J
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.0098 U	0.011 U	0.011 U	0.16 J
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.013 U	0.014 U	0.014 U	0.07 J
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.019 U	0.021 U	0.021 U	0.11 J
BENZOIC ACID	MG/KG	Not Analyzed	0.15 U	0.16 U	0.16 U	0.15 U
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.0087 U	0.0095 U	0.0096 U	0.0088 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.021 U	0.023 U	0.023 U	0.022 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0075 U	0.0082 U	0.0083 U	0.0076 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.019 U	0.021 U	0.021 U	0.02 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.0082 U	0.009 U	0.0091 U	0.0084 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.026 U	0.029 U	0.029 U	0.027 U
CARBAZOLE	MG/KG	Not Analyzed	0.012 U	0.055 J	0.014 U	0.013 U
CHRYSENE	MG/KG	Not Analyzed	0.01 U	0.011 U	0.011 U	0.14 J
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.029 U	0.031 U	0.032 U	0.029 U
DIBENZOFURAN	MG/KG	Not Analyzed	0.0092 U	0.047 J	0.01 U	0.0093 U
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.013 U	0.015 U	0.015 U	0.013 U
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.012 U	0.013 U	0.013 U	0.012 U
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.019 U	0.021 U	0.021 U	0.02 U
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.012 U	0.013 U	0.014 U	0.013 U
FLUORANTHENE	MG/KG	Not Analyzed	0.017 U	0.019 U	0.019 U	0.45
FLUORENE	MG/KG	Not Analyzed	0.01 U	0.14 J	0.011 U	0.01 U
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.0098 U	0.011 U	0.011 U	0.01 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.016 U	0.018 U	0.018 U	0.017 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.042 UR	0.046 UR	0.046 UR	0.042 UR
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.0083 U	0.0091 U	0.0091 U	0.0085 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.0093 U	0.01 U	0.01 U	0.064 J
ISOPHORONE	MG/KG	Not Analyzed	0.0075 U	0.0082 U	0.0082 U	0.0076 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.007 U	0.0077 U	0.0077 U	0.0071 U
NITROBENZENE	MG/KG	Not Analyzed	0.011 U	0.012 U	0.012 U	0.011 U
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.0088 U	0.0096 U	0.0097 U	0.0089 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.01 U	0.011 U	0.011 U	0.01 U
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.0087 U	0.0096 U	0.0096 U	0.0089 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.068 U	0.074 U	0.075 U	0.069 U
PHENANTHRENE	MG/KG	Not Analyzed	0.0095 U	0.01 U	0.01 U	0.25
PHENOL	MG/KG	Not Analyzed	0.039 U	0.042 U	0.043 U	0.039 U
PYRENE	MG/KG	Not Analyzed	0.011 U	0.012 U	0.012 U	0.35
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.00037 U	0.0004 U	0.0004 U	0.00036 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.0016 U	0.0017 U	0.0017 U	0.00032 U
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.002 U	0.0022 U	0.0022 U	0.0004 U
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00041 U	0.00044 U	0.00044 U	0.0004 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00039 U	0.00043 U	0.00042 U	0.00038 U
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.0004 U	0.00044 U	0.00044 U	0.0004 U
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00041 U	0.00044 U	0.00044 U	0.0004 U
CHLORDANE	MG/KG	Not Analyzed	0.0038 U	0.0041 U	0.0041 U	0.0037 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.00059 U	0.00065 U	0.00064 U	0.00058 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.00034 U	0.00038 U	0.00037 U	0.00034 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.0019 U	0.0021 U	0.0021 U	0.00038 U

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.0016 U	0.0017 U	0.0017 U	0.00032 U
DIELDRIN	MG/KG	Not Analyzed	0.00039 U	0.00043 U	0.00043 U	0.00039 U
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00041 U	0.00045 U	0.00044 U	0.0004 U
ENDRIN	MG/KG	Not Analyzed	0.0021 U	0.0023 U	0.0023 U	0.0021 U
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00043 U	0.00047 U	0.00046 U	0.00042 U
ENDRIN KETONE	MG/KG	Not Analyzed	0.0004 U	0.00043 U	0.00043 U	0.00039 U
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.0017 U	0.0018 U	0.0018 U	0.00033 U
HEPTACHLOR	MG/KG	Not Analyzed	0.002 U	0.0022 U	0.0022 U	0.00039 U
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.0004 U	0.00044 U	0.00044 U	0.0004 U
METHOXYCHLOR	MG/KG	Not Analyzed	0.0021 U	0.0023 U	0.0023 U	0.0021 U
TOXAPHENE	MG/KG	Not Analyzed	0.0055 U	0.006 U	0.0059 U	0.0054 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0032 U	0.0035 U	0.0035 U	0.0031 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0033 U	0.0036 U	0.0036 U	0.0032 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0033 U	0.0036 U	0.0036 U	0.0032 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.0049 U	0.0054 U	0.0054 U	0.0048 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0041 U	0.0044 U	0.0045 U	0.004 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0038 U	0.0042 U	0.0042 U	0.0038 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.0046 U	0.005 U	0.0051 U	0.0045 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0032 U	0.0035 U	0.0035 U	0.0031 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0032 U	0.0035 U	0.0035 U	0.0031 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.0027 U	0.0029 U	0.0029 U	0.0026 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	Not Analyzed	-0.072 U	0.105 U	0.027 U
CESIUM-137	PCI/G	Not Analyzed	Not Analyzed	0.258	0.082	0.32
COBALT-60	PCI/G	Not Analyzed	Not Analyzed	0.042 U	0.019 U	0.078 U
GROSS ALPHA	PCI/G	Not Analyzed	Not Analyzed	9.34	8.5	11.2
GROSS BETA	PCI/G	Not Analyzed	Not Analyzed	13.8	14.6	13.9
PLUTONIUM-238	PCI/G	Not Analyzed	Not Analyzed	-0.046 UJ	-0.026 UJ	-0.015 U
PLUTONIUM-239/240	PCI/G	Not Analyzed	Not Analyzed	0.017 UJ	-0.025 UJ	0.021 U
POTASSIUM-40	PCI/G	Not Analyzed	Not Analyzed	11.805	11.984	12.118
STRONTIUM-90	PCI/G	Not Analyzed	Not Analyzed	-0.102 U	-0.127 U	0.109 U
URANIUM-232	PCI/G	Not Analyzed	Not Analyzed	-0.035 U	0.16 J	0.021 U
URANIUM-234	PCI/G	Not Analyzed	Not Analyzed	0.624	0.605	0.624
URANIUM-235	PCI/G	Not Analyzed	Not Analyzed	0.075 U	0.113 U	0.07 J
URANIUM-238	PCI/G	Not Analyzed	Not Analyzed	0.384	0.556	0.566
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	Not Analyzed	0.124 U	0.238 U	0.202 U
URANIUM-238	PCI/G	Not Analyzed	Not Analyzed	0.006 U	0 U	0.761 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	8,000	6,200	9,400	6,770
ANTIMONY	MG/KG	Not Analyzed	5.5	4.4	6	0.44 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	12	6.6	6.2	9.1
BARIUM	MG/KG	Not Analyzed	49	33	48	48.6
BERYLLIUM	MG/KG	Not Analyzed	0.31	0.21 J	0.3	0.29
CADMIUM	MG/KG	Not Analyzed	0.18 U	0.17 U	0.18 U	0.086 J
CALCIUM	MG/KG	Not Analyzed	4,200	4,500	7,200	3,970
CHROMIUM, TOTAL	MG/KG	Not Analyzed	9.4	9.3	12	8.3
COBALT	MG/KG	Not Analyzed	6	4.8	6.5	7.6
COPPER	MG/KG	Not Analyzed	18	14	15	27.2
IRON	MG/KG	Not Analyzed	19,000	13,000	18,000	18,600
LEAD	MG/KG	Not Analyzed	8.2	5.7	7.3	11.2
MAGNESIUM	MG/KG	Not Analyzed	3,000	3,200	4,100	3,200
MANGANESE	MG/KG	Not Analyzed	330	210	250	409
MERCURY	MG/KG	Not Analyzed	0.0031 J	0.0052 J	0.0044 J	0.002 J
NICKEL	MG/KG	Not Analyzed	16	13	17	15.3
POTASSIUM	MG/KG	Not Analyzed	1,200	1,300	1,500	828 J
SELENIUM	MG/KG	Not Analyzed	0.22 J	0.11 U	0.24 J	0.7 U
SILVER	MG/KG	Not Analyzed	0.047 U	0.046 U	0.089 U	0.27 J
SODIUM	MG/KG	Not Analyzed	140	110	130	83 U
THALLIUM	MG/KG	Not Analyzed	0.8 J	0.43 U	0.44 U	0.62 U
VANADIUM	MG/KG	Not Analyzed	13	15	18	10.7
ZINC	MG/KG	Not Analyzed	57	46	50	130

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-002A	SD-003	SD-003	SD-003	SD-003
Field Sample Identifier		SVD-SD002 (13-13.5)	SVD-SD003 (0-6)	SVD-SD003 (12-18)	SVD-SD003 (18-22)	SVD-SD003 (2-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		13.0-13.5	0.0-6.0	12.0-18.0	18.0-22.0	2.0-6.0
Date of Sample		07/18/18	07/13/18	07/13/18	07/13/18	07/17/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.011 U	0.011 U	0.01 U	0.011 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.0017 U	0.0017 U	0.0016 U	0.0017 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.013 U	0.012 U	0.012 U	0.012 U
DALAPON	MG/KG	Not Analyzed	0.0033 U	0.0033 U	0.0031 U	0.0033 U
DICAMBA	MG/KG	Not Analyzed	0.0026 U	0.0026 U	0.0025 U	0.0026 U
DICHLOROPROP	MG/KG	Not Analyzed	0.011 U	0.011 U	0.01 U	0.011 U
DINOSEB	MG/KG	Not Analyzed	0.0072 U	0.0071 U	0.0068 U	0.0072 U
MCPA	MG/KG	Not Analyzed	1.6 U	1.6 U	1.6 U	1.6 U
MCPP	MG/KG	Not Analyzed	1.7 U	1.7 U	1.6 U	1.7 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0013 U	0.0013 U	0.0013 U	0.0013 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0031 U	0.0031 U	0.003 U	0.0031 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.35 U	0.4 U	0.4 U	0.36 U
PERCENT MOISTURE	PERCENT	7.6	8.8	17	17	14
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	3,500	2,800 J	6,000	2,200 J

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00062 U	0.00068 U	0.00068 U
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00041 U	0.00048 U	0.00043 U	0.00047 U	0.00047 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00081 U	0.00094 U	0.00084 U	0.00092 U	0.00092 U
1,1,2-TRICHLOROETHANE	MG/KG	0.00036 U	0.00042 U	0.00037 U	0.00041 U	0.00041 U
1,1-DICHLOROETHANE	MG/KG	0.00041 U	0.00047 U	0.00042 U	0.00046 U	0.00046 U
1,1-DICHLOROETHENE	MG/KG	0.00069 U	0.00081 U	0.00072 U	0.00079 U	0.00079 U
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.0006 U	0.00065 U	0.00065 U
1,2,3-TRICHLOROBENZENE	MG/KG	0.0011 U	0.0012 U	0.0011 U	0.0012 U	0.0021 J
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.00061 U	0.00067 U	0.00067 U
1,2,4-TRICHLOROBENZENE	MG/KG	0.0011 U	0.0012 U	0.0011 U	0.0012 U	0.0029 J
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0007 U	0.00076 U	0.0037
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.00088 U	0.001 U	0.00092 U	0.001 U	0.001 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00034 U	0.0004 U	0.00036 U	0.00039 U	0.00039 U
1,2-DICHLOROBENZENE	MG/KG	0.00032 U	0.00038 U	0.00033 U	0.00037 U	0.00099 J
1,2-DICHLOROETHANE	MG/KG	0.0005 U	0.00058 U	0.00052 U	0.00056 U	0.00056 U
1,2-DICHLOROPROPANE	MG/KG	0.00043 U	0.0005 U	0.00045 U	0.00049 U	0.00049 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.00043 U	0.0018 J
1,3-DICHLOROBENZENE	MG/KG	0.00038 U	0.00044 U	0.00039 U	0.00043 U	0.0015
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00044 U	0.00044 U
1,4-DICHLOROBENZENE	MG/KG	0.00036 U	0.00042 U	0.00038 U	0.00041 U	0.0017
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.00047 U	0.00052 U	0.00052 U

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	0.00046 U	0.0008 J
2-HEXANONE	MG/KG	0.0013 U	0.0016 U	0.0014 U	0.0015 U	0.0015 U
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.00062 U	0.00067 U	0.0014 J
ACETONE	MG/KG	0.0053 U	0.0062 U	0.0055 U	0.006 U	0.122
BENZENE	MG/KG	0.0004 U	0.00046 U	0.00041 U	0.00045 U	0.00045 U
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	0.00048 U	0.00059 J
BROMOCHLOROMETHANE	MG/KG	0.00046 U	0.00053 U	0.00047 U	0.00052 U	0.00052 U
BROMODICHLOROMETHANE	MG/KG	0.00047 U	0.00055 U	0.00049 U	0.00053 U	0.00053 U
BROMOFORM	MG/KG	0.00043 U	0.0005 U	0.00044 U	0.00048 U	0.00048 U
BROMOMETHANE	MG/KG	0.0011 U	0.0012 U	0.0011 U	0.0012 U	0.0012 U
CARBON DISULFIDE	MG/KG	0.00098 U	0.0011 U	0.001 U	0.0011 U	0.0024
CARBON TETRACHLORIDE	MG/KG	0.00058 U	0.00068 U	0.0006 U	0.00066 U	0.00066 U
CHLOROBENZENE	MG/KG	0.00037 U	0.00044 U	0.00039 U	0.00043 U	0.00054 J
CHLOROETHANE	MG/KG	0.00073 U	0.00085 U	0.00075 U	0.00083 U	0.00083 U
CHLOROFORM	MG/KG	0.00039 U	0.00046 U	0.00041 U	0.00045 U	0.00045 U
CHLOROMETHANE	MG/KG	0.0021 U	0.0024 U	0.0021 U	0.0024 U	0.0024 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.001 U	0.0012 U	0.001 U	0.0011 U	0.0011 U
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00037 U	0.00043 U	0.00039 U	0.00042 U	0.00042 U
CYCLOHEXANE	MG/KG	0.00043 U	0.0005 U	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	0.00036 U	0.00042 U	0.00037 U	0.00041 U	0.00041 U
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00037 U	0.00041 U	0.00041 U

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00067 U	0.00078 U	0.0007 U	0.00076 U	0.00076 U
ETHYLBENZENE	MG/KG	0.00058 U	0.00068 U	0.00061 U	0.00066 U	0.00066 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.00055 U	0.0006 U	0.0021 J
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00074 U	0.00086 U	0.00076 U	0.00084 U	0.00084 U
M+P-XYLENE	MG/KG	0.00079 U	0.00092 U	0.00082 U	0.0009 U	0.0017
METHYL ACETATE	MG/KG	0.0015 U	0.0017 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.004 U	0.0046 U	0.0041 U	0.0045 U	0.0045 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0017 U	0.0019 U	0.0017 U	0.0019 U	0.0019 U
METHYLCYCLOHEXANE	MG/KG	0.00075 U	0.00087 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	0.0077	0.0031 U	0.0027 U	0.0036 J	0.003 U
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0022 U	0.0024 U	0.0024 U
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00045 U	0.00049 U	0.0021 J
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	0.00037 U	0.001 J
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00062 U	0.00072 U	0.00064 U	0.0007 U	0.0007 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	0.00035 U	0.00039 U	0.0014 J
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00044 U	0.00074 J
STYRENE	MG/KG	0.00061 U	0.00071 U	0.00063 U	0.00069 U	0.00069 U
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	0.00042 U	0.00042 U
TERT-BUTYL METHYL ETHER	MG/KG	0.00037 U	0.00043 U	0.00039 U	0.00042 U	0.00042 U
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00049 U	0.00057 U	0.00051 U	0.00055 U	0.00094 J
TOLUENE	MG/KG	0.0004 U	0.00046 U	0.00041 U	0.00045 U	0.00066 J

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00071 U	0.00082 U	0.00073 U	0.0008 U	0.0008 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00035 U	0.0004 U	0.00036 U	0.00039 U	0.00039 U
TRICHLOROETHANE	MG/KG	0.00045 U	0.00052 U	0.00047 U	0.00051 U	0.00051 U
TRICHLOROETHYLENE (TCE)	MG/KG	0.00081 U	0.00094 U	0.00084 U	0.00092 U	0.00092 U
TRICHLOROFLUOROMETHANE	MG/KG	0.00072 U	0.00084 U	0.00075 U	0.00082 U	0.00082 U
VINYL CHLORIDE	MG/KG	0.0005 U	0.00058 U	0.00051 U	0.00056 U	0.00056 U
XYLENES, TOTAL	MG/KG	0.00062 U	0.00072 U	0.00064 U	0.0007 U	0.0017
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.0097 U	0.01 U	Not Analyzed	0.011 U	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	0.017 U	0.018 U	Not Analyzed	0.019 U	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	0.019 U	0.02 U	Not Analyzed	0.022 U	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	0.03 U	0.031 U	Not Analyzed	0.034 U	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	0.033 U	0.035 U	Not Analyzed	0.038 U	Not Analyzed
2,4-DINITROPHENOL	MG/KG	0.098 U	0.1 U	Not Analyzed	0.11 U	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	0.015 U	0.016 U	Not Analyzed	0.017 U	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	0.016 U	0.017 U	Not Analyzed	0.019 U	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	0.012 U	0.012 U	Not Analyzed	0.013 U	Not Analyzed
2-CHLOROPHENOL	MG/KG	0.036 U	0.038 U	Not Analyzed	0.041 U	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	0.0085 U	0.0089 U	Not Analyzed	0.0096 U	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.037 U	0.039 U	Not Analyzed	0.042 U	Not Analyzed
2-NITROANILINE	MG/KG	0.0084 U	0.0088 U	Not Analyzed	0.0096 U	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.043 U	0.045 U	Not Analyzed	0.049 U	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	0.44 U	0.46 U	Not Analyzed	0.5 U	Not Analyzed
3-NITROANILINE	MG/KG	0.012 U	0.013 U	Not Analyzed	0.014 U	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.05 U	0.052 U	Not Analyzed	0.057 U	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.044 U	0.046 U	Not Analyzed	0.05 U	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	0.018 U	0.019 U	Not Analyzed	0.021 U	Not Analyzed
4-CHLOROANILINE	MG/KG	0.026 U	0.027 U	Not Analyzed	0.03 U	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.01 U	0.011 U	Not Analyzed	0.012 U	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.062 U	0.064 U	Not Analyzed	0.07 U	Not Analyzed
4-NITROANILINE	MG/KG	0.025 U	0.026 U	Not Analyzed	0.028 U	Not Analyzed
4-NITROPHENOL	MG/KG	0.25 U	0.26 U	Not Analyzed	0.28 U	Not Analyzed
ACENAPHTHENE	MG/KG	0.0077 U	0.008 U	Not Analyzed	0.0087 U	Not Analyzed
ACENAPHTHYLENE	MG/KG	0.0074 U	0.0077 U	Not Analyzed	0.0084 U	Not Analyzed
ANTHRACENE	MG/KG	0.0084 U	0.0088 U	Not Analyzed	0.0096 U	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	0.011 U	0.012 U	Not Analyzed	0.013 U	Not Analyzed
BENZO(A)PYRENE	MG/KG	0.01 U	0.011 U	Not Analyzed	0.012 U	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	0.0094 U	0.0099 U	Not Analyzed	0.011 U	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	0.012 U	0.013 U	Not Analyzed	0.014 U	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	0.018 U	0.019 U	Not Analyzed	0.02 U	Not Analyzed
BENZOIC ACID	MG/KG	0.14 U	0.15 U	Not Analyzed	0.16 U	Not Analyzed
BENZYL ALCOHOL	MG/KG	0.0083 U	0.0087 U	Not Analyzed	0.0095 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.02 U	0.021 U	Not Analyzed	0.023 U	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0072 U	0.0075 U	Not Analyzed	0.0082 U	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.019 U	0.019 U	Not Analyzed	0.021 U	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.0079 U	0.0083 U	Not Analyzed	0.009 U	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.025 U	0.027 U	Not Analyzed	0.029 U	Not Analyzed
CARBAZOLE	MG/KG	0.012 U	0.012 U	Not Analyzed	0.014 U	Not Analyzed
CHRYSENE	MG/KG	0.0097 U	0.01 U	Not Analyzed	0.011 U	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	0.027 U	0.029 U	Not Analyzed	0.031 U	Not Analyzed
DIBENZOFURAN	MG/KG	0.0088 U	0.0092 U	Not Analyzed	0.01 U	Not Analyzed
DIETHYL PHTHALATE	MG/KG	0.013 U	0.013 U	Not Analyzed	0.014 U	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	0.012 U	0.012 U	Not Analyzed	0.013 U	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	0.019 U	0.02 U	Not Analyzed	0.021 U	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	0.012 U	0.012 U	Not Analyzed	0.013 U	Not Analyzed
FLUORANTHENE	MG/KG	0.017 U	0.017 U	Not Analyzed	0.019 U	Not Analyzed
FLUORENE	MG/KG	0.0097 U	0.01 U	Not Analyzed	0.011 U	Not Analyzed
HEXACHLOROBENZENE	MG/KG	0.0094 U	0.0098 U	Not Analyzed	0.011 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	0.016 U	0.017 U	Not Analyzed	0.018 U	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.04 UR	0.042 UR	Not Analyzed	0.045 UR	Not Analyzed
HEXACHLOROETHANE	MG/KG	0.008 U	0.0083 U	Not Analyzed	0.0091 U	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.0089 U	0.0093 U	Not Analyzed	0.01 U	Not Analyzed
ISOPHORONE	MG/KG	0.0072 U	0.0075 U	Not Analyzed	0.0082 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.0067 U	0.007 U	Not Analyzed	0.0076 U	Not Analyzed
NITROBENZENE	MG/KG	0.011 U	0.011 U	Not Analyzed	0.012 U	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	0.0084 U	0.0088 U	Not Analyzed	0.0096 U	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.0096 U	0.01 U	Not Analyzed	0.011 U	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	0.0084 U	0.0088 U	Not Analyzed	0.0095 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	0.065 U	0.068 U	Not Analyzed	0.074 U	Not Analyzed
PHENANTHRENE	MG/KG	0.0091 U	0.0096 U	Not Analyzed	0.01 U	Not Analyzed
PHENOL	MG/KG	0.037 U	0.039 U	Not Analyzed	0.042 U	Not Analyzed
PYRENE	MG/KG	0.011 U	0.011 U	Not Analyzed	0.012 U	Not Analyzed
PESTICIDES						
ALDRIN	MG/KG	0.00036 U	0.00036 U	Not Analyzed	0.0004 U	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00031 U	0.00031 U	Not Analyzed	0.0017 U	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	0.0004 U	0.0004 U	Not Analyzed	0.0022 U	Not Analyzed
ALPHA-CHLORDANE	MG/KG	0.0004 U	0.0004 U	Not Analyzed	0.00045 U	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00038 U	0.00038 U	Not Analyzed	0.00043 U	Not Analyzed
BETA ENDOSULFAN	MG/KG	0.00039 U	0.0004 U	Not Analyzed	0.00044 U	Not Analyzed
BETA-CHLORDANE	MG/KG	0.0004 U	0.0004 U	Not Analyzed	0.00045 U	Not Analyzed
CHLORDANE	MG/KG	0.0037 U	0.0037 U	Not Analyzed	0.0042 U	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.00058 U	0.00058 U	Not Analyzed	0.00065 U	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.0008 J	0.00034 U	Not Analyzed	0.00038 U	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.0016	0.00038 U	Not Analyzed	0.0021 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00031 U	0.00031 U	Not Analyzed	0.0017 U	Not Analyzed
DIELDRIN	MG/KG	0.00038 U	0.00039 U	Not Analyzed	0.00043 U	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	0.0004 U	0.0004 U	Not Analyzed	0.00045 U	Not Analyzed
ENDRIN	MG/KG	0.002 U	0.002 U	Not Analyzed	0.0023 U	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	0.00041 U	0.0021 U	Not Analyzed	0.00047 U	Not Analyzed
ENDRIN KETONE	MG/KG	0.00039 U	0.002 U	Not Analyzed	0.00044 U	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	0.00032 U	0.00033 U	Not Analyzed	0.0018 U	Not Analyzed
HEPTACHLOR	MG/KG	0.00039 U	0.00039 U	Not Analyzed	0.0022 U	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	0.00039 U	0.0004 U	Not Analyzed	0.00044 U	Not Analyzed
METHOXYCHLOR	MG/KG	0.002 U	0.002 U	Not Analyzed	0.0023 U	Not Analyzed
TOXAPHENE	MG/KG	0.0053 U	0.0054 U	Not Analyzed	0.006 U	Not Analyzed
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0031 U	0.0031 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0032 U	0.0032 U	Not Analyzed	0.0036 U	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0032 U	0.0032 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0048 U	0.0048 U	Not Analyzed	0.0053 U	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0039 U	0.004 U	Not Analyzed	0.0044 U	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0037 U	0.0038 U	Not Analyzed	0.0042 U	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0045 U	0.0045 U	Not Analyzed	0.005 U	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0031 U	0.0031 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0031 U	0.0031 U	Not Analyzed	0.0035 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.0026 U	0.0026 U	Not Analyzed	0.0029 U	Not Analyzed
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.075 U	0.009 U	0.02 U	0.022 U	Not Analyzed
CESIUM-137	PCI/G	0.258	0.382	0.283	0.221	Not Analyzed
COBALT-60	PCI/G	0.099 U	0.028 U	0.031 U	0.027 U	Not Analyzed
GROSS ALPHA	PCI/G	10.6	7.44	14.7	9.65	Not Analyzed
GROSS BETA	PCI/G	10	10	7	11.4	Not Analyzed
PLUTONIUM-238	PCI/G	0.029 U	-0.045 U	-0.012 U	-0.01 U	Not Analyzed
PLUTONIUM-239/240	PCI/G	-0.006 U	-0.006 U	0.017 J	0.01 U	Not Analyzed
POTASSIUM-40	PCI/G	11.603	10.047	11.114	8.996	Not Analyzed
STRONTIUM-90	PCI/G	0.145 U	-0.006 U	-0.054 U	0.062 U	Not Analyzed
URANIUM-232	PCI/G	0.011 U	0.104 J	0.044 U	0.029 U	Not Analyzed
URANIUM-234	PCI/G	0.465	0.387	0.7	0.838	Not Analyzed
URANIUM-235	PCI/G	0.112 J	0.153 J	0.128 J	0.186 J	Not Analyzed
URANIUM-238	PCI/G	0.395	0.524	0.598	0.558	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0 U	0 U	0.194 U	0 U	Not Analyzed
URANIUM-238	PCI/G	1.266 U	0.732 U	0.387 U	0.695 U	Not Analyzed
METALS						
ALUMINUM	MG/KG	5,650	6,040	Not Analyzed	6,100	Not Analyzed
ANTIMONY	MG/KG	0.41 U	0.44 U	Not Analyzed	4.4	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	6.7	6.1	Not Analyzed	5	Not Analyzed
BARIUM	MG/KG	45.3	51	Not Analyzed	34	Not Analyzed
BERYLLIUM	MG/KG	0.26	0.3	Not Analyzed	0.21 J	Not Analyzed
CADMIUM	MG/KG	0.081 J	0.075 U	Not Analyzed	0.19 U	Not Analyzed
CALCIUM	MG/KG	8,860	3,850	Not Analyzed	3,700	Not Analyzed
CHROMIUM, TOTAL	MG/KG	6.8	6.7	Not Analyzed	7.1	Not Analyzed
COBALT	MG/KG	4.6 J	5.1 J	Not Analyzed	5	Not Analyzed
COPPER	MG/KG	13.5	13.2	Not Analyzed	13	Not Analyzed
IRON	MG/KG	14,500	15,100	Not Analyzed	15,000	Not Analyzed
LEAD	MG/KG	6.4	5.9	Not Analyzed	3.4 J	Not Analyzed
MAGNESIUM	MG/KG	3,350	2,910	Not Analyzed	2,500	Not Analyzed
MANGANESE	MG/KG	374	389	Not Analyzed	210	Not Analyzed
MERCURY	MG/KG	0.003 J	0.0016 J	Not Analyzed	0.0031 J	Not Analyzed
NICKEL	MG/KG	12.4	13.2	Not Analyzed	13	Not Analyzed
POTASSIUM	MG/KG	740 J	712 J	Not Analyzed	890	Not Analyzed
SELENIUM	MG/KG	0.66 U	0.7 U	Not Analyzed	0.15 J	Not Analyzed
SILVER	MG/KG	0.18 J	0.18 J	Not Analyzed	0.065 J	Not Analyzed
SODIUM	MG/KG	79 U	116 J	Not Analyzed	130	Not Analyzed
THALLIUM	MG/KG	0.59 U	0.62 U	Not Analyzed	0.93 J	Not Analyzed
VANADIUM	MG/KG	8.6	9.2	Not Analyzed	10	Not Analyzed
ZINC	MG/KG	47.9	56.2	Not Analyzed	41	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-003	SD-003	SD-004	SD-004	SD-004
Field Sample Identifier		SVD-SD003 (6-12)	SVD-SD003 (12-16.9)	SVD-SD004 (0-6)	SVD-SD004 (6-12)	SVD-SD004 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-16.9	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/17/18	07/17/18	07/13/18	07/13/18	07/13/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	0.01 U	0.01 U	Not Analyzed	0.01 U	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.0016 U	0.0016 U	Not Analyzed	0.0016 U	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.012 U	0.012 U	Not Analyzed	0.012 U	Not Analyzed
DALAPON	MG/KG	0.0031 U	0.0031 U	Not Analyzed	0.0032 U	Not Analyzed
DICAMBA	MG/KG	0.0025 U	0.0025 U	Not Analyzed	0.0025 U	Not Analyzed
DICHLOROPROP	MG/KG	0.01 U	0.01 U	Not Analyzed	0.01 U	Not Analyzed
DINOSEB	MG/KG	0.0067 U	0.0067 U	Not Analyzed	0.0069 U	Not Analyzed
MCPA	MG/KG	1.5 U	1.5 U	Not Analyzed	1.6 U	Not Analyzed
MCPP	MG/KG	1.6 U	1.6 U	Not Analyzed	1.6 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	0.0012 U	0.0012 U	Not Analyzed	0.0013 U	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	0.0029 U	0.0029 U	Not Analyzed	0.003 U	Not Analyzed
MISCELLANEOUS						
CYANIDE	MG/KG	0.36 U	0.37 U	Not Analyzed	0.39 U	Not Analyzed
PERCENT MOISTURE	PERCENT	Not Analyzed	19	Not Analyzed	17	Not Analyzed
TOTAL ORGANIC CARBON	MG/KG	1,200 J	2,600 J	Not Analyzed	12,000	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	0.00069 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00047 U	Not Analyzed	0.00049 U	Not Analyzed	0.00045 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00092 U	Not Analyzed	0.00095 U	Not Analyzed	0.00087 U
1,1,2-TRICHLOROETHANE	MG/KG	0.00041 U	Not Analyzed	0.00043 U	Not Analyzed	0.00039 U
1,1-DICHLOROETHANE	MG/KG	0.00047 U	Not Analyzed	0.00048 U	Not Analyzed	0.00044 U
1,1-DICHLOROETHENE	MG/KG	0.00079 U	Not Analyzed	0.00082 U	Not Analyzed	0.00075 U
1,1-DICHLOROPROPENE	MG/KG	0.00066 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0012 U	Not Analyzed	0.0013 U	Not Analyzed	0.0011 U
1,2,3-TRICHLOROPROPANE	MG/KG	0.00067 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0012 U	Not Analyzed	0.0013 U	Not Analyzed	0.0011 U
1,2,4-TRIMETHYLBENZENE	MG/KG	0.00077 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.001 U	Not Analyzed	0.001 U	Not Analyzed	0.00096 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00039 U	Not Analyzed	0.00041 U	Not Analyzed	0.00037 U
1,2-DICHLOROBENZENE	MG/KG	0.00037 U	Not Analyzed	0.00038 U	Not Analyzed	0.00035 U
1,2-DICHLOROETHANE	MG/KG	0.00057 U	Not Analyzed	0.00059 U	Not Analyzed	0.00054 U
1,2-DICHLOROPROPANE	MG/KG	0.00049 U	Not Analyzed	0.00051 U	Not Analyzed	0.00047 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	0.00043 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00043 U	Not Analyzed	0.00045 U	Not Analyzed	0.00041 U
1,3-DICHLOROPROPANE	MG/KG	0.00044 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00042 U	Not Analyzed	0.00043 U	Not Analyzed	0.00039 U
2,2-DICHLOROPROPANE	MG/KG	0.00052 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	0.00046 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.0015 U	Not Analyzed	0.0016 U	Not Analyzed	0.0015 U
4-CHLOROTOLUENE	MG/KG	0.00068 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.0946	Not Analyzed	0.0063 U	Not Analyzed	0.073
BENZENE	MG/KG	0.00046 U	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U
BROMOBENZENE	MG/KG	0.00048 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00052 U	Not Analyzed	0.00054 U	Not Analyzed	0.00049 U
BROMODICHLOROMETHANE	MG/KG	0.00054 U	Not Analyzed	0.00056 U	Not Analyzed	0.00051 U
BROMOFORM	MG/KG	0.00049 U	Not Analyzed	0.0005 U	Not Analyzed	0.00046 U
BROMOMETHANE	MG/KG	0.0012 U	Not Analyzed	0.0012 U	Not Analyzed	0.0011 U
CARBON DISULFIDE	MG/KG	0.0085	Not Analyzed	0.0012 U	Not Analyzed	0.0024
CARBON TETRACHLORIDE	MG/KG	0.00066 U	Not Analyzed	0.00069 U	Not Analyzed	0.00063 U
CHLOROBENZENE	MG/KG	0.00043 U	Not Analyzed	0.00044 U	Not Analyzed	0.0004 U
CHLOROETHANE	MG/KG	0.00083 U	Not Analyzed	0.00086 U	Not Analyzed	0.00078 U
CHLOROFORM	MG/KG	0.00045 U	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U
CHLOROMETHANE	MG/KG	0.0024 U	Not Analyzed	0.0025 U	Not Analyzed	0.0022 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0012 U	Not Analyzed	0.0012 U	Not Analyzed	0.0011 U
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00043 U	Not Analyzed	0.00044 U	Not Analyzed	0.0004 U
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00051 U	Not Analyzed	0.00046 U
DIBROMOCHLOROMETHANE	MG/KG	0.00041 U	Not Analyzed	0.00042 U	Not Analyzed	0.00039 U
DIBROMOMETHANE	MG/KG	0.00041 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00077 U	Not Analyzed	0.0008 U	Not Analyzed	0.00073 U
ETHYLBENZENE	MG/KG	0.00067 U	Not Analyzed	0.00069 U	Not Analyzed	0.00063 U
HEXACHLOROBUTADIENE	MG/KG	0.00061 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00084 U	Not Analyzed	0.00087 U	Not Analyzed	0.0008 U
M+P-XYLENE	MG/KG	0.0009 U	Not Analyzed	0.00093 U	Not Analyzed	0.00085 U
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	0.0017 U	Not Analyzed	0.0016 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0133	Not Analyzed	0.0047 U	Not Analyzed	0.0119
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0019 U	Not Analyzed	0.002 U	Not Analyzed	0.0018 U
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00089 U	Not Analyzed	0.00081 U
METHYLENE CHLORIDE	MG/KG	0.0033 J	Not Analyzed	0.0031 U	Not Analyzed	0.0063
NAPHTHALENE	MG/KG	0.0024 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	0.00049 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	0.00038 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.0007 U	Not Analyzed	0.00073 U	Not Analyzed	0.00067 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	0.00039 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	0.00044 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00069 U	Not Analyzed	0.00072 U	Not Analyzed	0.00066 U
T-BUTYLBENZENE	MG/KG	0.00042 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00043 U	Not Analyzed	0.00044 U	Not Analyzed	0.0004 U
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00056 U	Not Analyzed	0.0014 J	Not Analyzed	0.00081 J
TOLUENE	MG/KG	0.00045 U	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00081 U	Not Analyzed	0.00084 U	Not Analyzed	0.00076 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00039 U	Not Analyzed	0.00041 U	Not Analyzed	0.00037 U
TRICHLOROETHANE	MG/KG	0.00051 U	Not Analyzed	0.00053 U	Not Analyzed	0.00049 U
TRICHLOROETHYLENE (TCE)	MG/KG	0.00092 U	Not Analyzed	0.00095 U	Not Analyzed	0.00087 U
TRICHLOROFLUOROMETHANE	MG/KG	0.00082 U	Not Analyzed	0.00085 U	Not Analyzed	0.00078 U
VINYL CHLORIDE	MG/KG	0.00057 U	Not Analyzed	0.00059 U	Not Analyzed	0.00054 U
XYLENES, TOTAL	MG/KG	0.0007 U	Not Analyzed	0.00073 U	Not Analyzed	0.00067 U
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.012 UJ	Not Analyzed	0.0098 UJ	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.021 UJ	Not Analyzed	0.017 UJ	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.023 UJ	Not Analyzed	0.02 UJ	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.036 UJ	Not Analyzed	0.03 UJ	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.04 UJ	Not Analyzed	0.034 UJ	Not Analyzed
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.12 UJ	Not Analyzed	0.1 UJ	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.018 UJ	Not Analyzed	0.015 UJ	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.02 UJ	Not Analyzed	0.017 UJ	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.014 UJ	Not Analyzed	0.012 UJ	Not Analyzed
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.043 UJ	Not Analyzed	0.037 UJ	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0086 UJ	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.045 UJ	Not Analyzed	0.038 UJ	Not Analyzed
2-NITROANILINE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0086 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.051 UJ	Not Analyzed	0.044 UJ	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.53 UR	Not Analyzed	0.45 UR	Not Analyzed
3-NITROANILINE	MG/KG	Not Analyzed	0.015 UJ	Not Analyzed	0.012 UJ	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.06 UJ	Not Analyzed	0.051 UJ	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.053 UJ	Not Analyzed	0.045 UJ	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.022 UJ	Not Analyzed	0.018 UJ	Not Analyzed
4-CHLOROANILINE	MG/KG	Not Analyzed	0.031 UJ	Not Analyzed	0.026 UJ	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.011 UJ	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.074 UJ	Not Analyzed	0.063 UJ	Not Analyzed
4-NITROANILINE	MG/KG	Not Analyzed	0.03 UJ	Not Analyzed	0.025 UJ	Not Analyzed
4-NITROPHENOL	MG/KG	Not Analyzed	0.3 UJ	Not Analyzed	0.25 UJ	Not Analyzed
ACENAPHTHENE	MG/KG	Not Analyzed	0.011 J	Not Analyzed	0.0078 UJ	Not Analyzed
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0088 UJ	Not Analyzed	0.0075 UJ	Not Analyzed
ANTHRACENE	MG/KG	Not Analyzed	0.029 J	Not Analyzed	0.0086 UJ	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.065 J	Not Analyzed	0.012 UJ	Not Analyzed
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.054 J	Not Analyzed	0.011 UJ	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.088 J	Not Analyzed	0.0096 UJ	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.021 J	Not Analyzed	0.012 UJ	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.028 J	Not Analyzed	0.018 UJ	Not Analyzed
BENZOIC ACID	MG/KG	Not Analyzed	0.17 UJ	Not Analyzed	0.14 UJ	Not Analyzed
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0085 UJ	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.025 UJ	Not Analyzed	0.021 UJ	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0086 UJ	Not Analyzed	0.0073 UJ	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.022 UJ	Not Analyzed	0.019 UJ	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.0095 UJ	Not Analyzed	0.008 UJ	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.03 UJ	Not Analyzed	0.026 UJ	Not Analyzed
CARBAZOLE	MG/KG	Not Analyzed	0.014 UJ	Not Analyzed	0.012 UJ	Not Analyzed
CHRYSENE	MG/KG	Not Analyzed	0.068 J	Not Analyzed	0.0099 UJ	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.033 UJ	Not Analyzed	0.028 UJ	Not Analyzed
DIBENZOFURAN	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.009 UJ	Not Analyzed
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.015 UJ	Not Analyzed	0.013 UJ	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.014 UJ	Not Analyzed	0.012 UJ	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.022 UJ	Not Analyzed	0.019 UJ	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.014 UJ	Not Analyzed	0.012 UJ	Not Analyzed
FLUORANTHENE	MG/KG	Not Analyzed	0.19 J	Not Analyzed	0.017 UJ	Not Analyzed
FLUORENE	MG/KG	Not Analyzed	0.015 J	Not Analyzed	0.0099 UJ	Not Analyzed
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.0095 UJ	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.019 UJ	Not Analyzed	0.016 UJ	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.048 UJ	Not Analyzed	0.041 UJ	Not Analyzed
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.0096 UJ	Not Analyzed	0.0081 UJ	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.017 J	Not Analyzed	0.009 UJ	Not Analyzed
ISOPHORONE	MG/KG	Not Analyzed	0.0086 UJ	Not Analyzed	0.0073 UJ	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.0081 UJ	Not Analyzed	0.0068 UJ	Not Analyzed
NITROBENZENE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.011 UJ	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0086 UJ	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.012 UJ	Not Analyzed	0.0098 UJ	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0085 UJ	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.078 UJ	Not Analyzed	0.066 UJ	Not Analyzed
PHENANTHRENE	MG/KG	Not Analyzed	0.12 J	Not Analyzed	0.0095 J	Not Analyzed
PHENOL	MG/KG	Not Analyzed	0.045 UJ	Not Analyzed	0.038 UJ	Not Analyzed
PYRENE	MG/KG	Not Analyzed	0.14 J	Not Analyzed	0.011 UJ	Not Analyzed
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00035 U	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00036 U	Not Analyzed	0.00031 U	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.00046 UJ	Not Analyzed	0.00039 U	Not Analyzed
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00038 U	Not Analyzed
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.00046 UJ	Not Analyzed	0.00039 U	Not Analyzed
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00039 U	Not Analyzed
CHLORDANE	MG/KG	Not Analyzed	0.0043 U	Not Analyzed	0.0037 U	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.00067 U	Not Analyzed	0.00057 U	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.00039 U	Not Analyzed	0.00033 U	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00037 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00036 UJ	Not Analyzed	0.00031 U	Not Analyzed
DIELDRIN	MG/KG	Not Analyzed	0.00044 UJ	Not Analyzed	0.00038 U	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00046 UJ	Not Analyzed	0.00039 U	Not Analyzed
ENDRIN	MG/KG	Not Analyzed	0.00047 UJ	Not Analyzed	0.0004 U	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00048 UJ	Not Analyzed	0.00041 U	Not Analyzed
ENDRIN KETONE	MG/KG	Not Analyzed	0.00045 UJ	Not Analyzed	0.00038 U	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00032 U	Not Analyzed
HEPTACHLOR	MG/KG	Not Analyzed	0.00045 U	Not Analyzed	0.00038 U	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.00045 U	Not Analyzed	0.00039 U	Not Analyzed
METHOXYCHLOR	MG/KG	Not Analyzed	0.00047 UJ	Not Analyzed	0.0004 U	Not Analyzed
TOXAPHENE	MG/KG	Not Analyzed	0.0061 U	Not Analyzed	0.0053 U	Not Analyzed
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0032 U	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0031 U	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.0055 U	Not Analyzed	0.0047 U	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0046 U	Not Analyzed	0.0039 U	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0043 U	Not Analyzed	0.0037 U	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.0052 U	Not Analyzed	0.0044 U	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0036 U	Not Analyzed	0.0031 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.003 U	Not Analyzed	0.0026 U	Not Analyzed
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	0.019 U	Not Analyzed	-0.03 U	Not Analyzed
CESIUM-137	PCI/G	Not Analyzed	0.617	Not Analyzed	0.151	Not Analyzed
COBALT-60	PCI/G	Not Analyzed	0.134 U	Not Analyzed	0.064 U	Not Analyzed
GROSS ALPHA	PCI/G	Not Analyzed	16.7	Not Analyzed	4.58	Not Analyzed
GROSS BETA	PCI/G	Not Analyzed	13.4	Not Analyzed	9.87	Not Analyzed
PLUTONIUM-238	PCI/G	Not Analyzed	0.008 U	Not Analyzed	0.004 U	Not Analyzed
PLUTONIUM-239/240	PCI/G	Not Analyzed	0.006 U	Not Analyzed	0.015 U	Not Analyzed
POTASSIUM-40	PCI/G	Not Analyzed	14.173	Not Analyzed	9.34	Not Analyzed
STRONTIUM-90	PCI/G	Not Analyzed	0.103 U	Not Analyzed	0.002 U	Not Analyzed
URANIUM-232	PCI/G	Not Analyzed	0.044 J	Not Analyzed	-0.022 U	Not Analyzed
URANIUM-234	PCI/G	Not Analyzed	0.46	Not Analyzed	0.689	Not Analyzed
URANIUM-235	PCI/G	Not Analyzed	0.15 J	Not Analyzed	0.031 U	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed	0.525	Not Analyzed	0.414	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	0.193 U	Not Analyzed	0.005 U	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed	0.634 U	Not Analyzed	1.1	Not Analyzed
METALS						
ALUMINUM	MG/KG	Not Analyzed	6,700	Not Analyzed	5,570	Not Analyzed
ANTIMONY	MG/KG	Not Analyzed	0.47 U	Not Analyzed	0.44 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	6.8	Not Analyzed	7.4	Not Analyzed
BARIUM	MG/KG	Not Analyzed	51.5	Not Analyzed	35.2	Not Analyzed
BERYLLIUM	MG/KG	Not Analyzed	0.32	Not Analyzed	0.24	Not Analyzed
CADMIUM	MG/KG	Not Analyzed	0.081 U	Not Analyzed	0.076 U	Not Analyzed
CALCIUM	MG/KG	Not Analyzed	10,300	Not Analyzed	26,400	Not Analyzed
CHROMIUM, TOTAL	MG/KG	Not Analyzed	8.5	Not Analyzed	6.4	Not Analyzed
COBALT	MG/KG	Not Analyzed	5.6 J	Not Analyzed	4.7 J	Not Analyzed
COPPER	MG/KG	Not Analyzed	13.1	Not Analyzed	20.1	Not Analyzed
IRON	MG/KG	Not Analyzed	16,600	Not Analyzed	16,200	Not Analyzed
LEAD	MG/KG	Not Analyzed	8.3	Not Analyzed	8.3	Not Analyzed
MAGNESIUM	MG/KG	Not Analyzed	3,530	Not Analyzed	2,610	Not Analyzed
MANGANESE	MG/KG	Not Analyzed	371	Not Analyzed	349	Not Analyzed
MERCURY	MG/KG	Not Analyzed	0.0088 J	Not Analyzed	0.0016 U	Not Analyzed
NICKEL	MG/KG	Not Analyzed	14.4	Not Analyzed	12.8	Not Analyzed
POTASSIUM	MG/KG	Not Analyzed	1,120 J	Not Analyzed	757 J	Not Analyzed
SELENIUM	MG/KG	Not Analyzed	0.75 U	Not Analyzed	0.7 U	Not Analyzed
SILVER	MG/KG	Not Analyzed	0.2 U	Not Analyzed	0.81	Not Analyzed
SODIUM	MG/KG	Not Analyzed	90 U	Not Analyzed	84 U	Not Analyzed
THALLIUM	MG/KG	Not Analyzed	0.67 U	Not Analyzed	0.63 U	Not Analyzed
VANADIUM	MG/KG	Not Analyzed	11.1	Not Analyzed	8.2	Not Analyzed
ZINC	MG/KG	Not Analyzed	51.8	Not Analyzed	57.7	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-004	SD-005A	SD-005A	SD-005A	SD-005A
Field Sample Identifier		SVD-SD004 (18-22)	SVD-SD005 (0-6)	SVD-SD005 (3-3.5)	SVD-SD005 (6-12)	SVD-SD005 (11.5-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-22.0	0.0-6.0	3.0-3.5	6.0-12.0	11.5-12.0
Date of Sample		07/13/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.01 U	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.002 U	Not Analyzed	0.0016 U	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.015 U	Not Analyzed	0.012 U	Not Analyzed
DALAPON	MG/KG	Not Analyzed	0.004 U	Not Analyzed	0.0031 U	Not Analyzed
DICAMBA	MG/KG	Not Analyzed	0.0032 U	Not Analyzed	0.0025 U	Not Analyzed
DICHLOROPROP	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.01 U	Not Analyzed
DINOSEB	MG/KG	Not Analyzed	0.0087 U	Not Analyzed	0.0068 U	Not Analyzed
MCPA	MG/KG	Not Analyzed	2 U	Not Analyzed	1.5 U	Not Analyzed
MCPP	MG/KG	Not Analyzed	2.1 U	Not Analyzed	1.6 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0016 U	Not Analyzed	0.0059	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0038 U	Not Analyzed	0.0029 U	Not Analyzed
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.42 U	Not Analyzed	0.36 U	Not Analyzed
PERCENT MOISTURE	PERCENT	Not Analyzed	20	20	7.2	16
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	6,900	Not Analyzed	2,400 J	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00017 U	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	0.00055 U	Not Analyzed	0.00031 U	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	0.00049 U	Not Analyzed	0.00023 U	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	0.00055 U	Not Analyzed	8.70E-05 U	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	0.00093 U	Not Analyzed	0.00012 U	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00011 U	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.00029 U	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.0002 U	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.00026 U	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00015 U	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	0.0012 U	Not Analyzed	0.00081 U	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00026 U	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00031 U	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	0.00067 U	Not Analyzed	7.80E-05 U	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	0.00058 U	Not Analyzed	0.00016 U	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00012 U	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00064 J	Not Analyzed	0.00018 U	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.0002 U	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00073 J	Not Analyzed	0.0002 U	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00012 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00011 U	Not Analyzed
2-HEXANONE	MG/KG	Not Analyzed	0.0018 U	Not Analyzed	0.00036 U	Not Analyzed
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00016 U	Not Analyzed
ACETONE	MG/KG	Not Analyzed	0.14	Not Analyzed	0.042	Not Analyzed
BENZENE	MG/KG	Not Analyzed	0.00085	Not Analyzed	0.00029 J	Not Analyzed
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00022 U	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.00061 U	Not Analyzed	0.00018 U	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	0.00063 U	Not Analyzed	0.00012 U	Not Analyzed
BROMOFORM	MG/KG	Not Analyzed	0.00057 U	Not Analyzed	0.00019 UR	Not Analyzed
BROMOMETHANE	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.0013 U	Not Analyzed
CARBON DISULFIDE	MG/KG	Not Analyzed	0.0036	Not Analyzed	0.001	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	0.00078 U	Not Analyzed	0.00012 U	Not Analyzed
CHLOROBENZENE	MG/KG	Not Analyzed	0.0005 U	Not Analyzed	0.00011 U	Not Analyzed
CHLOROETHANE	MG/KG	Not Analyzed	0.00098 U	Not Analyzed	0.00044 UR	Not Analyzed
CHLOROFORM	MG/KG	Not Analyzed	0.00053 U	Not Analyzed	0.00028 U	Not Analyzed
CHLOROMETHANE	MG/KG	Not Analyzed	0.0028 U	Not Analyzed	0.0002 U	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.00033 U	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	0.0005 U	Not Analyzed	9.30E-05 U	Not Analyzed
CYCLOHEXANE	MG/KG	Not Analyzed	0.00058 U	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.00048 U	Not Analyzed	0.0002 U	Not Analyzed
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00019 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	0.0009 U	Not Analyzed	0.00022 U	Not Analyzed
ETHYLBENZENE	MG/KG	Not Analyzed	0.00079 U	Not Analyzed	0.00013 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00017 U	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	0.00099 U	Not Analyzed	0.00011 U	Not Analyzed
M+P-XYLENE	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	0.00014 U	Not Analyzed
METHYL ACETATE	MG/KG	Not Analyzed	0.0739	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	0.028	Not Analyzed	0.0034 U	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	0.0022 U	Not Analyzed	0.00028 U	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	0.001 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	Not Analyzed	0.0088	Not Analyzed	0.00061 U	Not Analyzed
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00035 J	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00016 U	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.0001 U	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	0.00083 U	Not Analyzed	0.00012 U	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00015 U	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00039 U	Not Analyzed
STYRENE	MG/KG	Not Analyzed	0.00082 U	Not Analyzed	0.00013 U	Not Analyzed
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	0.00032 U	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	0.0005 U	Not Analyzed	0.0001 U	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	0.0016 J	Not Analyzed	0.00019 U	Not Analyzed
TOLUENE	MG/KG	Not Analyzed	0.00067 J	Not Analyzed	0.00033 J	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	0.00095 U	Not Analyzed	0.00011 U	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00013 U	Not Analyzed
TRICHLOROETHANE	MG/KG	Not Analyzed	0.00061 U	Not Analyzed	0.00012 U	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	0.0011 U	Not Analyzed	0.00022 U	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	0.00097 U	Not Analyzed	0.00013 U	Not Analyzed
VINYL CHLORIDE	MG/KG	Not Analyzed	0.00067 U	Not Analyzed	0.00018 U	Not Analyzed
XYLENES, TOTAL	MG/KG	Not Analyzed	0.00083 U	Not Analyzed	0.00026 U	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.02 U
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.022 U	Not Analyzed	0.023 U
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.033 U	Not Analyzed	0.035 U
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.037 U	Not Analyzed	0.039 U
2,4-DINITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.11 U	Not Analyzed	0.12 U
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.017 U	Not Analyzed	0.018 U
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.019 U
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.014 U
2-CHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.041 U	Not Analyzed	0.042 U
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0096 U	Not Analyzed	0.0099 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.042 U	Not Analyzed	0.044 U
2-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.0095 U	Not Analyzed	0.0098 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.048 U	Not Analyzed	0.05 U
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	Not Analyzed	0.5 UR	Not Analyzed	0.52 UR
3-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.014 U	Not Analyzed	0.014 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.056 U	Not Analyzed	0.058 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.05 U	Not Analyzed	0.052 U
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.02 U	Not Analyzed	0.021 U
4-CHLOROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.029 U	Not Analyzed	0.03 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.012 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.069 U	Not Analyzed	0.072 U
4-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.028 U	Not Analyzed	0.029 U
4-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.28 U	Not Analyzed	0.29 U
ACENAPHTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	Not Analyzed	0.009 U
ACENAPHTHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0083 U	Not Analyzed	0.0086 U
ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.0095 U	Not Analyzed	0.0099 U
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.013 U
BENZO(A)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.012 U
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	Not Analyzed	0.014 U	Not Analyzed	0.014 U
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.02 U	Not Analyzed	0.021 U
BENZOIC ACID	MG/KG	Not Analyzed	Not Analyzed	0.16 U	Not Analyzed	0.16 U
BENZYL ALCOHOL	MG/KG	Not Analyzed	Not Analyzed	0.0094 U	Not Analyzed	0.0097 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.023 U	Not Analyzed	0.024 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	Not Analyzed	0.0081 U	Not Analyzed	0.0084 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	Not Analyzed	0.021 U	Not Analyzed	0.022 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	Not Analyzed	0.0089 U	Not Analyzed	0.0092 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.029 U	Not Analyzed	0.03 U
CARBAZOLE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.014 U
CHRYSENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.031 U	Not Analyzed	0.032 U
DIBENZOFURAN	MG/KG	Not Analyzed	Not Analyzed	0.0099 U	Not Analyzed	0.01 U
DIETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.014 U	Not Analyzed	0.015 U
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.014 U
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.021 U	Not Analyzed	0.022 U
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.014 U
FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.019 U
FLUORENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
HEXACHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.018 U	Not Analyzed	0.018 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.045 UR	Not Analyzed	0.047 UR
HEXACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.009 U	Not Analyzed	0.0093 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.01 U
ISOPHORONE	MG/KG	Not Analyzed	Not Analyzed	0.0081 U	Not Analyzed	0.0084 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0076 U	Not Analyzed	0.0079 U
NITROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.013 U
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0095 U	Not Analyzed	0.0098 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.011 U
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0094 U	Not Analyzed	0.0098 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.073 U	Not Analyzed	0.076 U
PHENANTHRENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.011 U
PHENOL	MG/KG	Not Analyzed	Not Analyzed	0.042 U	Not Analyzed	0.043 U
PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.012 U
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00041 UJ
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	Not Analyzed	0.00035 UJ
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0022 U	Not Analyzed	0.0023 UJ
ALPHA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00045 UJ
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	Not Analyzed	0.00043 UJ
BETA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00045 UJ
BETA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00045 UJ
CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0041 U	Not Analyzed	0.0042 UJ
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00064 U	Not Analyzed	0.00065 UJ
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	Not Analyzed	0.00037 U	Not Analyzed	0.00038 UJ
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.0021 U	Not Analyzed	0.0021 UJ

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	Not Analyzed	0.00035 UJ
DIELDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	Not Analyzed	0.00043 UJ
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00045 UJ
ENDRIN	MG/KG	Not Analyzed	Not Analyzed	0.0023 U	Not Analyzed	0.0023 UJ
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	Not Analyzed	0.00046 U	Not Analyzed	0.00047 UJ
ENDRIN KETONE	MG/KG	Not Analyzed	Not Analyzed	0.00043 U	Not Analyzed	0.00044 UJ
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	Not Analyzed	0.00036 U	Not Analyzed	0.00037 UJ
HEPTACHLOR	MG/KG	Not Analyzed	Not Analyzed	0.0022 U	Not Analyzed	0.0022 UJ
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00044 UJ
METHOXYCHLOR	MG/KG	Not Analyzed	Not Analyzed	0.0023 U	Not Analyzed	0.0023 UJ
TOXAPHENE	MG/KG	Not Analyzed	Not Analyzed	0.0059 U	Not Analyzed	0.006 UJ
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	Not Analyzed	0.0035 U	Not Analyzed	0.0036 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	Not Analyzed	0.0035 U	Not Analyzed	0.0036 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	Not Analyzed	0.0053 U	Not Analyzed	0.0054 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	Not Analyzed	0.0044 U	Not Analyzed	0.0045 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	Not Analyzed	0.0041 U	Not Analyzed	0.0043 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	Not Analyzed	0.0049 U	Not Analyzed	0.0051 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	Not Analyzed	0.0029 U	Not Analyzed	0.003 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.188 U	Not Analyzed	-0.155 U	Not Analyzed	0.076 U
CESIUM-137	PCI/G	0.042 U	Not Analyzed	0.083	Not Analyzed	0.009 U
COBALT-60	PCI/G	0.099 U	Not Analyzed	0.038 U	Not Analyzed	0.087 U
GROSS ALPHA	PCI/G	9.15	Not Analyzed	15.4	Not Analyzed	8.88
GROSS BETA	PCI/G	9.38	Not Analyzed	15.3	Not Analyzed	15.7
PLUTONIUM-238	PCI/G	0.068 J	Not Analyzed	-0.019 U	Not Analyzed	0.066 U
PLUTONIUM-239/240	PCI/G	0.01 U	Not Analyzed	0.017 U	Not Analyzed	0.039 J
POTASSIUM-40	PCI/G	12.651	Not Analyzed	14.681	Not Analyzed	14.314
STRONTIUM-90	PCI/G	0.115 U	Not Analyzed	-0.153 U	Not Analyzed	0.047 U
URANIUM-232	PCI/G	0.011 U	Not Analyzed	-0.022 U	Not Analyzed	0.03 U
URANIUM-234	PCI/G	0.701	Not Analyzed	0.756	Not Analyzed	0.776
URANIUM-235	PCI/G	0.121 J	Not Analyzed	0.166 J	Not Analyzed	0.188 J
URANIUM-238	PCI/G	0.702	Not Analyzed	0.972	Not Analyzed	0.763 J
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.316 U	Not Analyzed	0.054 U	Not Analyzed	0 U
URANIUM-238	PCI/G	0.23 U	Not Analyzed	0.468 U	Not Analyzed	0.994 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	Not Analyzed	7,680	Not Analyzed	6,960
ANTIMONY	MG/KG	Not Analyzed	Not Analyzed	2.3 U	Not Analyzed	2.7 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	Not Analyzed	5.4	Not Analyzed	6.7
BARIUM	MG/KG	Not Analyzed	Not Analyzed	44.6	Not Analyzed	62.5
BERYLLIUM	MG/KG	Not Analyzed	Not Analyzed	0.41	Not Analyzed	0.38
CADMIUM	MG/KG	Not Analyzed	Not Analyzed	0.58 U	Not Analyzed	0.68 U
CALCIUM	MG/KG	Not Analyzed	Not Analyzed	2,900	Not Analyzed	1,180
CHROMIUM, TOTAL	MG/KG	Not Analyzed	Not Analyzed	9.6	Not Analyzed	9.2
COBALT	MG/KG	Not Analyzed	Not Analyzed	5.9	Not Analyzed	7.4
COPPER	MG/KG	Not Analyzed	Not Analyzed	14.9	Not Analyzed	16.3
IRON	MG/KG	Not Analyzed	Not Analyzed	16,000	Not Analyzed	17,000
LEAD	MG/KG	Not Analyzed	Not Analyzed	8.1	Not Analyzed	8.2
MAGNESIUM	MG/KG	Not Analyzed	Not Analyzed	2,650	Not Analyzed	2,330
MANGANESE	MG/KG	Not Analyzed	Not Analyzed	280	Not Analyzed	388
MERCURY	MG/KG	Not Analyzed	Not Analyzed	0.012	Not Analyzed	0.01 J
NICKEL	MG/KG	Not Analyzed	Not Analyzed	15	Not Analyzed	16.1
POTASSIUM	MG/KG	Not Analyzed	Not Analyzed	1,200 U	Not Analyzed	1,400 U
SELENIUM	MG/KG	Not Analyzed	Not Analyzed	2.3 U	Not Analyzed	2.7 U
SILVER	MG/KG	Not Analyzed	Not Analyzed	0.58 U	Not Analyzed	0.68 U
SODIUM	MG/KG	Not Analyzed	Not Analyzed	1,200 U	Not Analyzed	1,400 U
THALLIUM	MG/KG	Not Analyzed	Not Analyzed	1.2 U	Not Analyzed	1.4 U
VANADIUM	MG/KG	Not Analyzed	Not Analyzed	12.5	Not Analyzed	12.2
ZINC	MG/KG	Not Analyzed	Not Analyzed	52.1	Not Analyzed	53

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-005A	SD-005A	SD-006A	SD-006A	SD-006A
Field Sample Identifier		SVD-SD005 (12-18)	SVD-SD005 (15.5-16)	SVD-SD006 (0-6)	SVD-SD006 (5-5.5)	SVD-SD006 (6-8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	15.5-16.0	0.0-6.0	5.0-5.5	6.0-8.0
Date of Sample		07/19/18	07/19/18	07/12/18	07/12/18	07/12/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.012 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.0017 U	Not Analyzed	0.0019 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
DALAPON	MG/KG	Not Analyzed	Not Analyzed	0.0033 U	Not Analyzed	0.0037 U
DICAMBA	MG/KG	Not Analyzed	Not Analyzed	0.0026 U	Not Analyzed	0.003 U
DICHLOROPROP	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.012 U
DINOSEB	MG/KG	Not Analyzed	Not Analyzed	0.0072 U	Not Analyzed	0.0081 U
MCPA	MG/KG	Not Analyzed	Not Analyzed	1.6 U	Not Analyzed	1.9 U
MCPP	MG/KG	Not Analyzed	Not Analyzed	1.7 U	Not Analyzed	1.9 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	Not Analyzed	0.0015 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	Not Analyzed	0.0035 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	Not Analyzed	0.37 U	Not Analyzed	0.43 U
PERCENT MOISTURE	PERCENT	Not Analyzed	30	16	17	18
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	Not Analyzed	9,500	Not Analyzed	5,000

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	0.00015 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00027 U	Not Analyzed	0.00043 UJ	0.0004 U	0.00041 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00083 UJ	0.00078 U	0.0008 U
1,1,2-TRICHLOROETHANE	MG/KG	0.0002 U	Not Analyzed	0.00037 UJ	0.00035 U	0.00036 U
1,1-DICHLOROETHANE	MG/KG	7.70E-05 U	Not Analyzed	0.00042 UJ	0.00039 U	0.0004 U
1,1-DICHLOROETHENE	MG/KG	0.0001 U	Not Analyzed	0.00072 UJ	0.00067 U	0.00069 U
1,1-DICHLOROPROPENE	MG/KG	0.0001 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.00026 U	Not Analyzed	0.0011 UJ	0.001 U	0.001 U
1,2,3-TRICHLOROPROPANE	MG/KG	0.00018 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.00023 U	Not Analyzed	0.0011 UJ	0.001 U	0.001 U
1,2,4-TRIMETHYLBENZENE	MG/KG	0.00013 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.00072 U	Not Analyzed	0.00091 UJ	0.00085 U	0.00087 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00023 U	Not Analyzed	0.00035 UJ	0.00033 U	0.00034 U
1,2-DICHLOROBENZENE	MG/KG	0.00027 U	Not Analyzed	0.00033 UJ	0.00031 U	0.00032 U
1,2-DICHLOROETHANE	MG/KG	6.90E-05 U	Not Analyzed	0.00051 UJ	0.00048 U	0.00049 U
1,2-DICHLOROPROPANE	MG/KG	0.00014 U	Not Analyzed	0.00044 UJ	0.00041 U	0.00043 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	0.0001 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00016 U	Not Analyzed	0.00039 UJ	0.00037 U	0.00038 U
1,3-DICHLOROPROPANE	MG/KG	0.00018 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00018 U	Not Analyzed	0.00038 UJ	0.00035 U	0.00036 U
2,2-DICHLOROPROPANE	MG/KG	0.00011 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	9.30E-05 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.00032 U	Not Analyzed	0.0014 UJ	0.0013 U	0.0013 U
4-CHLOROTOLUENE	MG/KG	0.00014 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.022 J	Not Analyzed	0.0055 UJ	0.0191	0.0105
BENZENE	MG/KG	0.00014 U	Not Analyzed	0.00041 UJ	0.00038 U	0.00039 U
BROMOBENZENE	MG/KG	0.0002 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00016 U	Not Analyzed	0.00047 UJ	0.00044 U	0.00045 U
BROMODICHLOROMETHANE	MG/KG	0.0001 U	Not Analyzed	0.00048 UJ	0.00045 U	0.00046 U
BROMOFORM	MG/KG	0.00017 UR	Not Analyzed	0.00044 UJ	0.00041 U	0.00042 U
BROMOMETHANE	MG/KG	0.0012 U	Not Analyzed	0.0011 UJ	0.001 U	0.001 U
CARBON DISULFIDE	MG/KG	9.50E-05 U	Not Analyzed	0.001 UJ	0.0015 J	0.002 J
CARBON TETRACHLORIDE	MG/KG	0.00011 U	Not Analyzed	0.0006 UJ	0.00056 U	0.00058 U
CHLOROBENZENE	MG/KG	9.70E-05 U	Not Analyzed	0.00039 UJ	0.00036 U	0.00037 U
CHLOROETHANE	MG/KG	0.00039 UR	Not Analyzed	0.00075 UJ	0.0007 U	0.00072 U
CHLOROFORM	MG/KG	0.00024 U	Not Analyzed	0.00041 UJ	0.00038 U	0.00039 U
CHLOROMETHANE	MG/KG	0.00018 U	Not Analyzed	0.0021 UJ	0.002 U	0.0021 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.00029 U	Not Analyzed	0.001 UJ	0.00098 U	0.001 U
CIS-1,3-DICHLOROPROPENE	MG/KG	8.20E-05 U	Not Analyzed	0.00038 UJ	0.00036 U	0.00037 U
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00044 UJ	0.00041 U	0.00042 U
DIBROMOCHLOROMETHANE	MG/KG	0.00018 U	Not Analyzed	0.00037 UJ	0.00034 U	0.00035 U
DIBROMOMETHANE	MG/KG	0.00017 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.0002 U	Not Analyzed	0.00069 UJ	0.00065 U	0.00066 U
ETHYLBENZENE	MG/KG	0.00011 U	Not Analyzed	0.0006 UJ	0.00056 U	0.00058 U
HEXACHLOROBUTADIENE	MG/KG	0.00015 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	9.70E-05 U	Not Analyzed	0.00076 UJ	0.00071 U	0.00073 U
M+P-XYLENE	MG/KG	0.00013 U	Not Analyzed	0.00081 UJ	0.00076 U	0.00078 U
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	0.0015 UJ	0.0014 U	0.0015 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0032 J	Not Analyzed	0.0041 UJ	0.0038 U	0.0039 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.00025 U	Not Analyzed	0.0017 UJ	0.0016 U	0.0016 U
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00077 UJ	0.00072 U	0.00074 U
METHYLENE CHLORIDE	MG/KG	0.00054 U	Not Analyzed	0.0027 UJ	0.0025 U	0.0087
NAPHTHALENE	MG/KG	0.00026 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	0.00014 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	9.00E-05 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00011 U	Not Analyzed	0.00064 UJ	0.00059 U	0.00061 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	0.00013 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	0.00035 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00012 U	Not Analyzed	0.00063 UJ	0.00059 U	0.0006 U
T-BUTYLBENZENE	MG/KG	0.00028 U	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	9.10E-05 U	Not Analyzed	0.00038 UJ	0.00036 U	0.00037 U
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00016 U	Not Analyzed	0.0044 J	0.00047 U	0.00048 U
TOLUENE	MG/KG	0.00014 U	Not Analyzed	0.00041 UJ	0.00038 U	0.00039 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	9.60E-05 U	Not Analyzed	0.00073 UJ	0.00068 U	0.0007 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00012 U	Not Analyzed	0.00036 UJ	0.00033 U	0.00034 U
TRICHLOROETHANE	MG/KG	0.00011 U	Not Analyzed	0.00047 UJ	0.00043 U	0.00045 U
TRICHLOROETHYLENE (TCE)	MG/KG	0.0002 U	Not Analyzed	0.00083 UJ	0.00078 U	0.0008 U
TRICHLOROFLUOROMETHANE	MG/KG	0.00011 U	Not Analyzed	0.00074 UJ	0.00069 U	0.00071 U
VINYL CHLORIDE	MG/KG	0.00016 U	Not Analyzed	0.00051 UJ	0.00048 U	0.00049 U
XYLENES, TOTAL	MG/KG	0.00023 U	Not Analyzed	0.00064 UJ	0.00059 U	0.00061 U
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	0.01 U	0.011 U
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.018 U	0.018 U	0.02 U
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.02 U	0.02 U	0.022 U
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.031 U	0.031 U	0.035 U
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.034 U	0.035 U	0.039 U
2,4-DINITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.1 U	0.1 U	0.11 U
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.016 U	0.016 U	0.018 U
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.017 U	0.017 U	0.019 U
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.012 U	0.013 U
2-CHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.037 U	0.038 U	0.042 U
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	0.0089 U	0.0099 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.038 U	0.039 U	0.043 U
2-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	0.0089 U	0.0098 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.044 U	0.045 U	0.05 U
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	Not Analyzed	0.46 U	0.47 U	0.52 U
3-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.013 U	0.014 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.051 U	0.053 U	0.058 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.046 U	0.047 U	0.051 U
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.019 U	0.019 U	0.021 U
4-CHLOROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.027 U	0.028 U	0.03 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.011 U	0.011 U	0.012 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.064 U	0.065 U	0.072 U
4-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.026 U	0.026 U	0.029 U
4-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.26 U	0.26 U	0.29 U
ACENAPHTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0079 U	0.0081 U	0.009 U
ACENAPHTHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0076 U	0.0078 U	0.0086 U
ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	0.0089 U	0.0098 U
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.012 U	0.013 U
BENZO(A)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	0.011 U	0.012 U
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	0.01 U	0.011 U
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	0.013 U	0.014 U
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	0.019 U	0.021 U
BENZOIC ACID	MG/KG	Not Analyzed	Not Analyzed	0.14 U	0.15 U	0.16 U
BENZYL ALCOHOL	MG/KG	Not Analyzed	Not Analyzed	0.0086 U	0.0088 U	0.0097 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.021 U	0.022 U	0.024 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	Not Analyzed	0.0074 U	0.0076 U	0.0084 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	Not Analyzed	0.019 U	0.02 U	0.022 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	Not Analyzed	0.0082 U	0.0083 U	0.0092 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.026 U	0.027 U	0.03 U
CARBAZOLE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.013 U	0.014 U
CHRYSENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	0.01 U	0.011 U
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.028 U	0.029 U	0.032 U
DIBENZOFURAN	MG/KG	Not Analyzed	Not Analyzed	0.0091 U	0.0093 U	0.01 U
DIETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	0.013 U	0.015 U
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.012 U	0.013 U
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	0.02 U	0.022 U
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.012 U	0.014 U
FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.017 U	0.018 U	0.019 U
FLUORENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	0.01 U	0.011 U
HEXACHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	0.0099 U	0.011 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.016 U	0.017 U	0.018 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.041 UR	0.042 UR	0.047 UR
HEXACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0082 U	0.0084 U	0.0093 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.0092 U	0.0094 U	0.01 U
ISOPHORONE	MG/KG	Not Analyzed	Not Analyzed	0.0074 U	0.0076 U	0.0084 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0069 U	0.0071 U	0.0078 U
NITROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	0.011 U	0.013 U
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	0.0089 U	0.0098 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0099 U	0.01 U	0.011 U
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0086 U	0.0088 U	0.0098 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.067 U	0.069 U	0.076 U
PHENANTHRENE	MG/KG	Not Analyzed	Not Analyzed	0.0094 U	0.0097 U	0.011 U
PHENOL	MG/KG	Not Analyzed	Not Analyzed	0.038 U	0.039 U	0.043 U
PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	0.011 U	0.012 U
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00036 U	0.00037 U	0.00041 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	0.00032 U	0.00035 U
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00041 U	0.00045 U
ALPHA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00041 U	0.00045 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	0.00039 U	0.00043 U
BETA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00041 U	0.00045 U
BETA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00041 U	0.00045 U
CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0037 U	0.0038 U	0.0042 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00058 U	0.00059 U	0.00066 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	0.00034 U	0.00038 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00037 U	0.00038 U	0.00043 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	0.00032 U	0.00035 U
DIELDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	0.00039 U	0.00044 U
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00041 U	0.00045 U
ENDRIN	MG/KG	Not Analyzed	Not Analyzed	0.002 U	0.0021 U	0.0023 U
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	0.00043 U	0.00047 U
ENDRIN KETONE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.0004 U	0.00044 U
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	Not Analyzed	0.00032 U	0.00033 U	0.00037 U
HEPTACHLOR	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.0004 U	0.00044 U
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.0004 U	0.00045 U
METHOXYCHLOR	MG/KG	Not Analyzed	Not Analyzed	0.002 U	0.0021 U	0.0023 U
TOXAPHENE	MG/KG	Not Analyzed	Not Analyzed	0.0053 U	0.0055 U	0.0061 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0032 U	0.0035 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	0.0033 U	0.0036 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	0.0033 U	0.0036 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	Not Analyzed	0.0048 U	0.0049 U	0.0054 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	Not Analyzed	0.004 U	0.0041 U	0.0045 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	Not Analyzed	0.0037 U	0.0038 U	0.0043 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	Not Analyzed	0.0045 U	0.0046 U	0.0051 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0032 U	0.0035 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0032 U	0.0035 U

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	Not Analyzed	0.0026 U	0.0027 U	0.003 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	0.035 U	Not Analyzed	-0.095 U	0.056 U
CESIUM-137	PCI/G	Not Analyzed	0.213	Not Analyzed	0.215	0.055 U
COBALT-60	PCI/G	Not Analyzed	0.012 U	Not Analyzed	0.024 U	0.107 U
GROSS ALPHA	PCI/G	Not Analyzed	6.31 J	Not Analyzed	5.47	6.32
GROSS BETA	PCI/G	Not Analyzed	13.3	Not Analyzed	9.49	13.4
PLUTONIUM-238	PCI/G	Not Analyzed	0.02 U	Not Analyzed	0.013 U	0.063 J
PLUTONIUM-239/240	PCI/G	Not Analyzed	0.003 U	Not Analyzed	0.044 J	0.075 U
POTASSIUM-40	PCI/G	Not Analyzed	10.662	Not Analyzed	9.404	11.711
STRONTIUM-90	PCI/G	Not Analyzed	-0.122 U	Not Analyzed	0.156 U	-0.054 U
URANIUM-232	PCI/G	Not Analyzed	0.001 U	Not Analyzed	0.104 J	0.05 J
URANIUM-234	PCI/G	Not Analyzed	0.49 J	Not Analyzed	0.572	0.669
URANIUM-235	PCI/G	Not Analyzed	0.035 U	Not Analyzed	0.037 U	0.057 J
URANIUM-238	PCI/G	Not Analyzed	0.497 J	Not Analyzed	0.438	0.642
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	0.22 U	Not Analyzed	0.183 U	0.389 U
URANIUM-238	PCI/G	Not Analyzed	0.136 U	Not Analyzed	0.463 U	0.344 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	Not Analyzed	6,190	6,140	5,690
ANTIMONY	MG/KG	Not Analyzed	Not Analyzed	0.45 U	0.46 U	0.49 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	Not Analyzed	7.9	6.6	5.1
BARIUM	MG/KG	Not Analyzed	Not Analyzed	47	47.6	37.5
BERYLLIUM	MG/KG	Not Analyzed	Not Analyzed	0.29	0.28	0.29
CADMIUM	MG/KG	Not Analyzed	Not Analyzed	0.076 U	0.078 J	0.084 U
CALCIUM	MG/KG	Not Analyzed	Not Analyzed	4,940	4,270	6,430
CHROMIUM, TOTAL	MG/KG	Not Analyzed	Not Analyzed	7.6	7.9	7.5
COBALT	MG/KG	Not Analyzed	Not Analyzed	5.3 J	4.6 J	4.9 J
COPPER	MG/KG	Not Analyzed	Not Analyzed	13.7	14.3	11.4
IRON	MG/KG	Not Analyzed	Not Analyzed	17,300	17,900	13,300
LEAD	MG/KG	Not Analyzed	Not Analyzed	7.6	6.1	7.5
MAGNESIUM	MG/KG	Not Analyzed	Not Analyzed	3,170	3,280	3,370
MANGANESE	MG/KG	Not Analyzed	Not Analyzed	268	247	257
MERCURY	MG/KG	Not Analyzed	Not Analyzed	0.0082 J	0.0023 J	0.0043 J
NICKEL	MG/KG	Not Analyzed	Not Analyzed	14.1	12.7	12.4
POTASSIUM	MG/KG	Not Analyzed	Not Analyzed	733 J	802 J	988 J
SELENIUM	MG/KG	Not Analyzed	Not Analyzed	0.71 U	0.73 U	0.78 U
SILVER	MG/KG	Not Analyzed	Not Analyzed	0.19 U	0.22 J	0.29 J
SODIUM	MG/KG	Not Analyzed	Not Analyzed	85 U	87 U	94 U
THALLIUM	MG/KG	Not Analyzed	Not Analyzed	0.63 U	0.65 U	0.7 U
VANADIUM	MG/KG	Not Analyzed	Not Analyzed	2.6 J	10.3	10.9
ZINC	MG/KG	Not Analyzed	Not Analyzed	51.1	47.7	42.5

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-006A	SD-007	SD-007	SD-007	SD-007
Field Sample Identifier		SVD-SD006 (6.75-7.25)	SVD-SD007 (0-6)	SVD-SD007 (0-6)	SVD-SD007 (6-12)	SVD-SD007 (12-18)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.8-7.3	0.0-6.0	0.0-6.0	6.0-12.0	12.0-18.0
Date of Sample		07/12/18	07/12/18	07/16/18	07/17/18	07/17/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	0.01 U	0.012 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.0015 U	0.0016 U	0.0018 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.011 U	0.012 U	0.014 U
DALAPON	MG/KG	Not Analyzed	Not Analyzed	0.003 U	0.0031 U	0.0036 U
DICAMBA	MG/KG	Not Analyzed	Not Analyzed	0.0024 U	0.0025 U	0.0029 U
DICHLOROPROP	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	0.01 U	0.012 U
DINOSEB	MG/KG	Not Analyzed	Not Analyzed	0.0065 U	0.0067 U	0.0078 U
MCPA	MG/KG	Not Analyzed	Not Analyzed	1.5 U	1.5 U	1.8 U
MCPP	MG/KG	Not Analyzed	Not Analyzed	1.5 U	1.6 U	1.9 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.0012 U	0.0012 U	0.0014 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	Not Analyzed	0.0028 U	0.0029 U	0.0034 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	Not Analyzed	0.35 U	0.36 U	0.41 U
PERCENT MOISTURE	PERCENT	18	Not Analyzed	8.4	16	21
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	Not Analyzed	2,200 J	3,400	6,000

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.0005 U	0.00042 UJ	0.00044 UJ	0.00047 UJ	0.0005 UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00097 U	0.00083 UJ	0.00086 UJ	0.00091 UJ	0.00097 UJ
1,1,2-TRICHLOROETHANE	MG/KG	0.00044 U	0.00037 UJ	0.00039 UJ	0.00041 UJ	0.00044 UJ
1,1-DICHLOROETHANE	MG/KG	0.00049 U	0.00042 UJ	0.00044 UJ	0.00046 UJ	0.00049 UJ
1,1-DICHLOROETHENE	MG/KG	0.00084 U	0.00071 UJ	0.00074 UJ	0.00078 UJ	0.00084 UJ
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0013 U	0.0011 UJ	0.0011 UJ	0.0012 UJ	0.0013 UJ
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0013 U	0.0011 UJ	0.0011 UJ	0.0012 UJ	0.0013 UJ
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.0011 U	0.00091 UJ	0.00095 UJ	0.001 UJ	0.0011 UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00041 U	0.00035 UJ	0.00037 UJ	0.00039 UJ	0.00042 UJ
1,2-DICHLOROBENZENE	MG/KG	0.00039 U	0.00033 UJ	0.00034 UJ	0.00036 UJ	0.00039 UJ
1,2-DICHLOROETHANE	MG/KG	0.0006 U	0.00051 UJ	0.00053 UJ	0.00056 UJ	0.0006 UJ
1,2-DICHLOROPROPANE	MG/KG	0.00052 U	0.00044 UJ	0.00046 UJ	0.00049 UJ	0.00052 UJ
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00046 U	0.00039 UJ	0.00041 UJ	0.00043 UJ	0.00046 UJ
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00044 U	0.00037 UJ	0.00039 UJ	0.00041 UJ	0.00044 UJ
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.0016 U	0.0014 UJ	0.0014 UJ	0.0015 UJ	0.0016 UJ
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.0064 U	0.0054 UJ	0.0057 UJ	0.105 J	0.104 J
BENZENE	MG/KG	0.00048 U	0.00041 UJ	0.00043 UJ	0.00045 UJ	0.00048 UJ
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00055 U	0.00047 UJ	0.00049 UJ	0.00051 UJ	0.00055 UJ
BROMODICHLOROMETHANE	MG/KG	0.00056 U	0.00048 UJ	0.0005 UJ	0.00053 UJ	0.00057 UJ
BROMOFORM	MG/KG	0.00051 U	0.00044 UJ	0.00046 UJ	0.00048 UJ	0.00051 UJ
BROMOMETHANE	MG/KG	0.0013 U	0.0011 UJ	0.0011 UJ	0.0012 UJ	0.0013 UJ
CARBON DISULFIDE	MG/KG	0.0031	0.001 UJ	0.0036 J	0.0044 J	0.0012 J
CARBON TETRACHLORIDE	MG/KG	0.0007 U	0.0006 UJ	0.00062 UJ	0.00066 UJ	0.0007 UJ
CHLOROBENZENE	MG/KG	0.00045 U	0.00038 UJ	0.0004 UJ	0.00042 UJ	0.00045 UJ
CHLOROETHANE	MG/KG	0.00088 U	0.00075 UJ	0.00078 UJ	0.00082 UJ	0.00088 UJ
CHLOROFORM	MG/KG	0.00047 U	0.0004 UJ	0.00042 UJ	0.00044 UJ	0.00048 UJ
CHLOROMETHANE	MG/KG	0.0025 U	0.0021 UJ	0.0022 UJ	0.0023 UJ	0.0025 UJ
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0012 U	0.001 UJ	0.0011 UJ	0.0011 UJ	0.0012 UJ
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00045 U	0.00038 UJ	0.0004 UJ	0.00042 UJ	0.00045 UJ
CYCLOHEXANE	MG/KG	0.00052 U	0.00044 UJ	0.0012 J	0.00056 J	0.00052 UJ
DIBROMOCHLOROMETHANE	MG/KG	0.00043 U	0.00037 UJ	0.00038 UJ	0.0004 UJ	0.00043 UJ
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00081 U	0.00069 UJ	0.00072 UJ	0.00076 UJ	0.00081 UJ
ETHYLBENZENE	MG/KG	0.0007 U	0.0006 UJ	0.00062 UJ	0.00066 UJ	0.00071 UJ
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00089 U	0.00076 UJ	0.00079 UJ	0.00083 UJ	0.00089 UJ
M+P-XYLENE	MG/KG	0.00095 U	0.00081 UJ	0.00084 UJ	0.00089 UJ	0.00095 UJ
METHYL ACETATE	MG/KG	0.0018 U	0.0015 UJ	0.0016 UJ	0.0017 UJ	0.005 J
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0048 U	0.0041 UJ	0.0042 UJ	0.02 J	0.0074 J
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.002 U	0.0017 UJ	0.0018 UJ	0.0019 UJ	0.002 UJ
METHYLCYCLOHEXANE	MG/KG	0.0009 U	0.00077 UJ	0.0052 J	0.0024 J	0.0009 UJ
METHYLENE CHLORIDE	MG/KG	0.0135	0.0027 UJ	0.0036 J	0.003 UJ	0.0039 J
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00074 U	0.00063 UJ	0.00066 UJ	0.0007 UJ	0.00074 UJ
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00073 U	0.00062 UJ	0.00065 UJ	0.00069 UJ	0.00073 UJ
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00045 U	0.00038 UJ	0.0004 UJ	0.00042 UJ	0.00045 UJ
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00059 U	0.0005 UJ	0.00059 J	0.00072 J	0.004 J
TOLUENE	MG/KG	0.00048 U	0.00041 UJ	0.00043 UJ	0.00045 UJ	0.00048 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00085 U	0.00072 UJ	0.00075 UJ	0.0008 UJ	0.00085 UJ
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00042 U	0.00035 UJ	0.00037 UJ	0.00039 UJ	0.00042 UJ
TRICHLOROETHANE	MG/KG	0.00054 U	0.00046 UJ	0.00048 UJ	0.00051 UJ	0.00054 UJ
TRICHLOROETHYLENE (TCE)	MG/KG	0.00097 U	0.00083 UJ	0.00086 UJ	0.00091 UJ	0.0011 J
TRICHLOROFLUOROMETHANE	MG/KG	0.00087 U	0.00074 UJ	0.00077 UJ	0.00081 UJ	0.00087 UJ
VINYL CHLORIDE	MG/KG	0.0006 U	0.00051 UJ	0.00053 UJ	0.00056 UJ	0.0006 UJ
XYLENES, TOTAL	MG/KG	0.00074 U	0.00063 UJ	0.00066 UJ	0.0007 UJ	0.00074 UJ
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.011 U	0.0099 U	0.01 U	0.011 U	0.011 U
2,4,5-TRICHLOROPHENOL	MG/KG	0.02 U	0.017 U	0.018 U	0.019 U	0.019 U
2,4,6-TRICHLOROPHENOL	MG/KG	0.023 U	0.02 U	0.02 U	0.021 U	0.021 U
2,4-DICHLOROPHENOL	MG/KG	0.035 U	0.03 U	0.031 U	0.033 U	0.033 U
2,4-DIMETHYLPHENOL	MG/KG	0.039 U	0.034 U	0.034 U	0.037 U	0.036 U
2,4-DINITROPHENOL	MG/KG	0.12 U	0.1 U	0.1 U	0.11 U	0.11 U
2,4-DINITROTOLUENE	MG/KG	0.018 U	0.015 U	0.016 U	0.017 U	0.017 U
2,6-DINITROTOLUENE	MG/KG	0.019 U	0.017 U	0.017 U	0.018 U	0.018 U
2-CHLORONAPHTHALENE	MG/KG	0.014 U	0.012 U	0.012 U	0.013 U	0.013 U
2-CHLOROPHENOL	MG/KG	0.043 U	0.037 U	0.038 U	0.04 U	0.04 U
2-METHYLNAPHTHALENE	MG/KG	0.01 U	0.0086 U	0.0088 U	0.0094 U	0.0093 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.044 U	0.038 U	0.039 U	0.041 U	0.041 U
2-NITROANILINE	MG/KG	0.01 U	0.0086 U	0.0088 U	0.0093 U	0.0093 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.051 U	0.044 U	0.045 U	0.048 U	0.047 U
3,3'-DICHLOROBENZIDINE	MG/KG	0.52 U	0.45 U	0.46 U	0.49 U	0.49 U
3-NITROANILINE	MG/KG	0.014 U	0.012 U	0.013 U	0.013 U	0.013 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.059 U	0.051 U	0.052 U	0.055 U	0.055 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.052 U	0.045 U	0.046 U	0.049 U	0.048 U
4-CHLORO-3-METHYLPHENOL	MG/KG	0.021 U	0.018 U	0.019 U	0.02 U	0.02 U
4-CHLOROANILINE	MG/KG	0.031 U	0.027 U	0.027 U	0.029 U	0.029 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.012 U	0.011 U	0.011 U	0.012 U	0.012 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.073 U	0.063 U	0.064 U	0.068 U	0.068 U
4-NITROANILINE	MG/KG	0.03 U	0.025 U	0.026 U	0.028 U	0.027 U
4-NITROPHENOL	MG/KG	0.29 U	0.25 U	0.26 U	0.28 U	0.27 U
ACENAPHTHENE	MG/KG	0.0091 U	0.0078 U	0.008 U	0.0085 U	0.0085 U
ACENAPHTHYLENE	MG/KG	0.0087 U	0.0075 U	0.0077 U	0.0082 U	0.0081 U
ANTHRACENE	MG/KG	0.01 U	0.0086 U	0.0088 U	0.0094 U	0.0093 U
BENZO(A)ANTHRACENE	MG/KG	0.014 U	0.012 U	0.012 U	0.013 U	0.013 U
BENZO(A)PYRENE	MG/KG	0.012 U	0.011 U	0.011 U	0.012 U	0.011 U
BENZO(B)FLUORANTHENE	MG/KG	0.011 U	0.0096 U	0.0098 U	0.01 U	0.01 U
BENZO(G,H,I)PERYLENE	MG/KG	0.014 U	0.012 U	0.013 U	0.014 U	0.013 U
BENZO(K)FLUORANTHENE	MG/KG	0.021 U	0.018 U	0.019 U	0.02 U	0.02 U
BENZOIC ACID	MG/KG	0.17 U	0.14 U	0.15 U	0.16 U	0.15 U
BENZYL ALCOHOL	MG/KG	0.0099 U	0.0085 U	0.0087 U	0.0092 U	0.0092 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.024 U	0.021 U	0.021 U	0.023 U	0.022 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0085 U	0.0073 U	0.0075 U	0.008 U	0.0079 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.022 U	0.019 U	0.019 U	0.021 U	0.02 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.0094 U	0.0081 U	0.0082 U	0.0088 U	0.0087 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.03 U	0.026 U	0.026 U	0.028 U	0.028 U
CARBAZOLE	MG/KG	0.014 U	0.012 U	0.012 U	0.013 U	0.013 U
CHRYSENE	MG/KG	0.012 U	0.0099 U	0.01 U	0.011 U	0.011 U
DIBENZ(A,H)ANTHRACENE	MG/KG	0.032 U	0.028 U	0.029 U	0.03 U	0.03 U
DIBENZOFURAN	MG/KG	0.01 U	0.009 U	0.0092 U	0.0098 U	0.0097 U
DIETHYL PHTHALATE	MG/KG	0.015 U	0.013 U	0.013 U	0.014 U	0.014 U
DIMETHYL PHTHALATE	MG/KG	0.014 U	0.012 U	0.012 U	0.013 U	0.013 U
DI-N-BUTYL PHTHALATE	MG/KG	0.022 U	0.019 U	0.019 U	0.021 U	0.021 U
DI-N-OCTYLPHTHALATE	MG/KG	0.014 U	0.012 U	0.012 U	0.013 U	0.013 U
FLUORANTHENE	MG/KG	0.02 U	0.017 U	0.017 U	0.018 U	0.018 U
FLUORENE	MG/KG	0.012 U	0.01 U	0.01 U	0.011 U	0.011 U
HEXACHLOROBENZENE	MG/KG	0.011 U	0.0096 U	0.0098 U	0.01 U	0.01 U
HEXACHLOROBUTADIENE	MG/KG	0.019 U	0.016 U	0.016 U	0.018 U	0.017 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.047 UR	0.041 UR	0.042 UR	0.044 UR	0.044 UR
HEXACHLOROETHANE	MG/KG	0.0094 U	0.0081 U	0.0083 U	0.0088 U	0.0088 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.011 U	0.0091 U	0.0093 U	0.0099 U	0.0098 U
ISOPHORONE	MG/KG	0.0085 U	0.0073 U	0.0075 U	0.008 U	0.0079 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.008 U	0.0068 U	0.007 U	0.0074 U	0.0074 U
NITROBENZENE	MG/KG	0.013 U	0.011 U	0.011 U	0.012 U	0.012 U
N-NITROSODIMETHYLAMINE	MG/KG	0.01 U	0.0086 U	0.0088 U	0.0093 U	0.0093 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.011 U	0.0098 U	0.01 U	0.011 U	0.011 U
N-NITROSODIPHENYLAMINE	MG/KG	0.0099 U	0.0085 U	0.0087 U	0.0093 U	0.0092 U
PENTACHLOROPHENOL	MG/KG	0.077 U	0.066 U	0.068 U	0.072 U	0.072 U
PHENANTHRENE	MG/KG	0.011 U	0.0093 U	0.0095 U	0.01 U	0.01 U
PHENOL	MG/KG	0.044 U	0.038 U	0.039 U	0.041 U	0.041 U
PYRENE	MG/KG	0.012 U	0.011 U	0.011 U	0.012 U	0.012 U
PESTICIDES						
ALDRIN	MG/KG	0.00041 U	0.00035 U	0.00037 U	0.00039 U	0.00039 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00036 U	0.0003 U	0.00032 U	0.00034 U	0.00034 U
ALPHA ENDOSULFAN	MG/KG	0.00046 U	0.00039 U	0.00041 U	0.00044 U	0.00043 UJ
ALPHA-CHLORDANE	MG/KG	0.00046 U	0.00039 U	0.00041 U	0.00043 U	0.00043 UJ
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00044 U	0.00037 U	0.00039 U	0.00042 U	0.00041 UJ
BETA ENDOSULFAN	MG/KG	0.00046 U	0.00039 U	0.00041 U	0.00043 U	0.00043 UJ
BETA-CHLORDANE	MG/KG	0.00046 U	0.00039 U	0.00041 U	0.00044 U	0.00043 UJ
CHLORDANE	MG/KG	0.0043 U	0.0036 U	0.0038 U	0.0041 U	0.004 UJ
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.00067 U	0.00057 U	0.00059 U	0.00063 U	0.00063 UJ
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.00039 U	0.00033 U	0.00034 U	0.00037 U	0.00037 UJ
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.00043 U	0.00037 U	0.00038 U	0.00041 U	0.00041 UJ

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00036 U	0.0003 U	0.00032 U	0.00034 U	0.00034 UJ
DIELDRIN	MG/KG	0.00044 U	0.00038 U	0.00039 U	0.00042 U	0.00042 UJ
ENDOSULFAN SULFATE	MG/KG	0.00046 U	0.00039 U	0.00041 U	0.00044 U	0.00043 UJ
ENDRIN	MG/KG	0.0024 U	0.002 U	0.0021 U	0.0022 U	0.0022 U
ENDRIN ALDEHYDE	MG/KG	0.00048 U	0.00041 U	0.00043 U	0.00045 U	0.00045 UJ
ENDRIN KETONE	MG/KG	0.00045 U	0.00038 U	0.0004 U	0.00043 U	0.00042 UJ
GAMMA BHC (LINDANE)	MG/KG	0.00037 U	0.00032 U	0.00033 U	0.00035 U	0.00035 UJ
HEPTACHLOR	MG/KG	0.00045 U	0.00038 U	0.0004 U	0.00043 U	0.00042 UJ
HEPTACHLOR EPOXIDE	MG/KG	0.00045 U	0.00039 U	0.0004 U	0.00043 U	0.00043 UJ
METHOXYCHLOR	MG/KG	0.0023 U	0.002 U	0.0021 U	0.0022 U	0.0022 UJ
TOXAPHENE	MG/KG	0.0062 U	0.0052 U	0.0055 U	0.0058 U	0.0058 UJ
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0036 U	0.003 U	0.0032 U	0.0034 U	0.0034 U
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0037 U	0.0031 U	0.0033 U	0.0035 U	0.0035 U
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0037 U	0.0031 U	0.0033 U	0.0035 U	0.0035 U
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0055 U	0.0047 U	0.0049 U	0.0052 U	0.0052 U
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0046 U	0.0039 U	0.0041 U	0.0043 U	0.0043 U
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0043 U	0.0037 U	0.0038 U	0.0041 U	0.0041 U
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0052 U	0.0044 U	0.0046 U	0.0049 U	0.0049 U
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0036 U	0.003 U	0.0032 U	0.0034 U	0.0034 U
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0036 U	0.003 U	0.0032 U	0.0034 U	0.0034 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.003 U	0.0025 U	0.0027 U	0.0028 U	0.0028 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	0.22 U	-0.036 U	-0.098 U	-0.068 U	-0.013 U
CESIUM-137	PCI/G	-0.01 U	0.682	0.215	0.172	-0.031 U
COBALT-60	PCI/G	0.071 U	0.086 U	0.027 U	0.066 U	0.101 U
GROSS ALPHA	PCI/G	-0.392 U	12.2	11.2	14.9	12.8
GROSS BETA	PCI/G	13.4	9.52	9.01	13	12.4
PLUTONIUM-238	PCI/G	-0.03 U	-0.028 U	0.033 U	0.025 U	0.175 J
PLUTONIUM-239/240	PCI/G	0.03 U	0.005 U	0.009 U	-0.006 U	-0.036 UJ
POTASSIUM-40	PCI/G	11.822	9.304	10.447	12.356	12.622
STRONTIUM-90	PCI/G	0.002 U	-0.023 U	0.063 U	-0.139 U	0.117 U
URANIUM-232	PCI/G	0.066 J	0.044 U	0.087 J	-0.013 U	0.129 J
URANIUM-234	PCI/G	0.55	0.548 J	0.738	0.654 J	0.94
URANIUM-235	PCI/G	0.1 J	0.171 J	0.108 J	0.183 J	0.132 J
URANIUM-238	PCI/G	0.52	0.545 J	0.482 J	0.818 J	0.863 J
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.144 U	0.104 U	0.206 U	0 U	0 U
URANIUM-238	PCI/G	0.776 U	0 U	0 U	0.562 U	0.484 U
METALS						
ALUMINUM	MG/KG	5,580	5,150	5,460	4,910	6,840
ANTIMONY	MG/KG	0.47 U	0.45 U	0.44 U	0.46 U	0.49 U

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	4.5	6.6	6.7	4.5	4.8
BARIUM	MG/KG	29	35	45.3	33.1	39.3
BERYLLIUM	MG/KG	0.24	0.24	0.24	0.23	0.31
CADMIUM	MG/KG	0.08 U	0.077 U	0.075 U	0.079 U	0.084 U
CALCIUM	MG/KG	3,620	5,140	4,400	3,330	2,500
CHROMIUM, TOTAL	MG/KG	6.5	6.3	6.8	6.2	9
COBALT	MG/KG	4.4 J	4.6 J	4.7 J	4.1 J	6.1
COPPER	MG/KG	10.9	16	12.3	12.1	14.6
IRON	MG/KG	12,000	14,000	14,800	12,600	17,100
LEAD	MG/KG	5.9	6.4	7	6.6	6.7
MAGNESIUM	MG/KG	2,450	2,630	3,370	2,430	2,930
MANGANESE	MG/KG	181	294	336	205	218
MERCURY	MG/KG	0.0025 J	0.0017 J	0.0042 J	0.002 J	0.0052 J
NICKEL	MG/KG	11.4	11.7	11.9	10.7	15.4
POTASSIUM	MG/KG	861 J	605 J	670 J	686 J	977 J
SELENIUM	MG/KG	0.74 U	0.72 U	0.69 U	0.74 U	0.78 U
SILVER	MG/KG	0.26 J	0.19 U	0.18 U	0.19 U	0.2 U
SODIUM	MG/KG	134 J	86 U	83 U	88 U	93 U
THALLIUM	MG/KG	0.66 U	0.64 U	0.62 U	0.66 U	0.69 U
VANADIUM	MG/KG	9.1	0.89 J	0.2 U	4.5 J	7.1
ZINC	MG/KG	40.9	42.7	42.2	39.4	58.6

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-007	SD-008	SD-008	SD-008	SD-008
Field Sample Identifier		SVD-SD007 (18-20.7)	SVD-SD008 (0-6)	SVD-SD008 (6-12)	SVD-SD008 (12-18)	SVD-SD008 (18-20.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-20.7	0.0-6.0	6.0-12.0	12.0-18.0	18.0-20.6
Date of Sample		07/17/18	07/16/18	07/16/18	07/16/18	07/16/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	0.011 U	0.01 U	0.01 U	0.011 U	0.01 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.0017 U	0.0016 U	0.0016 U	0.0017 U	0.0016 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.013 U	0.012 U	0.012 U	0.013 U	0.012 U
DALAPON	MG/KG	0.0034 U	0.0032 U	0.0031 U	0.0034 U	0.0032 U
DICAMBA	MG/KG	0.0027 U	0.0025 U	0.0025 U	0.0027 U	0.0025 U
DICHLOROPROP	MG/KG	0.011 U	0.01 U	0.01 U	0.011 U	0.01 U
DINOSEB	MG/KG	0.0074 U	0.0069 U	0.0068 U	0.0074 U	0.0069 U
MCPA	MG/KG	1.7 U	1.6 U	1.6 U	1.7 U	1.6 U
MCPP	MG/KG	1.7 U	1.6 U	1.6 U	1.7 U	1.6 U
PENTACHLOROPHENOL	MG/KG	0.0014 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U
SILVEX (2,4,5-TP)	MG/KG	0.0032 U	0.003 U	0.003 U	0.0032 U	0.003 U
MISCELLANEOUS						
CYANIDE	MG/KG	0.4 U	0.36 U	0.35 U	0.38 U	0.39 U
PERCENT MOISTURE	PERCENT	22	7.8	12	16	22
TOTAL ORGANIC CARBON	MG/KG	2,200 J	2,600 J	1,800 J	2,900 J	6,600

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	0.00069 U	0.00074 U	0.00067 U	0.00074 U	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00047 U	0.0005 U	0.00046 U	0.00051 U	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00092 U	0.00099 U	0.00089 U	0.00099 U	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	0.00041 U	0.00044 U	0.0004 U	0.00044 U	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	0.00047 U	0.0005 U	0.00045 U	0.0005 U	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	0.0008 U	0.00085 U	0.00077 U	0.00085 U	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	0.00066 U	0.0007 U	0.00063 U	0.00071 U	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0012 U	0.0013 U	0.0012 U	0.0013 U	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	0.00067 U	0.00072 U	0.00065 U	0.00072 U	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0012 U	0.0013 U	0.0012 U	0.0013 U	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	0.00077 U	0.00082 U	0.00074 U	0.00083 U	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.001 U	0.0011 U	0.00098 U	0.0011 U	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00039 U	0.00042 U	0.00038 U	0.00042 U	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	0.00037 U	0.00039 U	0.00036 U	0.0004 U	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	0.00057 U	0.00061 U	0.00055 U	0.00061 U	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	0.00049 U	0.00053 U	0.00048 U	0.00053 U	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	0.00043 U	0.00046 U	0.00042 U	0.00046 U	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00044 U	0.00046 U	0.00042 U	0.00047 U	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	0.00045 U	0.00047 U	0.00043 U	0.00048 U	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00042 U	0.00044 U	0.0004 U	0.00045 U	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	0.00052 U	0.00055 U	0.0005 U	0.00056 U	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	0.00046 U	0.00049 U	0.00044 U	0.00049 U	Not Analyzed
2-HEXANONE	MG/KG	0.0015 U	0.0016 U	0.0015 U	0.0017 U	Not Analyzed
4-CHLOROTOLUENE	MG/KG	0.00068 U	0.00073 U	0.00066 U	0.00073 U	Not Analyzed
ACETONE	MG/KG	0.172	0.191	0.0545	0.0514	Not Analyzed
BENZENE	MG/KG	0.00046 U	0.00049 U	0.00044 U	0.00049 U	Not Analyzed
BROMOBENZENE	MG/KG	0.00048 U	0.00051 U	0.00046 U	0.00052 U	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00052 U	0.00056 U	0.0005 U	0.00056 U	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	0.00054 U	0.00057 U	0.00052 U	0.00058 U	Not Analyzed
BROMOFORM	MG/KG	0.00049 U	0.00052 U	0.00047 U	0.00052 U	Not Analyzed
BROMOMETHANE	MG/KG	0.0012 U	0.0013 U	0.0012 U	0.0013 U	Not Analyzed
CARBON DISULFIDE	MG/KG	0.0011 U	0.0024 J	0.0011 U	0.0012 U	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	0.00067 U	0.00071 U	0.00064 U	0.00071 U	Not Analyzed
CHLOROBENZENE	MG/KG	0.00043 U	0.00046 U	0.00041 U	0.00046 U	Not Analyzed
CHLOROETHANE	MG/KG	0.00083 U	0.00089 U	0.0008 U	0.00089 U	Not Analyzed
CHLOROFORM	MG/KG	0.00045 U	0.00048 U	0.00043 U	0.00048 U	Not Analyzed
CHLOROMETHANE	MG/KG	0.0024 U	0.0025 U	0.0023 U	0.0025 U	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0012 U	0.0012 U	0.0011 U	0.0012 U	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00043 U	0.00046 U	0.00041 U	0.00046 U	Not Analyzed
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	0.00041 U	0.00044 U	0.00039 U	0.00044 U	Not Analyzed
DIBROMOMETHANE	MG/KG	0.00041 U	0.00044 U	0.0004 U	0.00044 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00077 U	0.00082 U	0.00074 U	0.00083 U	Not Analyzed
ETHYLBENZENE	MG/KG	0.00067 U	0.00071 U	0.00064 U	0.00072 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	0.00061 U	0.00065 U	0.00059 U	0.00065 U	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00085 U	0.0009 U	0.00081 U	0.00091 U	Not Analyzed
M+P-XYLENE	MG/KG	0.00091 U	0.00096 U	0.00087 U	0.00097 U	Not Analyzed
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0045 U	0.0325	0.0055 J	0.0049 U	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0019 U	0.002 U	0.0018 U	0.002 U	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	0.003 U	0.0032 U	0.0029 U	0.0032 U	Not Analyzed
NAPHTHALENE	MG/KG	0.0024 U	0.0026 U	0.0023 U	0.0026 U	Not Analyzed
N-BUTYLBENZENE	MG/KG	0.00049 U	0.00053 U	0.00048 U	0.00053 U	Not Analyzed
N-PROPYLBENZENE	MG/KG	0.00038 U	0.0004 U	0.00036 U	0.00041 U	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00071 U	0.00075 U	0.00068 U	0.00076 U	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	0.00039 U	0.00041 U	0.00037 U	0.00042 U	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	0.00044 U	0.00047 U	0.00043 U	0.00047 U	Not Analyzed
STYRENE	MG/KG	0.0007 U	0.00074 U	0.00067 U	0.00075 U	Not Analyzed
T-BUTYLBENZENE	MG/KG	0.00043 U	0.00045 U	0.00041 U	0.00046 U	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00043 U	0.00046 U	0.00041 U	0.00046 U	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00056 U	0.0006 U	0.00054 U	0.0006 U	Not Analyzed
TOLUENE	MG/KG	0.00046 U	0.00049 U	0.00044 U	0.00049 U	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00081 U	0.00086 U	0.00078 U	0.00087 U	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.0004 U	0.00042 U	0.00038 U	0.00043 U	Not Analyzed
TRICHLOROETHANE	MG/KG	0.00052 U	0.00055 U	0.0005 U	0.00055 U	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	0.00092 U	0.00099 U	0.00089 U	0.00099 U	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	0.00083 U	0.00088 U	0.0008 U	0.00089 U	Not Analyzed
VINYL CHLORIDE	MG/KG	0.00057 U	0.00061 U	0.00055 U	0.00061 U	Not Analyzed
XYLENES, TOTAL	MG/KG	0.00071 U	0.00075 U	0.00068 U	0.00076 U	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.011 U	0.012 U	0.011 U	0.012 U	0.01 U
2,4,5-TRICHLOROPHENOL	MG/KG	0.02 U	0.021 U	0.019 U	0.021 U	0.018 U
2,4,6-TRICHLOROPHENOL	MG/KG	0.022 U	0.024 U	0.021 U	0.024 U	0.02 U
2,4-DICHLOROPHENOL	MG/KG	0.034 U	0.037 U	0.033 U	0.037 U	0.031 U
2,4-DIMETHYLPHENOL	MG/KG	0.038 U	0.041 U	0.037 U	0.041 U	0.034 U
2,4-DINITROPHENOL	MG/KG	0.11 U	0.12 U	0.11 U	0.12 U	0.1 U
2,4-DINITROTOLUENE	MG/KG	0.017 U	0.019 U	0.017 U	0.019 U	0.016 U
2,6-DINITROTOLUENE	MG/KG	0.019 U	0.02 U	0.018 U	0.02 U	0.017 U
2-CHLORONAPHTHALENE	MG/KG	0.013 U	0.014 U	0.013 U	0.014 U	0.012 U
2-CHLOROPHENOL	MG/KG	0.041 U	0.045 U	0.04 U	0.045 U	0.037 U
2-METHYLNAPHTHALENE	MG/KG	0.0097 U	0.011 U	0.0094 U	0.011 U	0.0088 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.042 U	0.046 U	0.041 U	0.046 U	0.039 U
2-NITROANILINE	MG/KG	0.0096 U	0.01 U	0.0094 U	0.01 U	0.0087 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.049 U	0.053 U	0.048 U	0.053 U	0.044 U
3,3'-DICHLOROBENZIDINE	MG/KG	0.5 U	0.55 U	0.49 UR	0.55 UR	0.46 UR
3-NITROANILINE	MG/KG	0.014 U	0.015 U	0.013 U	0.015 U	0.013 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.057 U	0.062 U	0.055 U	0.062 U	0.052 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.05 U	0.055 U	0.049 U	0.055 U	0.046 U
4-CHLORO-3-METHYLPHENOL	MG/KG	0.021 U	0.022 U	0.02 U	0.022 U	0.019 U
4-CHLOROANILINE	MG/KG	0.03 U	0.032 U	0.029 U	0.032 U	0.027 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.012 U	0.013 U	0.012 U	0.013 U	0.011 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.07 U	0.077 U	0.068 U	0.076 U	0.064 U
4-NITROANILINE	MG/KG	0.028 U	0.031 U	0.028 U	0.031 U	0.026 U
4-NITROPHENOL	MG/KG	0.28 U	0.31 U	0.28 U	0.31 U	0.26 U
ACENAPHTHENE	MG/KG	0.0088 U	0.0096 U	0.0085 U	0.0095 U	0.008 U
ACENAPHTHYLENE	MG/KG	0.0084 U	0.0092 U	0.0082 U	0.0091 U	0.0076 U
ANTHRACENE	MG/KG	0.0096 U	0.011 U	0.0094 U	0.01 U	0.0087 U
BENZO(A)ANTHRACENE	MG/KG	0.013 U	0.014 U	0.013 U	0.014 U	0.012 U
BENZO(A)PYRENE	MG/KG	0.012 U	0.013 U	0.012 U	0.013 U	0.011 U
BENZO(B)FLUORANTHENE	MG/KG	0.011 U	0.012 U	0.01 U	0.012 U	0.0098 U
BENZO(G,H,I)PERYLENE	MG/KG	0.014 U	0.015 U	0.014 U	0.015 U	0.013 U
BENZO(K)FLUORANTHENE	MG/KG	0.021 U	0.022 U	0.02 U	0.022 U	0.019 U
BENZOIC ACID	MG/KG	0.16 U	0.17 U	0.16 U	0.17 U	0.14 U
BENZYL ALCOHOL	MG/KG	0.0095 U	0.01 U	0.0093 U	0.01 U	0.0086 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.023 U	0.025 U	0.023 U	0.025 U	0.021 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0082 U	0.009 U	0.008 U	0.0089 U	0.0075 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.021 U	0.023 U	0.021 U	0.023 U	0.019 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.009 U	0.0098 U	0.0088 U	0.0098 U	0.0082 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.029 U	0.032 U	0.028 U	0.031 U	0.026 U
CARBAZOLE	MG/KG	0.014 U	0.015 U	0.013 U	0.015 U	0.012 U
CHRYSENE	MG/KG	0.011 U	0.012 U	0.011 U	0.012 U	0.01 U
DIBENZ(A,H)ANTHRACENE	MG/KG	0.031 U	0.034 U	0.03 U	0.034 U	0.028 U
DIBENZOFURAN	MG/KG	0.01 U	0.011 U	0.0098 U	0.011 U	0.0091 U
DIETHYL PHTHALATE	MG/KG	0.014 U	0.016 U	0.014 U	0.016 U	0.013 U
DIMETHYL PHTHALATE	MG/KG	0.013 U	0.014 U	0.013 U	0.014 U	0.012 U
DI-N-BUTYL PHTHALATE	MG/KG	0.021 U	0.023 U	0.021 U	0.023 U	0.019 U
DI-N-OCTYLPHTHALATE	MG/KG	0.013 U	0.015 U	0.013 U	0.015 U	0.012 U
FLUORANTHENE	MG/KG	0.019 U	0.021 U	0.018 U	0.021 U	0.017 U
FLUORENE	MG/KG	0.011 U	0.012 U	0.011 U	0.012 U	0.01 U
HEXACHLOROBENZENE	MG/KG	0.011 U	0.012 U	0.01 U	0.012 U	0.0097 U
HEXACHLOROBUTADIENE	MG/KG	0.018 U	0.02 U	0.018 U	0.02 U	0.016 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.046 UR	0.05 UR	0.044 UR	0.05 UR	0.041 UR
HEXACHLOROETHANE	MG/KG	0.0091 U	0.0099 U	0.0088 U	0.0099 U	0.0082 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.01 U	0.011 U	0.0099 U	0.011 U	0.0092 U
ISOPHORONE	MG/KG	0.0082 U	0.0089 U	0.008 U	0.0089 U	0.0074 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.0077 U	0.0084 U	0.0075 U	0.0083 U	0.007 U
NITROBENZENE	MG/KG	0.012 U	0.013 U	0.012 U	0.013 U	0.011 U
N-NITROSODIMETHYLAMINE	MG/KG	0.0096 U	0.01 U	0.0093 U	0.01 U	0.0087 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.011 U	0.012 U	0.011 U	0.012 U	0.01 U
N-NITROSODIPHENYLAMINE	MG/KG	0.0095 U	0.01 U	0.0093 U	0.01 U	0.0087 U
PENTACHLOROPHENOL	MG/KG	0.074 U	0.081 U	0.072 U	0.081 U	0.067 U
PHENANTHRENE	MG/KG	0.01 U	0.011 U	0.01 U	0.011 U	0.0095 U
PHENOL	MG/KG	0.042 U	0.046 U	0.041 U	0.046 U	0.038 U
PYRENE	MG/KG	0.012 U	0.013 U	0.012 U	0.013 U	0.011 U
PESTICIDES						
ALDRIN	MG/KG	0.00041 U	0.00043 U	0.00039 U	0.00043 U	0.00036 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.0018 U	0.0019 U	0.0017 U	0.0019 U	0.00031 U
ALPHA ENDOSULFAN	MG/KG	0.0023 U	0.0024 U	0.0021 U	0.0024 U	0.002 U
ALPHA-CHLORDANE	MG/KG	0.00045 U	0.00048 U	0.00043 U	0.00048 U	0.0004 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00043 U	0.00046 U	0.00041 U	0.00046 U	0.00038 U
BETA ENDOSULFAN	MG/KG	0.00045 U	0.00047 U	0.00043 U	0.00048 U	0.0004 U
BETA-CHLORDANE	MG/KG	0.00045 U	0.00048 U	0.00043 U	0.00048 U	0.0004 U
CHLORDANE	MG/KG	0.0042 U	0.0044 U	0.004 U	0.0045 U	0.0037 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.00065 U	0.00069 U	0.00062 U	0.0007 U	0.00058 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.00038 U	0.0004 U	0.00036 U	0.0004 U	0.00034 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.0021 U	0.0022 U	0.002 U	0.0023 U	0.0019 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.0018 U	0.0019 U	0.0017 U	0.0019 U	0.00031 U
DIELDRIN	MG/KG	0.00043 U	0.00046 U	0.00041 U	0.00046 U	0.00038 U
ENDOSULFAN SULFATE	MG/KG	0.00045 U	0.00048 U	0.00043 U	0.00048 U	0.0004 U
ENDRIN	MG/KG	0.0023 U	0.0024 U	0.0022 U	0.0025 U	0.002 U
ENDRIN ALDEHYDE	MG/KG	0.00047 U	0.0005 U	0.00045 U	0.0005 U	0.00042 U
ENDRIN KETONE	MG/KG	0.00044 U	0.00047 U	0.00042 U	0.00047 U	0.00039 U
GAMMA BHC (LINDANE)	MG/KG	0.0018 U	0.0019 U	0.0017 U	0.002 U	0.00032 U
HEPTACHLOR	MG/KG	0.0022 U	0.0023 U	0.0021 U	0.0024 U	0.002 U
HEPTACHLOR EPOXIDE	MG/KG	0.00044 U	0.00047 U	0.00042 U	0.00047 U	0.00039 U
METHOXYCHLOR	MG/KG	0.0023 U	0.0024 U	0.0022 U	0.0025 U	0.002 U
TOXAPHENE	MG/KG	0.006 U	0.0064 U	0.0057 U	0.0064 U	0.0053 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0035 U	0.0037 U	0.0034 U	0.0037 U	0.0031 U
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0036 U	0.0038 U	0.0035 U	0.0038 U	0.0032 U
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0036 U	0.0038 U	0.0034 U	0.0038 U	0.0032 U
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0054 U	0.0057 U	0.0052 U	0.0057 U	0.0048 U
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0045 U	0.0048 U	0.0043 U	0.0048 U	0.0039 U
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0042 U	0.0045 U	0.004 U	0.0045 U	0.0037 U
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0051 U	0.0054 U	0.0049 U	0.0054 U	0.0045 U
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0035 U	0.0037 U	0.0034 U	0.0037 U	0.0031 U
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0035 U	0.0037 U	0.0034 U	0.0037 U	0.0031 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.0029 U	0.0031 U	0.0028 U	0.0031 U	0.0026 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.04 U	0.07 U	0.112 U	0.328 U	-0.019 U
CESIUM-137	PCI/G	0.178	-0.004 U	0.026 U	0.1 U	0.344
COBALT-60	PCI/G	0.091 U	0.048	0.108 U	0.018 U	0.093
GROSS ALPHA	PCI/G	7.99 J	15.7	8.61	13.3	10.2
GROSS BETA	PCI/G	8.62	27.2	17	15.3	14.2
PLUTONIUM-238	PCI/G	0.133 U	0.102 UJ	0.066 UJ	0.042 J	-0.011 U
PLUTONIUM-239/240	PCI/G	0.013 U	-0.019 UJ	0.002 UJ	0.001 U	-0.012 U
POTASSIUM-40	PCI/G	14.254	25.357	16.218	15.413	14.167
STRONTIUM-90	PCI/G	-0.052 U	-0.327 U	-0.219 U	0.058 U	-0.074 U
URANIUM-232	PCI/G	-0.015 U	0.012 U	-0.013 U	0.001 U	0.016 U
URANIUM-234	PCI/G	0.551 J	1.28	0.844	1.19	0.815
URANIUM-235	PCI/G	0.072 J	0.136 J	0.208 J	0.157 J	0.16 J
URANIUM-238	PCI/G	0.516 J	1.06	1.08	1.09	0.812 J
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0 U	0 U	0 U	0.014 U	0.262 U
URANIUM-238	PCI/G	0.13 U	1.428 U	0.238 U	1.296 U	0 U
METALS						
ALUMINUM	MG/KG	16,000	28,000	17,000	13,000	7,040
ANTIMONY	MG/KG	8.6	12	9.6	8.8	2.4 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
METALS						
ARSENIC	MG/KG	7.2	13	9.9	5.5	7.4
BARIUM	MG/KG	90	130	88	64	43.2
BERYLLIUM	MG/KG	0.63	1.1	0.79	0.49	0.36
CADMIUM	MG/KG	0.18 U	0.04 U	0.18 U	0.2 U	0.61 U
CALCIUM	MG/KG	2,800	2,800	2,300	2,000	5,850
CHROMIUM, TOTAL	MG/KG	20	34	21	18	9.5
COBALT	MG/KG	9.4	14	10	9.5	6.9
COPPER	MG/KG	16	27	23	20	14.7
IRON	MG/KG	23,000	39,000	29,000	21,000	17,500
LEAD	MG/KG	9.8	14	11	9	7.7
MAGNESIUM	MG/KG	4,400	7,200	4,600	4,000	3,730
MANGANESE	MG/KG	330	510	390	220	357
MERCURY	MG/KG	0.012	0.024	0.011	0.0094 J	0.0027 J
NICKEL	MG/KG	23	40	28	25	16.1
POTASSIUM	MG/KG	3,400	6,000	3,600	2,700	1,200 U
SELENIUM	MG/KG	0.29 J	0.6 J	0.49 J	0.38 J	2.4 U
SILVER	MG/KG	0.047 U	0.053 U	0.048 U	0.054 U	0.61 U
SODIUM	MG/KG	110 J	140 J	110 J	110 J	1,200 U
THALLIUM	MG/KG	1.1 J	1.8 J	1.1 J	0.5 U	1.2 U
VANADIUM	MG/KG	28	47	31	28	11.5
ZINC	MG/KG	59	90	76	75	48.8

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-009	SD-009	SD-009	SD-009	SD-010
Field Sample Identifier		SVD-SD009 (0-6)	SVD-SD009 (8-12)	SVD-SD009 (12-18.5)	SVD-SD009 (12-18.5)-D	SVD-SD010 (0-6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-6.0	8.0-12.0	12.0-18.5	12.0-18.5	0.0-6.0
Date of Sample		07/13/18	07/13/18	07/13/18	07/13/18	07/12/18
Parameter	Units				Field Duplicate	
HERBICIDES						
2,4 DB	MG/KG	0.013 U	0.013 U	0.012 UJ	0.011 U	0.011 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.0021 U	0.002 U	0.0018 UJ	0.0017 U	0.0017 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.016 U	0.015 U	0.014 UJ	0.013 U	0.013 U
DALAPON	MG/KG	0.0041 U	0.0039 U	0.0036 UJ	0.0034 U	0.0033 U
DICAMBA	MG/KG	0.0033 U	0.0031 U	0.0029 UJ	0.0027 U	0.0027 U
DICHLOROPROP	MG/KG	0.013 U	0.013 U	0.012 UJ	0.011 U	0.011 U
DINOSEB	MG/KG	0.009 U	0.0085 U	0.0079 UJ	0.0074 U	0.0073 U
MCPA	MG/KG	2.1 U	1.9 U	1.8 UJ	1.7 U	1.7 U
MCPP	MG/KG	2.1 U	2 U	1.9 UJ	1.7 U	1.7 U
PENTACHLOROPHENOL	MG/KG	0.0017 U	0.0016 U	0.0014 UJ	0.0014 U	0.0013 U
SILVEX (2,4,5-TP)	MG/KG	0.0039 U	0.0037 U	0.0034 UJ	0.0032 U	0.0032 U
MISCELLANEOUS						
CYANIDE	MG/KG	0.39 U	0.43 U	0.38 U	0.43 U	0.31 U
PERCENT MOISTURE	PERCENT	18	23	14	23	7.7
TOTAL ORGANIC CARBON	MG/KG	8,600	11,000	4,900	4,600	2,500 J

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5-5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	0.033 UJ	Not Analyzed	0.024 UJ	0.022 UJ	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.061 UJ	Not Analyzed	0.045 UJ	0.041 UJ	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	0.025 UJ	Not Analyzed	0.018 UJ	0.017 UJ	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	0.024 UJ	Not Analyzed	0.018 UJ	0.017 UJ	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	0.032 UJ	Not Analyzed	0.024 UJ	0.022 UJ	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	0.033 UJ	Not Analyzed	0.024 UJ	0.022 UJ	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.073 UJ	Not Analyzed	0.054 UJ	0.05 UJ	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	0.065 UJ	Not Analyzed	0.048 UJ	0.044 UJ	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.085 UJ	Not Analyzed	0.063 UJ	0.058 UJ	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	0.029 UJ	Not Analyzed	0.022 UJ	0.02 UJ	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.14 UJ	Not Analyzed	0.1 UJ	0.092 UJ	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.04 UJ	Not Analyzed	0.03 UJ	0.027 UJ	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	0.06 UJ	Not Analyzed	0.044 UJ	0.041 UJ	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	0.03 UJ	Not Analyzed	0.022 UJ	0.02 UJ	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	0.038 UJ	Not Analyzed	0.028 UJ	0.026 UJ	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	0.065 UJ	Not Analyzed	0.048 UJ	0.044 UJ	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.016 UJ	Not Analyzed	0.012 UJ	0.011 UJ	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	0.042 UJ	Not Analyzed	0.031 UJ	0.028 UJ	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.035 UJ	Not Analyzed	0.026 UJ	0.024 UJ	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	0.045 UJ	Not Analyzed	0.033 UJ	0.03 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5-5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	0.021 UJ	Not Analyzed	0.015 UJ	0.014 UJ	Not Analyzed
2-HEXANONE	MG/KG	0.071 UJ	Not Analyzed	0.053 UJ	0.048 UJ	Not Analyzed
4-CHLOROTOLUENE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
ACETONE	MG/KG	0.094 UJ	Not Analyzed	0.07 UJ	0.064 UJ	Not Analyzed
BENZENE	MG/KG	0.023 UJ	Not Analyzed	0.017 UJ	0.016 UJ	Not Analyzed
BROMOBENZENE	MG/KG	0.044 UJ	Not Analyzed	0.032 UJ	0.03 UJ	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.066 UJ	Not Analyzed	0.049 UJ	0.045 UJ	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	0.03 UJ	Not Analyzed	0.022 UJ	0.02 UJ	Not Analyzed
BROMOFORM	MG/KG	0.038 UJ	Not Analyzed	0.028 UJ	0.026 UJ	Not Analyzed
BROMOMETHANE	MG/KG	0.2 UJ	Not Analyzed	0.14 UJ	0.13 UJ	Not Analyzed
CARBON DISULFIDE	MG/KG	0.041 UJ	Not Analyzed	0.03 UJ	0.028 UJ	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
CHLOROBENZENE	MG/KG	0.03 UJ	Not Analyzed	0.022 UJ	0.02 UJ	Not Analyzed
CHLOROETHANE	MG/KG	0.17 UJ	Not Analyzed	0.12 UJ	0.11 UJ	Not Analyzed
CHLOROFORM	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
CHLOROMETHANE	MG/KG	0.046 UJ	Not Analyzed	0.034 UJ	0.031 UJ	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.066 UJ	Not Analyzed	0.048 UJ	0.045 UJ	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	0.018 UJ	Not Analyzed	0.013 UJ	0.012 UJ	Not Analyzed
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	0.056 UR	Not Analyzed	0.042 UR	0.038 UR	Not Analyzed
DIBROMOMETHANE	MG/KG	0.034 UJ	Not Analyzed	0.025 UJ	0.023 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.1 UJ	Not Analyzed	0.074 UJ	0.068 UJ	Not Analyzed
ETHYLBENZENE	MG/KG	0.025 UJ	Not Analyzed	0.019 UJ	0.017 UJ	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	0.052 UJ	Not Analyzed	0.038 UJ	0.035 UJ	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.028 UJ	Not Analyzed	0.021 UJ	0.019 UJ	Not Analyzed
M+P-XYLENE	MG/KG	0.039 UJ	Not Analyzed	0.028 UJ	0.026 UJ	Not Analyzed
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.38 UJ	Not Analyzed	0.28 UJ	0.26 UJ	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.055 UJ	Not Analyzed	0.041 UJ	0.037 UJ	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	0.1 J	Not Analyzed	0.068 J	0.059 UJ	Not Analyzed
NAPHTHALENE	MG/KG	0.058 UJ	Not Analyzed	0.043 UJ	0.04 UJ	Not Analyzed
N-BUTYLBENZENE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
N-PROPYLBENZENE	MG/KG	0.027 UJ	Not Analyzed	0.02 UJ	0.018 UJ	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.067 UJ	Not Analyzed	0.05 UJ	0.046 UJ	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	0.028 UJ	Not Analyzed	0.02 UJ	0.019 UJ	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	0.035 UJ	Not Analyzed	0.026 UJ	0.024 UJ	Not Analyzed
STYRENE	MG/KG	0.026 UJ	Not Analyzed	0.019 UJ	0.018 UJ	Not Analyzed
T-BUTYLBENZENE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.046 UJ	Not Analyzed	0.034 UJ	0.031 UJ	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	0.059 UJ	Not Analyzed	0.043 UJ	0.04 UJ	Not Analyzed
TOLUENE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.023 UJ	Not Analyzed	0.017 UJ	0.016 UJ	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.031 UJ	Not Analyzed	0.023 UJ	0.021 UJ	Not Analyzed
TRICHLOROETHANE	MG/KG	0.029 UJ	Not Analyzed	0.021 UJ	0.019 UJ	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	0.073 UJ	Not Analyzed	0.054 UJ	0.05 UJ	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	0.063 UJ	Not Analyzed	0.047 UJ	0.043 UJ	Not Analyzed
VINYL CHLORIDE	MG/KG	0.062 UJ	Not Analyzed	0.046 UJ	0.042 UJ	Not Analyzed
XYLENES, TOTAL	MG/KG	0.11 UJ	Not Analyzed	0.078 UJ	0.072 UJ	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.012 U
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.022 U	0.02 U	Not Analyzed	0.02 U
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.024 U	0.022 U	Not Analyzed	0.023 U
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.037 U	0.035 U	Not Analyzed	0.035 U
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.042 U	0.039 U	Not Analyzed	0.04 U
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.12 U	0.11 U	Not Analyzed	0.12 U
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.019 U	0.018 U	Not Analyzed	0.018 U
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.021 U	0.019 U	Not Analyzed	0.02 U
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.015 U	0.013 U	Not Analyzed	0.014 U
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.046 U	0.042 U	Not Analyzed	0.043 U
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.011 U	0.0099 U	Not Analyzed	0.01 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.047 U	0.043 U	Not Analyzed	0.044 U
2-NITROANILINE	MG/KG	Not Analyzed	0.011 U	0.0098 U	Not Analyzed	0.01 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.054 U	0.05 U	Not Analyzed	0.051 U
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.56 U	0.52 UR	Not Analyzed	0.53 U
3-NITROANILINE	MG/KG	Not Analyzed	0.015 U	0.014 U	Not Analyzed	0.014 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.063 U	0.058 U	Not Analyzed	0.059 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.056 U	0.051 U	Not Analyzed	0.053 U
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.023 U	0.021 U	Not Analyzed	0.022 U
4-CHLOROANILINE	MG/KG	Not Analyzed	0.033 U	0.03 U	Not Analyzed	0.031 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.013 U	0.012 U	Not Analyzed	0.013 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.078 U	0.072 U	Not Analyzed	0.074 U
4-NITROANILINE	MG/KG	Not Analyzed	0.031 U	0.029 U	Not Analyzed	0.03 U
4-NITROPHENOL	MG/KG	Not Analyzed	0.31 U	0.29 U	Not Analyzed	0.3 U
ACENAPHTHENE	MG/KG	Not Analyzed	0.0097 U	0.009 U	Not Analyzed	0.0092 U
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0093 U	0.0086 U	Not Analyzed	0.0088 U
ANTHRACENE	MG/KG	Not Analyzed	0.011 U	0.0098 U	Not Analyzed	0.01 U
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.014 U	0.013 U	Not Analyzed	0.014 U
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.013 U	0.012 U	Not Analyzed	0.012 U
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.011 U
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.015 U	0.014 U	Not Analyzed	0.015 U
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.023 U	0.021 U	Not Analyzed	0.021 U
BENZOIC ACID	MG/KG	Not Analyzed	0.18 U	0.16 U	Not Analyzed	0.17 U
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.011 U	0.0097 U	Not Analyzed	0.01 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.026 U	0.024 U	Not Analyzed	0.024 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0091 U	0.0084 U	Not Analyzed	0.0086 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.023 U	0.022 U	Not Analyzed	0.022 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.01 U	0.0092 U	Not Analyzed	0.0094 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.032 U	0.03 U	Not Analyzed	0.03 U
CARBAZOLE	MG/KG	Not Analyzed	0.015 U	0.014 U	Not Analyzed	0.014 U
CHRYSENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.012 U
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.035 U	0.032 U	Not Analyzed	0.033 U
DIBENZOFURAN	MG/KG	Not Analyzed	0.011 U	0.01 U	Not Analyzed	0.011 U
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.016 U	0.015 U	Not Analyzed	0.015 U
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.015 U	0.013 U	Not Analyzed	0.014 U
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.024 U	0.022 U	Not Analyzed	0.022 U
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.015 U	0.014 U	Not Analyzed	0.014 U
FLUORANTHENE	MG/KG	Not Analyzed	0.021 U	0.019 U	Not Analyzed	0.02 U
FLUORENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.012 U
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.011 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.02 U	0.018 U	Not Analyzed	0.019 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.05 UR	0.047 UR	Not Analyzed	0.048 UR
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.01 U	0.0093 U	Not Analyzed	0.0095 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.011 U	0.01 U	Not Analyzed	0.011 U
ISOPHORONE	MG/KG	Not Analyzed	0.009 U	0.0084 U	Not Analyzed	0.0086 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.0085 U	0.0078 U	Not Analyzed	0.008 U
NITROBENZENE	MG/KG	Not Analyzed	0.014 U	0.013 U	Not Analyzed	0.013 U
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.011 U	0.0098 U	Not Analyzed	0.01 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.011 U
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.011 U	0.0097 U	Not Analyzed	0.01 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.082 U	0.076 U	Not Analyzed	0.078 U
PHENANTHRENE	MG/KG	Not Analyzed	0.012 U	0.011 U	Not Analyzed	0.011 U
PHENOL	MG/KG	Not Analyzed	0.047 U	0.043 U	Not Analyzed	0.044 U
PYRENE	MG/KG	Not Analyzed	0.013 U	0.012 U	Not Analyzed	0.013 U
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.00044 U	0.0004 U	Not Analyzed	0.00041 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00038 U	0.0017 U	Not Analyzed	0.0018 U
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.0024 U	0.0022 U	Not Analyzed	0.0023 U
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00048 U	0.00044 U	Not Analyzed	0.00046 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00046 U	0.00042 U	Not Analyzed	0.00044 U
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.00048 U	0.00044 U	Not Analyzed	0.00046 U
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00048 U	0.00044 U	Not Analyzed	0.00046 U
CHLORDANE	MG/KG	Not Analyzed	0.0045 U	0.0041 U	Not Analyzed	0.0043 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.0007 U	0.00064 U	Not Analyzed	0.00066 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.00041 U	0.00037 U	Not Analyzed	0.00039 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.0023 U	0.0021 U	Not Analyzed	0.0021 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00038 U	0.0017 U	Not Analyzed	0.0018 U
DIELDRIN	MG/KG	Not Analyzed	0.00047 U	0.00043 U	Not Analyzed	0.00044 U
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00049 U	0.00044 U	Not Analyzed	0.00046 U
ENDRIN	MG/KG	Not Analyzed	0.0025 U	0.0023 U	Not Analyzed	0.0023 U
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00051 U	0.00046 U	Not Analyzed	0.00048 U
ENDRIN KETONE	MG/KG	Not Analyzed	0.00047 U	0.00043 U	Not Analyzed	0.00045 U
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.00039 U	0.0018 U	Not Analyzed	0.0019 U
HEPTACHLOR	MG/KG	Not Analyzed	0.0024 U	0.0022 U	Not Analyzed	0.0022 U
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.00048 U	0.00044 U	Not Analyzed	0.00045 U
METHOXYCHLOR	MG/KG	Not Analyzed	0.0025 U	0.0023 U	Not Analyzed	0.0023 U
TOXAPHENE	MG/KG	Not Analyzed	0.0065 U	0.0059 U	Not Analyzed	0.0061 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0038 U	0.0035 U	Not Analyzed	0.0036 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0039 U	0.0036 U	Not Analyzed	0.0037 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0039 U	0.0036 U	Not Analyzed	0.0037 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.0059 U	0.0054 U	Not Analyzed	0.0056 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0049 U	0.0045 U	Not Analyzed	0.0046 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0046 U	0.0042 U	Not Analyzed	0.0043 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.0055 U	0.0051 U	Not Analyzed	0.0052 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0038 U	0.0035 U	Not Analyzed	0.0036 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0038 U	0.0035 U	Not Analyzed	0.0036 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.0032 U	0.0029 U	Not Analyzed	0.003 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	-0.008 U	Not Analyzed	Not Analyzed	0.14 U
CESIUM-137	PCI/G	Not Analyzed	0.033 U	Not Analyzed	Not Analyzed	0.026 U
COBALT-60	PCI/G	Not Analyzed	0.126 U	Not Analyzed	Not Analyzed	0.124 U
GROSS ALPHA	PCI/G	Not Analyzed	15.4	Not Analyzed	Not Analyzed	10.6
GROSS BETA	PCI/G	Not Analyzed	26	Not Analyzed	Not Analyzed	14.9
PLUTONIUM-238	PCI/G	Not Analyzed	-0.018 U	Not Analyzed	Not Analyzed	-0.027 U
PLUTONIUM-239/240	PCI/G	Not Analyzed	-0.004 U	Not Analyzed	Not Analyzed	0.006 U
POTASSIUM-40	PCI/G	Not Analyzed	27.165	Not Analyzed	Not Analyzed	16.756
STRONTIUM-90	PCI/G	Not Analyzed	0.188 J	Not Analyzed	Not Analyzed	-0.072 U
URANIUM-232	PCI/G	Not Analyzed	0.03 U	Not Analyzed	Not Analyzed	0.014 U
URANIUM-234	PCI/G	Not Analyzed	0.936	Not Analyzed	Not Analyzed	1
URANIUM-235	PCI/G	Not Analyzed	0.161 J	Not Analyzed	Not Analyzed	0.225 J
URANIUM-238	PCI/G	Not Analyzed	1.12	Not Analyzed	Not Analyzed	0.778 J
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	0.258 U	Not Analyzed	Not Analyzed	0 U
URANIUM-238	PCI/G	Not Analyzed	0.96 U	Not Analyzed	Not Analyzed	0.97 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	17,400	15,700	Not Analyzed	9,310
ANTIMONY	MG/KG	Not Analyzed	2.6 U	2.7 U	Not Analyzed	2.4 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
METALS						
ARSENIC	MG/KG	Not Analyzed	9.9	9.9	Not Analyzed	5.7
BARIUM	MG/KG	Not Analyzed	82.3	79.5	Not Analyzed	48.5
BERYLLIUM	MG/KG	Not Analyzed	0.9	0.85	Not Analyzed	0.44
CADMIUM	MG/KG	Not Analyzed	0.65 U	0.66 U	Not Analyzed	0.59 U
CALCIUM	MG/KG	Not Analyzed	9,140	9,950	Not Analyzed	1,320
CHROMIUM, TOTAL	MG/KG	Not Analyzed	22.9	20.7	Not Analyzed	12.3
COBALT	MG/KG	Not Analyzed	12.1	15.8	Not Analyzed	7.5
COPPER	MG/KG	Not Analyzed	26.2	24	Not Analyzed	13.8
IRON	MG/KG	Not Analyzed	30,900	29,000	Not Analyzed	18,000
LEAD	MG/KG	Not Analyzed	14.3	15.8	Not Analyzed	9.7
MAGNESIUM	MG/KG	Not Analyzed	7,790	7,630	Not Analyzed	3,070
MANGANESE	MG/KG	Not Analyzed	459	709	Not Analyzed	223
MERCURY	MG/KG	Not Analyzed	0.018	0.013	Not Analyzed	0.021
NICKEL	MG/KG	Not Analyzed	35.8	35.9	Not Analyzed	18.4
POTASSIUM	MG/KG	Not Analyzed	2,840	2,540	Not Analyzed	1,260
SELENIUM	MG/KG	Not Analyzed	5.2 U	5.3 U	Not Analyzed	2.4 U
SILVER	MG/KG	Not Analyzed	1.3 U	1.3 U	Not Analyzed	0.59 U
SODIUM	MG/KG	Not Analyzed	1,300 U	1,300 U	Not Analyzed	1,200 U
THALLIUM	MG/KG	Not Analyzed	2.6 U	2.7 U	Not Analyzed	1.2 U
VANADIUM	MG/KG	Not Analyzed	27.3	25.2	Not Analyzed	16.6
ZINC	MG/KG	Not Analyzed	73.7	69.9	Not Analyzed	46.6

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-010	SD-010	SD-010
Field Sample Identifier		SVD-SD010 (5.5-6)	SVD-SD010 (6-12)	SVD-SD901	SVD-SD010 (11-11.5)	SVD-SD010 (12-17.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	6.0-12.0	6.0-12.0	11.0-11.5	12.0-17.6
Date of Sample		07/12/18	07/12/18	07/12/18	07/12/18	07/12/18
Parameter	Units			Field Duplicate		
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.011 U	0.012 U	Not Analyzed	0.011 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.0018 U	0.0019 U	Not Analyzed	0.0017 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.013 U	0.014 U	Not Analyzed	0.013 U
DALAPON	MG/KG	Not Analyzed	0.0035 U	0.0038 U	Not Analyzed	0.0034 U
DICAMBA	MG/KG	Not Analyzed	0.0028 U	0.003 U	Not Analyzed	0.0027 U
DICHLOROPROP	MG/KG	Not Analyzed	0.011 U	0.012 U	Not Analyzed	0.011 U
DINOSEB	MG/KG	Not Analyzed	0.0076 U	0.0082 U	Not Analyzed	0.0073 U
MCPA	MG/KG	Not Analyzed	1.7 U	1.9 U	Not Analyzed	1.7 U
MCPP	MG/KG	Not Analyzed	1.8 U	1.9 U	Not Analyzed	1.7 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0014 U	0.0015 U	Not Analyzed	0.0013 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0033 U	0.0036 U	Not Analyzed	0.0032 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.38 U	0.42 U	Not Analyzed	0.38 U
PERCENT MOISTURE	PERCENT	21	24	25	21	20
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	3,600	8,900	Not Analyzed	5,400

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	0.00016 U	Not Analyzed	0.00032 UJ	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	0.0003 U	Not Analyzed	0.00059 UJ	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	0.00022 U	Not Analyzed	0.00043 UJ	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	8.50E-05 U	Not Analyzed	0.00017 UJ	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	0.00012 U	Not Analyzed	0.00023 UJ	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00022 UJ	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.00028 U	Not Analyzed	0.00055 UJ	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	0.0002 U	Not Analyzed	0.00039 UJ	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.00026 U	Not Analyzed	0.0005 UJ	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.00029 UJ	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	0.00079 U	Not Analyzed	0.0016 UJ	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	0.00025 U	Not Analyzed	0.0005 UJ	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	0.0003 U	Not Analyzed	0.00058 UJ	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	7.60E-05 U	Not Analyzed	0.00015 UJ	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	0.00016 U	Not Analyzed	0.00031 UJ	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00022 UJ	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00018 U	Not Analyzed	0.00035 UJ	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	0.00019 U	Not Analyzed	0.00038 UJ	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	0.00019 U	Not Analyzed	0.00038 UJ	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	0.00012 U	Not Analyzed	0.00023 UJ	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	0.0001 U	Not Analyzed	0.0002 UJ	Not Analyzed
2-HEXANONE	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00069 UJ	Not Analyzed
4-CHLOROTOLUENE	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.0003 UJ	Not Analyzed
ACETONE	MG/KG	Not Analyzed	0.06	Not Analyzed	0.049 J	Not Analyzed
BENZENE	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.0019 J	Not Analyzed
BROMOBENZENE	MG/KG	Not Analyzed	0.00022 U	Not Analyzed	0.00042 UJ	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.00017 U	Not Analyzed	0.00034 UJ	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00022 UJ	Not Analyzed
BROMOFORM	MG/KG	Not Analyzed	0.00018 UR	Not Analyzed	0.00036 UR	Not Analyzed
BROMOMETHANE	MG/KG	Not Analyzed	0.0013 U	Not Analyzed	0.0025 UJ	Not Analyzed
CARBON DISULFIDE	MG/KG	Not Analyzed	0.0039	Not Analyzed	0.01 J	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	0.00012 U	Not Analyzed	0.00024 UJ	Not Analyzed
CHLOROBENZENE	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00021 UJ	Not Analyzed
CHLOROETHANE	MG/KG	Not Analyzed	0.00043 UR	Not Analyzed	0.00084 UJ	Not Analyzed
CHLOROFORM	MG/KG	Not Analyzed	0.00027 U	Not Analyzed	0.0036 J	Not Analyzed
CHLOROMETHANE	MG/KG	Not Analyzed	0.00019 U	Not Analyzed	0.00038 UJ	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	0.00032 U	Not Analyzed	0.00062 UJ	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	9.10E-05 U	Not Analyzed	0.00018 UJ	Not Analyzed
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	0.0002 U	Not Analyzed	0.00038 UJ	Not Analyzed
DIBROMOMETHANE	MG/KG	Not Analyzed	0.00018 U	Not Analyzed	0.00036 UJ	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	0.00022 U	Not Analyzed	0.00042 UJ	Not Analyzed
ETHYLBENZENE	MG/KG	Not Analyzed	0.00013 U	Not Analyzed	0.00025 UJ	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.00017 U	Not Analyzed	0.00033 UJ	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00021 UJ	Not Analyzed
M+P-XYLENE	MG/KG	Not Analyzed	0.00014 U	Not Analyzed	0.00027 UJ	Not Analyzed
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	0.0081 J	Not Analyzed	0.0066 UJ	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	0.00027 U	Not Analyzed	0.00054 UJ	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	Not Analyzed	0.0006 U	Not Analyzed	0.0024 J	Not Analyzed
NAPHTHALENE	MG/KG	Not Analyzed	0.00029 J	Not Analyzed	0.00057 UJ	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.0003 UJ	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	9.90E-05 U	Not Analyzed	0.00019 UJ	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	0.00012 U	Not Analyzed	0.00023 UJ	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.00029 UJ	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00075 UJ	Not Analyzed
STYRENE	MG/KG	Not Analyzed	0.00013 U	Not Analyzed	0.00025 UJ	Not Analyzed
T-BUTYLBENZENE	MG/KG	Not Analyzed	0.00031 U	Not Analyzed	0.00061 UJ	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	0.0001 U	Not Analyzed	0.0002 UJ	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	0.00018 U	Not Analyzed	0.00036 UJ	Not Analyzed
TOLUENE	MG/KG	Not Analyzed	0.00015 U	Not Analyzed	0.0003 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	0.00011 U	Not Analyzed	0.00021 UJ	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	0.00013 U	Not Analyzed	0.00025 UJ	Not Analyzed
TRICHLOROETHANE	MG/KG	Not Analyzed	0.00012 U	Not Analyzed	0.00023 UJ	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	0.00022 U	Not Analyzed	0.00042 UJ	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	0.00013 U	Not Analyzed	0.00025 UJ	Not Analyzed
VINYL CHLORIDE	MG/KG	Not Analyzed	0.00017 U	Not Analyzed	0.00034 UJ	Not Analyzed
XYLENES, TOTAL	MG/KG	Not Analyzed	0.00026 U	Not Analyzed	0.0005 UJ	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.011 U
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.018 U	Not Analyzed	0.02 U
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.02 U	Not Analyzed	0.023 U
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.031 U	Not Analyzed	0.035 U
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.034 U	Not Analyzed	0.039 U
2,4-DINITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.1 U	Not Analyzed	0.12 U
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.016 U	Not Analyzed	0.018 U
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.017 U	Not Analyzed	0.019 U
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
2-CHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.037 U	Not Analyzed	0.043 U
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	Not Analyzed	0.01 U
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.038 U	Not Analyzed	0.044 U
2-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	Not Analyzed	0.01 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.044 U	Not Analyzed	0.051 U
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	Not Analyzed	0.46 UR	Not Analyzed	0.52 UR
3-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.051 U	Not Analyzed	0.059 U
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.045 U	Not Analyzed	0.052 U
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.021 U
4-CHLOROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.027 U	Not Analyzed	0.031 U
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.012 U
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.064 U	Not Analyzed	0.073 U
4-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.026 U	Not Analyzed	0.03 U
4-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.26 U	Not Analyzed	0.29 U
ACENAPHTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0079 U	Not Analyzed	0.0091 U
ACENAPHTHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0076 U	Not Analyzed	0.0087 U
ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	Not Analyzed	0.01 U
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
BENZO(A)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.012 U
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	Not Analyzed	0.011 U
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.015 U
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.021 U
BENZOIC ACID	MG/KG	Not Analyzed	Not Analyzed	0.14 U	Not Analyzed	0.17 U
BENZYL ALCOHOL	MG/KG	Not Analyzed	Not Analyzed	0.011 J	Not Analyzed	0.0099 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.021 U	Not Analyzed	0.024 U
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	Not Analyzed	0.0074 U	Not Analyzed	0.0085 U
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.022 U
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	Not Analyzed	0.0082 U	Not Analyzed	0.0094 U
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.026 U	Not Analyzed	0.03 U
CARBAZOLE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
CHRYSENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.012 U
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.028 U	Not Analyzed	0.033 U
DIBENZOFURAN	MG/KG	Not Analyzed	Not Analyzed	0.0091 U	Not Analyzed	0.01 U
DIETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.013 U	Not Analyzed	0.015 U
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.019 U	Not Analyzed	0.022 U
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.014 U
FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.017 U	Not Analyzed	0.02 U
FLUORENE	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.012 U
HEXACHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0097 U	Not Analyzed	0.011 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.016 U	Not Analyzed	0.019 U
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.041 UR	Not Analyzed	0.047 UR
HEXACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0082 U	Not Analyzed	0.0094 U
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.0092 U	Not Analyzed	0.011 U
ISOPHORONE	MG/KG	Not Analyzed	Not Analyzed	0.0074 U	Not Analyzed	0.0085 U

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0069 U	Not Analyzed	0.008 U
NITROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.013 U
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 U	Not Analyzed	0.01 U
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0099 U	Not Analyzed	0.011 U
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0086 U	Not Analyzed	0.0099 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.067 U	Not Analyzed	0.077 U
PHENANTHRENE	MG/KG	Not Analyzed	Not Analyzed	0.0094 U	Not Analyzed	0.011 U
PHENOL	MG/KG	Not Analyzed	Not Analyzed	0.038 U	Not Analyzed	0.044 U
PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.011 U	Not Analyzed	0.012 U
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00036 U	Not Analyzed	0.00041 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	Not Analyzed	0.00036 U
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.002 U	Not Analyzed	0.0023 U
ALPHA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00046 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	Not Analyzed	0.00044 U
BETA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00045 U
BETA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00046 U
CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0037 U	Not Analyzed	0.0043 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00058 U	Not Analyzed	0.00066 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	Not Analyzed	0.00039 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.0019 U	Not Analyzed	0.0021 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	Not Analyzed	0.00036 U
DIELDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	Not Analyzed	0.00044 U
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00046 U
ENDRIN	MG/KG	Not Analyzed	Not Analyzed	0.002 U	Not Analyzed	0.0023 U
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	Not Analyzed	0.00048 U
ENDRIN KETONE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	Not Analyzed	0.00045 U
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	Not Analyzed	0.00032 U	Not Analyzed	0.00037 U
HEPTACHLOR	MG/KG	Not Analyzed	Not Analyzed	0.0019 U	Not Analyzed	0.0022 U
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	Not Analyzed	0.00045 U
METHOXYCHLOR	MG/KG	Not Analyzed	Not Analyzed	0.002 U	Not Analyzed	0.0023 U
TOXAPHENE	MG/KG	Not Analyzed	Not Analyzed	0.0053 U	Not Analyzed	0.0061 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	Not Analyzed	0.0036 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	Not Analyzed	0.0037 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	Not Analyzed	0.0037 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	Not Analyzed	0.0048 U	Not Analyzed	0.0055 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	Not Analyzed	0.0039 U	Not Analyzed	0.0045 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	Not Analyzed	0.0037 U	Not Analyzed	0.0043 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	Not Analyzed	0.0045 U	Not Analyzed	0.0052 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	Not Analyzed	0.0036 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	Not Analyzed	0.0036 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	Not Analyzed	0.0026 U	Not Analyzed	0.003 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	0.168 U	Not Analyzed	0.006 U	Not Analyzed	0.005 U
CESIUM-137	PCI/G	0.004 U	Not Analyzed	0.196	Not Analyzed	0.283
COBALT-60	PCI/G	0.091 U	Not Analyzed	0.119 U	Not Analyzed	0.022 U
GROSS ALPHA	PCI/G	11.6	Not Analyzed	12.2	Not Analyzed	9.64
GROSS BETA	PCI/G	18.7	Not Analyzed	9.42	Not Analyzed	14.1
PLUTONIUM-238	PCI/G	0.018 U	Not Analyzed	0.058 J	Not Analyzed	-0.01 U
PLUTONIUM-239/240	PCI/G	0.01 U	Not Analyzed	-0.002 U	Not Analyzed	-0.033 U
POTASSIUM-40	PCI/G	17.113	Not Analyzed	9.016	Not Analyzed	14.687
STRONTIUM-90	PCI/G	0.082 U	Not Analyzed	-0.038 U	Not Analyzed	-0.031 U
URANIUM-232	PCI/G	-0.043 U	Not Analyzed	-0.056 U	Not Analyzed	0.036 U
URANIUM-234	PCI/G	0.898	Not Analyzed	0.616 J	Not Analyzed	0.784
URANIUM-235	PCI/G	0.151 J	Not Analyzed	0.05 U	Not Analyzed	0.191 J
URANIUM-238	PCI/G	0.752 J	Not Analyzed	0.461 J	Not Analyzed	0.71 J
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0 U	Not Analyzed	0 U	Not Analyzed	0.105 U
URANIUM-238	PCI/G	0.909 U	Not Analyzed	0.666 U	Not Analyzed	0.416 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	Not Analyzed	5,360	Not Analyzed	15,600
ANTIMONY	MG/KG	Not Analyzed	Not Analyzed	0.43 U	Not Analyzed	0.53 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
METALS						
ARSENIC	MG/KG	Not Analyzed	Not Analyzed	6.6	Not Analyzed	7.6
BARIUM	MG/KG	Not Analyzed	Not Analyzed	36.4	Not Analyzed	78.6
BERYLLIUM	MG/KG	Not Analyzed	Not Analyzed	0.25	Not Analyzed	0.7
CADMIUM	MG/KG	Not Analyzed	Not Analyzed	0.074 U	Not Analyzed	0.1 J
CALCIUM	MG/KG	Not Analyzed	Not Analyzed	6,510	Not Analyzed	3,050
CHROMIUM, TOTAL	MG/KG	Not Analyzed	Not Analyzed	6.7	Not Analyzed	18.7
COBALT	MG/KG	Not Analyzed	Not Analyzed	4.4 J	Not Analyzed	10.1
COPPER	MG/KG	Not Analyzed	Not Analyzed	13.9	Not Analyzed	20.8
IRON	MG/KG	Not Analyzed	Not Analyzed	15,600	Not Analyzed	27,700
LEAD	MG/KG	Not Analyzed	Not Analyzed	6.3	Not Analyzed	13
MAGNESIUM	MG/KG	Not Analyzed	Not Analyzed	2,890	Not Analyzed	4,740
MANGANESE	MG/KG	Not Analyzed	Not Analyzed	319	Not Analyzed	341
MERCURY	MG/KG	Not Analyzed	Not Analyzed	0.002 J	Not Analyzed	0.012
NICKEL	MG/KG	Not Analyzed	Not Analyzed	11.7	Not Analyzed	28.3
POTASSIUM	MG/KG	Not Analyzed	Not Analyzed	671 J	Not Analyzed	1,990
SELENIUM	MG/KG	Not Analyzed	Not Analyzed	0.68 U	Not Analyzed	0.84 U
SILVER	MG/KG	Not Analyzed	Not Analyzed	0.18 U	Not Analyzed	0.22 U
SODIUM	MG/KG	Not Analyzed	Not Analyzed	82 U	Not Analyzed	100 U
THALLIUM	MG/KG	Not Analyzed	Not Analyzed	0.61 U	Not Analyzed	0.75 U
VANADIUM	MG/KG	Not Analyzed	Not Analyzed	0.37 J	Not Analyzed	13.8
ZINC	MG/KG	Not Analyzed	Not Analyzed	53.2	Not Analyzed	65.5

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-010	SD-010	SD-011	SD-011	SD-011
Field Sample Identifier		SVD-SD010 (12-17.6)-D	SVD-SD010 (15-15.5)	SVD-SD011 (0-6)	SVD-SD011 (5-5.5)	SVD-SD011 (6-12)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-17.6	15.0-15.5	0.0-6.0	5.0-5.5	6.0-12.0
Date of Sample		07/12/18	07/12/18	07/11/18	07/11/18	07/11/18
Parameter	Units	Field Duplicate				
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.01 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.0016 U	Not Analyzed	0.0016 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.012 U	Not Analyzed	0.012 U
DALAPON	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	Not Analyzed	0.0031 U
DICAMBA	MG/KG	Not Analyzed	Not Analyzed	0.0025 U	Not Analyzed	0.0025 U
DICHLOROPROP	MG/KG	Not Analyzed	Not Analyzed	0.01 U	Not Analyzed	0.01 U
DINOSEB	MG/KG	Not Analyzed	Not Analyzed	0.0069 U	Not Analyzed	0.0068 U
MCPA	MG/KG	Not Analyzed	Not Analyzed	1.6 U	Not Analyzed	1.5 U
MCPP	MG/KG	Not Analyzed	Not Analyzed	1.6 U	Not Analyzed	1.6 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	Not Analyzed	0.0012 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	Not Analyzed	0.003 U	Not Analyzed	0.0029 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	Not Analyzed	0.33 U	Not Analyzed	0.42 U
PERCENT MOISTURE	PERCENT	Not Analyzed	20	7	19	20
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	Not Analyzed	1,700 J	Not Analyzed	10,000

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	0.00032 UJ	Not Analyzed	0.0003 UJ	Not Analyzed	0.00014 UJ
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.0006 UJ	Not Analyzed	0.00056 UJ	Not Analyzed	0.00026 UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	0.00044 UJ	Not Analyzed	0.00041 UJ	Not Analyzed	0.00019 UJ
1,1-DICHLOROETHANE	MG/KG	0.00017 UJ	Not Analyzed	0.00016 UJ	Not Analyzed	7.40E-05 UJ
1,1-DICHLOROETHENE	MG/KG	0.00023 UJ	Not Analyzed	0.00022 UJ	Not Analyzed	0.0001 UJ
1,1-DICHLOROPROPENE	MG/KG	0.00022 UJ	Not Analyzed	0.0002 UJ	Not Analyzed	9.70E-05 UJ
1,2,3-TRICHLOROBENZENE	MG/KG	0.00056 UJ	Not Analyzed	0.00053 UJ	Not Analyzed	0.00025 UJ
1,2,3-TRICHLOROPROPANE	MG/KG	0.0004 UJ	Not Analyzed	0.00037 UJ	Not Analyzed	0.00017 UJ
1,2,4-TRICHLOROBENZENE	MG/KG	0.00051 UJ	Not Analyzed	0.00048 UJ	Not Analyzed	0.00022 UJ
1,2,4-TRIMETHYLBENZENE	MG/KG	0.00029 UJ	Not Analyzed	0.00027 UJ	Not Analyzed	0.00013 UJ
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.0016 UJ	Not Analyzed	0.0015 UJ	Not Analyzed	0.00069 UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00051 UJ	Not Analyzed	0.00047 UJ	Not Analyzed	0.00022 UJ
1,2-DICHLOROBENZENE	MG/KG	0.00059 UJ	Not Analyzed	0.00055 UJ	Not Analyzed	0.00026 UJ
1,2-DICHLOROETHANE	MG/KG	0.00015 UJ	Not Analyzed	0.00014 UJ	Not Analyzed	6.70E-05 UJ
1,2-DICHLOROPROPANE	MG/KG	0.00031 UJ	Not Analyzed	0.00029 UJ	Not Analyzed	0.00014 UJ
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	0.00022 UJ	Not Analyzed	0.00021 UJ	Not Analyzed	9.90E-05 UJ
1,3-DICHLOROBENZENE	MG/KG	0.00035 UJ	Not Analyzed	0.00033 UJ	Not Analyzed	0.00016 UJ
1,3-DICHLOROPROPANE	MG/KG	0.00039 UJ	Not Analyzed	0.00036 UJ	Not Analyzed	0.00017 UJ
1,4-DICHLOROBENZENE	MG/KG	0.00039 UJ	Not Analyzed	0.00036 UJ	Not Analyzed	0.00017 UJ
2,2-DICHLOROPROPANE	MG/KG	0.00024 UJ	Not Analyzed	0.00022 UJ	Not Analyzed	0.00011 UJ

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	0.00021 UJ	Not Analyzed	0.00019 UJ	Not Analyzed	9.00E-05 UJ
2-HEXANONE	MG/KG	0.00071 UJ	Not Analyzed	0.00066 UJ	Not Analyzed	0.00031 UJ
4-CHLOROTOLUENE	MG/KG	0.00031 UJ	Not Analyzed	0.00028 UJ	Not Analyzed	0.00013 UJ
ACETONE	MG/KG	0.068 J	Not Analyzed	0.069 J	Not Analyzed	0.05 J
BENZENE	MG/KG	0.0003 UJ	Not Analyzed	0.00028 UJ	Not Analyzed	0.0015 J
BROMOBENZENE	MG/KG	0.00043 UJ	Not Analyzed	0.0004 UJ	Not Analyzed	0.00019 UJ
BROMOCHLOROMETHANE	MG/KG	0.00034 UJ	Not Analyzed	0.00032 UJ	Not Analyzed	0.00015 UJ
BROMODICHLOROMETHANE	MG/KG	0.00023 UJ	Not Analyzed	0.00021 UJ	Not Analyzed	0.0001 UJ
BROMOFORM	MG/KG	0.00037 UR	Not Analyzed	0.00034 UR	Not Analyzed	0.00016 UR
BROMOMETHANE	MG/KG	0.0025 UJ	Not Analyzed	0.0024 UJ	Not Analyzed	0.0011 UJ
CARBON DISULFIDE	MG/KG	0.00021 UJ	Not Analyzed	0.0009 J	Not Analyzed	0.018 J
CARBON TETRACHLORIDE	MG/KG	0.00024 UJ	Not Analyzed	0.00022 UJ	Not Analyzed	0.00011 UJ
CHLOROBENZENE	MG/KG	0.00021 UJ	Not Analyzed	0.0002 UJ	Not Analyzed	9.40E-05 UJ
CHLOROETHANE	MG/KG	0.00085 UJ	Not Analyzed	0.0008 UJ	Not Analyzed	0.00038 UJ
CHLOROFORM	MG/KG	0.0027 J	Not Analyzed	0.0026 J	Not Analyzed	0.00024 UJ
CHLOROMETHANE	MG/KG	0.00039 UJ	Not Analyzed	0.00036 UJ	Not Analyzed	0.00017 UJ
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.00063 UJ	Not Analyzed	0.00059 UJ	Not Analyzed	0.00028 UJ
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00018 UJ	Not Analyzed	0.00017 UJ	Not Analyzed	8.00E-05 UJ
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	0.00039 UJ	Not Analyzed	0.00036 UJ	Not Analyzed	0.00017 UJ
DIBROMOMETHANE	MG/KG	0.00037 UJ	Not Analyzed	0.00034 UJ	Not Analyzed	0.00016 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00043 UJ	Not Analyzed	0.0004 UJ	Not Analyzed	0.00019 UJ
ETHYLBENZENE	MG/KG	0.00025 UJ	Not Analyzed	0.00023 UJ	Not Analyzed	0.00011 UJ
HEXACHLOROBUTADIENE	MG/KG	0.00034 UJ	Not Analyzed	0.00031 UJ	Not Analyzed	0.00015 UJ
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00021 UJ	Not Analyzed	0.0002 UJ	Not Analyzed	9.40E-05 UJ
M+P-XYLENE	MG/KG	0.00028 UJ	Not Analyzed	0.00026 UJ	Not Analyzed	0.00065 J
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0067 UJ	Not Analyzed	0.0066 J	Not Analyzed	0.0029 UJ
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.00055 UJ	Not Analyzed	0.00051 UJ	Not Analyzed	0.00024 UJ
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	0.0012 UJ	Not Analyzed	0.0011 UJ	Not Analyzed	0.00052 UJ
NAPHTHALENE	MG/KG	0.00098 J	Not Analyzed	0.00073 J	Not Analyzed	0.00068 J
N-BUTYLBENZENE	MG/KG	0.0003 UJ	Not Analyzed	0.00028 UJ	Not Analyzed	0.00013 UJ
N-PROPYLBENZENE	MG/KG	0.0002 UJ	Not Analyzed	0.00018 UJ	Not Analyzed	8.70E-05 UJ
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00023 UJ	Not Analyzed	0.00022 UJ	Not Analyzed	0.0001 UJ
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	0.0003 UJ	Not Analyzed	0.00028 UJ	Not Analyzed	0.00013 UJ
SEC-BUTYLBENZENE	MG/KG	0.00077 UJ	Not Analyzed	0.00071 UJ	Not Analyzed	0.00034 UJ
STYRENE	MG/KG	0.00026 UJ	Not Analyzed	0.00024 UJ	Not Analyzed	0.00011 UJ
T-BUTYLBENZENE	MG/KG	0.00062 UJ	Not Analyzed	0.00058 UJ	Not Analyzed	0.00027 UJ
TERT-BUTYL METHYL ETHER	MG/KG	0.0002 UJ	Not Analyzed	0.00019 UJ	Not Analyzed	8.80E-05 UJ
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00036 UJ	Not Analyzed	0.00034 UJ	Not Analyzed	0.00016 UJ
TOLUENE	MG/KG	0.0003 UJ	Not Analyzed	0.00028 UJ	Not Analyzed	0.0014 J

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00021 UJ	Not Analyzed	0.0002 UJ	Not Analyzed	9.30E-05 UJ
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00026 UJ	Not Analyzed	0.00024 UJ	Not Analyzed	0.00011 UJ
TRICHLOROETHANE	MG/KG	0.00024 UJ	Not Analyzed	0.00022 UJ	Not Analyzed	0.0001 UJ
TRICHLOROETHYLENE (TCE)	MG/KG	0.00043 UJ	Not Analyzed	0.0004 UJ	Not Analyzed	0.00019 UJ
TRICHLOROFLUOROMETHANE	MG/KG	0.00025 UJ	Not Analyzed	0.00024 UJ	Not Analyzed	0.00011 UJ
VINYL CHLORIDE	MG/KG	0.00035 UJ	Not Analyzed	0.00032 UJ	Not Analyzed	0.00015 UJ
XYLENES, TOTAL	MG/KG	0.00051 UJ	Not Analyzed	0.00048 UJ	Not Analyzed	0.00065 J
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.011 U	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.021 U	Not Analyzed	0.019 U	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.024 U	Not Analyzed	0.021 U	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.036 U	Not Analyzed	0.033 U	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.041 U	Not Analyzed	0.037 U	Not Analyzed
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.12 U	Not Analyzed	0.11 U	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.019 U	Not Analyzed	0.017 U	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.02 U	Not Analyzed	0.018 U	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.013 U	Not Analyzed
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.044 U	Not Analyzed	0.04 U	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.0094 U	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.046 U	Not Analyzed	0.041 U	Not Analyzed
2-NITROANILINE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.0093 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.053 U	Not Analyzed	0.047 U	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.54 UR	Not Analyzed	0.49 UR	Not Analyzed
3-NITROANILINE	MG/KG	Not Analyzed	0.015 U	Not Analyzed	0.013 U	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.061 U	Not Analyzed	0.055 U	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.054 U	Not Analyzed	0.049 U	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.022 U	Not Analyzed	0.02 U	Not Analyzed
4-CHLOROANILINE	MG/KG	Not Analyzed	0.032 U	Not Analyzed	0.029 U	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.012 U	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.076 U	Not Analyzed	0.068 U	Not Analyzed
4-NITROANILINE	MG/KG	Not Analyzed	0.031 U	Not Analyzed	0.028 U	Not Analyzed
4-NITROPHENOL	MG/KG	Not Analyzed	0.3 U	Not Analyzed	0.27 U	Not Analyzed
ACENAPHTHENE	MG/KG	Not Analyzed	0.0094 U	Not Analyzed	0.0085 U	Not Analyzed
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0091 U	Not Analyzed	0.0082 U	Not Analyzed
ANTHRACENE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.0093 U	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.015 J	Not Analyzed
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.012 U	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.01 U	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.015 U	Not Analyzed	0.014 U	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.022 U	Not Analyzed	0.02 U	Not Analyzed
BENZOIC ACID	MG/KG	Not Analyzed	0.17 U	Not Analyzed	0.15 U	Not Analyzed
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.0092 U	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.025 U	Not Analyzed	0.023 U	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0088 U	Not Analyzed	0.008 U	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.023 U	Not Analyzed	0.021 U	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.0097 U	Not Analyzed	0.0087 U	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.031 U	Not Analyzed	0.028 U	Not Analyzed
CARBAZOLE	MG/KG	Not Analyzed	0.015 U	Not Analyzed	0.013 U	Not Analyzed
CHRYSENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.023 J	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.034 U	Not Analyzed	0.03 U	Not Analyzed
DIBENZOFURAN	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.0097 U	Not Analyzed
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.016 U	Not Analyzed	0.014 U	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.013 U	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.023 U	Not Analyzed	0.021 U	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.015 UJ	Not Analyzed	0.013 U	Not Analyzed
FLUORANTHENE	MG/KG	Not Analyzed	0.02 U	Not Analyzed	0.035 J	Not Analyzed
FLUORENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.011 U	Not Analyzed
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.01 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.019 U	Not Analyzed	0.017 U	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.049 UR	Not Analyzed	0.044 UR	Not Analyzed
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.0098 U	Not Analyzed	0.0088 U	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.0099 U	Not Analyzed
ISOPHORONE	MG/KG	Not Analyzed	0.0088 U	Not Analyzed	0.0079 U	Not Analyzed

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.0083 U	Not Analyzed	0.0074 U	Not Analyzed
NITROBENZENE	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.012 U	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.0093 U	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.011 U	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.0093 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.08 U	Not Analyzed	0.072 U	Not Analyzed
PHENANTHRENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.021 J	Not Analyzed
PHENOL	MG/KG	Not Analyzed	0.046 U	Not Analyzed	0.041 U	Not Analyzed
PYRENE	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.03 J	Not Analyzed
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00039 U	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00033 U	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.0024 U	Not Analyzed	0.0021 U	Not Analyzed
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00045 U	Not Analyzed	0.00041 U	Not Analyzed
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U	Not Analyzed
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U	Not Analyzed
CHLORDANE	MG/KG	Not Analyzed	0.0044 U	Not Analyzed	0.004 U	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.00069 U	Not Analyzed	0.00062 U	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.0004 U	Not Analyzed	0.0027	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.0022 U	Not Analyzed	0.002 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00037 U	Not Analyzed	0.00033 U	Not Analyzed
DIELDRIN	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00041 U	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00043 U	Not Analyzed
ENDRIN	MG/KG	Not Analyzed	0.0024 U	Not Analyzed	0.0022 U	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00049 U	Not Analyzed	0.00045 U	Not Analyzed
ENDRIN KETONE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00042 U	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.00039 U	Not Analyzed	0.00035 U	Not Analyzed
HEPTACHLOR	MG/KG	Not Analyzed	0.0023 U	Not Analyzed	0.0021 U	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.00047 U	Not Analyzed	0.00042 U	Not Analyzed
METHOXYCHLOR	MG/KG	Not Analyzed	0.0024 U	Not Analyzed	0.0022 U	Not Analyzed
TOXAPHENE	MG/KG	Not Analyzed	0.0063 U	Not Analyzed	0.0057 U	Not Analyzed
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0033 U	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0038 U	Not Analyzed	0.0034 U	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0038 U	Not Analyzed	0.0034 U	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.0057 U	Not Analyzed	0.0051 U	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0047 U	Not Analyzed	0.0043 U	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0045 U	Not Analyzed	0.004 U	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.0054 U	Not Analyzed	0.0048 U	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0033 U	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0033 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.0031 U	Not Analyzed	0.0028 U	Not Analyzed
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	-0.043 U	Not Analyzed	0.071 U	Not Analyzed
CESIUM-137	PCI/G	Not Analyzed	-0.022 U	Not Analyzed	0.243	Not Analyzed
COBALT-60	PCI/G	Not Analyzed	0.03 U	Not Analyzed	0.123 U	Not Analyzed
GROSS ALPHA	PCI/G	Not Analyzed	8.11	Not Analyzed	5.79 J	Not Analyzed
GROSS BETA	PCI/G	Not Analyzed	17.5	Not Analyzed	9.44	Not Analyzed
PLUTONIUM-238	PCI/G	Not Analyzed	0.029 U	Not Analyzed	-0.018 U	Not Analyzed
PLUTONIUM-239/240	PCI/G	Not Analyzed	-0.021 U	Not Analyzed	0.022 J	Not Analyzed
POTASSIUM-40	PCI/G	Not Analyzed	15.906	Not Analyzed	10.99	Not Analyzed
STRONTIUM-90	PCI/G	Not Analyzed	0.026 U	Not Analyzed	-0.037 U	Not Analyzed
URANIUM-232	PCI/G	Not Analyzed	0.014 U	Not Analyzed	-0.008 U	Not Analyzed
URANIUM-234	PCI/G	Not Analyzed	1	Not Analyzed	0.55 J	Not Analyzed
URANIUM-235	PCI/G	Not Analyzed	0.105 J	Not Analyzed	0.109 J	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed	0.865 J	Not Analyzed	0.522 J	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	0.191 U	Not Analyzed	0.051 U	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed	1.109 U	Not Analyzed	0.759 U	Not Analyzed
METALS						
ALUMINUM	MG/KG	Not Analyzed	11,700	Not Analyzed	5,150	Not Analyzed
ANTIMONY	MG/KG	Not Analyzed	0.49 U	Not Analyzed	0.48 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	5	Not Analyzed	7	Not Analyzed
BARIUM	MG/KG	Not Analyzed	64.3	Not Analyzed	40.9	Not Analyzed
BERYLLIUM	MG/KG	Not Analyzed	0.56	Not Analyzed	0.24	Not Analyzed
CADMIUM	MG/KG	Not Analyzed	0.084 J	Not Analyzed	0.081 U	Not Analyzed
CALCIUM	MG/KG	Not Analyzed	1,800	Not Analyzed	15,800	Not Analyzed
CHROMIUM, TOTAL	MG/KG	Not Analyzed	13.5	Not Analyzed	8	Not Analyzed
COBALT	MG/KG	Not Analyzed	6.9	Not Analyzed	4.2 J	Not Analyzed
COPPER	MG/KG	Not Analyzed	17.3	Not Analyzed	27.2	Not Analyzed
IRON	MG/KG	Not Analyzed	18,400	Not Analyzed	14,500	Not Analyzed
LEAD	MG/KG	Not Analyzed	11.5	Not Analyzed	8	Not Analyzed
MAGNESIUM	MG/KG	Not Analyzed	3,380	Not Analyzed	8,850	Not Analyzed
MANGANESE	MG/KG	Not Analyzed	139	Not Analyzed	413	Not Analyzed
MERCURY	MG/KG	Not Analyzed	0.015	Not Analyzed	0.003 J	Not Analyzed
NICKEL	MG/KG	Not Analyzed	19.4	Not Analyzed	10.6	Not Analyzed
POTASSIUM	MG/KG	Not Analyzed	1,080 J	Not Analyzed	661 J	Not Analyzed
SELENIUM	MG/KG	Not Analyzed	0.78 U	Not Analyzed	0.75 U	Not Analyzed
SILVER	MG/KG	Not Analyzed	0.2 U	Not Analyzed	0.2 U	Not Analyzed
SODIUM	MG/KG	Not Analyzed	93 U	Not Analyzed	90 U	Not Analyzed
THALLIUM	MG/KG	Not Analyzed	0.69 U	Not Analyzed	0.67 U	Not Analyzed
VANADIUM	MG/KG	Not Analyzed	15.1	Not Analyzed	0.22 U	Not Analyzed
ZINC	MG/KG	Not Analyzed	61	Not Analyzed	58.9	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-011	SD-011	SD-011	SD-012	SD-012
Field Sample Identifier		SVD-SD011 (11.5-12)	SVD-SD011 (12-18)	SVD-SD011 (15.5-16)	SVD-SD012 (0-6)	SVD-SD012 (2.5-3)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		11.5-12.0	12.0-18.0	15.5-16.0	0.0-6.0	2.5-3.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.011 U	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.0019 U	Not Analyzed	0.0017 U	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.013 U	Not Analyzed
DALAPON	MG/KG	Not Analyzed	0.0037 U	Not Analyzed	0.0034 U	Not Analyzed
DICAMBA	MG/KG	Not Analyzed	0.0029 U	Not Analyzed	0.0027 U	Not Analyzed
DICHLOROPROP	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.011 U	Not Analyzed
DINOSEB	MG/KG	Not Analyzed	0.008 U	Not Analyzed	0.0074 U	Not Analyzed
MCPA	MG/KG	Not Analyzed	1.8 U	Not Analyzed	1.7 U	Not Analyzed
MCPP	MG/KG	Not Analyzed	1.9 U	Not Analyzed	1.7 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0015 U	Not Analyzed	0.0014 U	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0035 U	Not Analyzed	0.0032 U	Not Analyzed
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.37 U	Not Analyzed	0.36 U	Not Analyzed
PERCENT MOISTURE	PERCENT	25	22	25	14	9.2
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	4,900	Not Analyzed	2,000 J	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.021 UJ	0.00016 UJ	0.00017 UJ
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.039 UJ	0.0003 UJ	0.00032 UJ
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.016 UJ	0.00022 UJ	0.00023 UJ
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.016 UJ	8.40E-05 UJ	9.00E-05 UJ
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.021 UJ	0.00011 UJ	0.00012 UJ
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.021 UJ	0.00011 UJ	0.00012 UJ
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.047 UJ	0.00028 UJ	0.0003 UJ
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.042 UJ	0.0002 UJ	0.00021 UJ
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.055 UJ	0.00025 UJ	0.00027 UJ
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.00014 UJ	0.00015 UJ
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.088 UJ	0.00078 UJ	0.00084 UJ
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	Not Analyzed	0.026 UJ	0.00025 UJ	0.00027 UJ
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.039 UJ	0.00029 UJ	0.00032 UJ
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	7.50E-05 UJ	8.10E-05 UJ
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.025 UJ	0.00015 UJ	0.00017 UJ
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	0.042 UJ	0.00011 UJ	0.00012 UJ
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.01 UJ	0.00017 UJ	0.00019 UJ
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.027 UJ	0.00019 UJ	0.00021 UJ
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.023 UJ	0.00019 UJ	0.00021 UJ
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.029 UJ	0.00012 UJ	0.00013 UJ

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.013 UJ	0.0001 UJ	0.00011 UJ
2-HEXANONE	MG/KG	Not Analyzed	Not Analyzed	0.046 UJ	0.00035 UJ	0.00038 UJ
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00015 UJ	0.00016 UJ
ACETONE	MG/KG	Not Analyzed	Not Analyzed	0.061 UJ	0.029 J	0.032 J
BENZENE	MG/KG	Not Analyzed	Not Analyzed	0.015 UJ	0.00015 UJ	0.00016 UJ
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.028 UJ	0.00021 UJ	0.00023 UJ
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.043 UJ	0.00017 UJ	0.00018 UJ
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.00011 UJ	0.00012 UJ
BROMOFORM	MG/KG	Not Analyzed	Not Analyzed	0.024 UJ	0.00018 UR	0.0002 UR
BROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.13 UJ	0.0013 UJ	0.0013 UJ
CARBON DISULFIDE	MG/KG	Not Analyzed	Not Analyzed	0.027 UJ	0.0012 J	0.0029 J
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00012 UJ	0.00013 UJ
CHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.00011 UJ	0.00011 UJ
CHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.11 UJ	0.00042 UJ	0.00045 UJ
CHLOROFORM	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00026 UJ	0.00028 UJ
CHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.03 UJ	0.00019 UJ	0.00021 UJ
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.043 UJ	0.00031 UJ	0.00034 UJ
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	9.00E-05 UJ	9.60E-05 UJ
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.037 UR	0.00019 UJ	0.00021 UJ
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.022 UJ	0.00018 UJ	0.00019 UJ

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.065 UJ	0.00021 UJ	0.00023 UJ
ETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.016 UJ	0.00012 UJ	0.00013 UJ
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.034 UJ	0.00017 UJ	0.00018 UJ
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	Not Analyzed	0.018 UJ	0.00011 UJ	0.00011 UJ
M+P-XYLENE	MG/KG	Not Analyzed	Not Analyzed	0.025 UJ	0.00014 UJ	0.00015 UJ
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.25 UJ	0.0033 UJ	0.0036 UJ
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.036 UJ	0.00027 UJ	0.00029 UJ
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.057 UJ	0.0038 J	0.00063 UJ
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.038 UJ	0.00028 UJ	0.00034 J
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00015 UJ	0.00016 UJ
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.018 UJ	9.80E-05 UJ	0.0001 UJ
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	Not Analyzed	0.044 UJ	0.00012 UJ	0.00012 UJ
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	0.018 UJ	0.00015 UJ	0.00016 UJ
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.023 UJ	0.00038 UJ	0.00041 UJ
STYRENE	MG/KG	Not Analyzed	Not Analyzed	0.017 UJ	0.00013 UJ	0.00014 UJ
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00031 UJ	0.00033 UJ
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.03 UJ	9.90E-05 UJ	0.00011 UJ
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	Not Analyzed	0.038 UJ	0.00018 UJ	0.00019 UJ
TOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00015 UJ	0.00016 UJ

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.015 UJ	0.0001 UJ	0.00011 UJ
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.00013 UJ	0.00014 UJ
TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.018 UJ	0.00012 UJ	0.00013 UJ
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	Not Analyzed	0.047 UJ	0.00021 UJ	0.00023 UJ
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.041 UJ	0.00012 UJ	0.00013 UJ
VINYL CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.04 UJ	0.00017 UJ	0.00018 UJ
XYLENES, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.069 UJ	0.00025 UJ	0.00027 UJ
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.02 U	Not Analyzed	0.02 U	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.022 U	Not Analyzed	0.022 U	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.034 U	Not Analyzed	0.034 U	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.038 U	Not Analyzed	0.038 U	Not Analyzed
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.11 U	Not Analyzed	0.11 U	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.017 U	Not Analyzed	0.017 U	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.019 U	Not Analyzed	0.019 U	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.013 U	Not Analyzed
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.042 U	Not Analyzed	0.041 U	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.0098 U	Not Analyzed	0.0097 U	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.043 U	Not Analyzed	0.043 U	Not Analyzed
2-NITROANILINE	MG/KG	Not Analyzed	0.0097 U	Not Analyzed	0.0096 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.049 U	Not Analyzed	0.049 U	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.51 UR	Not Analyzed	0.51 UR	Not Analyzed
3-NITROANILINE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.014 U	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.057 U	Not Analyzed	0.057 U	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.051 U	Not Analyzed	0.05 U	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.021 U	Not Analyzed	0.021 U	Not Analyzed
4-CHLOROANILINE	MG/KG	Not Analyzed	0.03 U	Not Analyzed	0.03 U	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.012 U	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.071 U	Not Analyzed	0.071 U	Not Analyzed
4-NITROANILINE	MG/KG	Not Analyzed	0.029 U	Not Analyzed	0.029 U	Not Analyzed
4-NITROPHENOL	MG/KG	Not Analyzed	0.29 U	Not Analyzed	0.28 U	Not Analyzed
ACENAPHTHENE	MG/KG	Not Analyzed	0.0089 U	Not Analyzed	0.0088 U	Not Analyzed
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0085 U	Not Analyzed	0.0084 U	Not Analyzed
ANTHRACENE	MG/KG	Not Analyzed	0.0097 U	Not Analyzed	0.0097 U	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.013 U	Not Analyzed
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.012 U	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.014 U	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.021 U	Not Analyzed	0.021 U	Not Analyzed
BENZOIC ACID	MG/KG	Not Analyzed	0.16 U	Not Analyzed	0.16 U	Not Analyzed
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.0096 U	Not Analyzed	0.0095 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.024 U	Not Analyzed	0.023 U	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0083 U	Not Analyzed	0.0082 U	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.021 U	Not Analyzed	0.021 U	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.0091 U	Not Analyzed	0.009 U	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.029 U	Not Analyzed	0.029 U	Not Analyzed
CARBAZOLE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.014 U	Not Analyzed
CHRYSENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.032 U	Not Analyzed	0.031 U	Not Analyzed
DIBENZOFURAN	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.01 U	Not Analyzed
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.015 U	Not Analyzed	0.015 U	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.013 U	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.022 U	Not Analyzed	0.021 U	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.014 U	Not Analyzed	0.014 U	Not Analyzed
FLUORANTHENE	MG/KG	Not Analyzed	0.019 U	Not Analyzed	0.019 U	Not Analyzed
FLUORENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.018 U	Not Analyzed	0.018 U	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.046 UR	Not Analyzed	0.046 UR	Not Analyzed
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.0092 U	Not Analyzed	0.0091 U	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.01 U	Not Analyzed	0.01 U	Not Analyzed
ISOPHORONE	MG/KG	Not Analyzed	0.0083 U	Not Analyzed	0.0082 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.0078 U	Not Analyzed	0.0077 U	Not Analyzed
NITROBENZENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.012 U	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.0097 U	Not Analyzed	0.0096 U	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.011 U	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.0097 U	Not Analyzed	0.0096 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.075 U	Not Analyzed	0.074 U	Not Analyzed
PHENANTHRENE	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.01 U	Not Analyzed
PHENOL	MG/KG	Not Analyzed	0.043 U	Not Analyzed	0.042 U	Not Analyzed
PYRENE	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.012 U	Not Analyzed
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.0004 U	Not Analyzed	0.00041 U	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00035 U	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.0022 U	Not Analyzed	0.0023 U	Not Analyzed
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00045 U	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00043 U	Not Analyzed
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00045 U	Not Analyzed
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00045 U	Not Analyzed
CHLORDANE	MG/KG	Not Analyzed	0.0041 U	Not Analyzed	0.0042 U	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.00065 U	Not Analyzed	0.00065 U	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00038 U	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.0021 U	Not Analyzed	0.0021 U	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00035 U	Not Analyzed
DIELDRIN	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00043 U	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00045 U	Not Analyzed	0.00045 U	Not Analyzed
ENDRIN	MG/KG	Not Analyzed	0.0023 U	Not Analyzed	0.0023 U	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00046 U	Not Analyzed	0.00047 U	Not Analyzed
ENDRIN KETONE	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00044 U	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.00036 U	Not Analyzed	0.00037 U	Not Analyzed
HEPTACHLOR	MG/KG	Not Analyzed	0.0022 U	Not Analyzed	0.0022 U	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00045 U	Not Analyzed
METHOXYCHLOR	MG/KG	Not Analyzed	0.0023 U	Not Analyzed	0.0023 U	Not Analyzed
TOXAPHENE	MG/KG	Not Analyzed	0.006 U	Not Analyzed	0.006 U	Not Analyzed
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0035 U	Not Analyzed	0.0036 U	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0035 U	Not Analyzed	0.0036 U	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.0053 U	Not Analyzed	0.0054 U	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0044 U	Not Analyzed	0.0045 U	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0041 U	Not Analyzed	0.0042 U	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.005 U	Not Analyzed	0.0051 U	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U	Not Analyzed

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.0029 U	Not Analyzed	0.0029 U	Not Analyzed
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.087 U	0.215 U	Not Analyzed	0.037 U	Not Analyzed
CESIUM-137	PCI/G	0.2	0.005 U	Not Analyzed	0.017 U	Not Analyzed
COBALT-60	PCI/G	0.078 U	0.106 U	Not Analyzed	0.071 U	Not Analyzed
GROSS ALPHA	PCI/G	6.22 J	18.1	Not Analyzed	15.4	Not Analyzed
GROSS BETA	PCI/G	16.2	16.7	Not Analyzed	13.2	Not Analyzed
PLUTONIUM-238	PCI/G	0.005 U	0.009 U	Not Analyzed	-0.034 U	Not Analyzed
PLUTONIUM-239/240	PCI/G	-0.007 U	-0.031 U	Not Analyzed	-0.035 U	Not Analyzed
POTASSIUM-40	PCI/G	8.69	14.766	Not Analyzed	14.325	Not Analyzed
STRONTIUM-90	PCI/G	-0.181 U	-0.001 U	Not Analyzed	-0.075 U	Not Analyzed
URANIUM-232	PCI/G	-0.006 U	0.121 J	Not Analyzed	0.087 J	Not Analyzed
URANIUM-234	PCI/G	0.538 J	1.05	Not Analyzed	0.828	Not Analyzed
URANIUM-235	PCI/G	0.137 J	0.153 J	Not Analyzed	0.094 J	Not Analyzed
URANIUM-238	PCI/G	0.803 J	0.85 J	Not Analyzed	0.595 J	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.029 U	0.071 U	Not Analyzed	0 U	Not Analyzed
URANIUM-238	PCI/G	0.882 U	0.684 U	Not Analyzed	0.239 U	Not Analyzed
METALS						
ALUMINUM	MG/KG	Not Analyzed	12,000	Not Analyzed	8,450	Not Analyzed
ANTIMONY	MG/KG	Not Analyzed	0.55 U	Not Analyzed	0.5 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
METALS						
ARSENIC	MG/KG	Not Analyzed	8.1	Not Analyzed	7.1	Not Analyzed
BARIUM	MG/KG	Not Analyzed	65.7	Not Analyzed	45.9	Not Analyzed
BERYLLIUM	MG/KG	Not Analyzed	0.56	Not Analyzed	0.42	Not Analyzed
CADMIUM	MG/KG	Not Analyzed	0.093 U	Not Analyzed	0.085 U	Not Analyzed
CALCIUM	MG/KG	Not Analyzed	1,510	Not Analyzed	1,790	Not Analyzed
CHROMIUM, TOTAL	MG/KG	Not Analyzed	14.4	Not Analyzed	11.1	Not Analyzed
COBALT	MG/KG	Not Analyzed	9	Not Analyzed	6.2	Not Analyzed
COPPER	MG/KG	Not Analyzed	18.7	Not Analyzed	18.6	Not Analyzed
IRON	MG/KG	Not Analyzed	22,400	Not Analyzed	19,100	Not Analyzed
LEAD	MG/KG	Not Analyzed	12.3	Not Analyzed	10.6	Not Analyzed
MAGNESIUM	MG/KG	Not Analyzed	3,330	Not Analyzed	2,750	Not Analyzed
MANGANESE	MG/KG	Not Analyzed	291	Not Analyzed	315	Not Analyzed
MERCURY	MG/KG	Not Analyzed	0.031	Not Analyzed	0.011 J	Not Analyzed
NICKEL	MG/KG	Not Analyzed	21	Not Analyzed	15.9	Not Analyzed
POTASSIUM	MG/KG	Not Analyzed	1,310	Not Analyzed	1,120 J	Not Analyzed
SELENIUM	MG/KG	Not Analyzed	0.87 U	Not Analyzed	0.79 U	Not Analyzed
SILVER	MG/KG	Not Analyzed	0.23 U	Not Analyzed	0.21 U	Not Analyzed
SODIUM	MG/KG	Not Analyzed	100 U	Not Analyzed	94 U	Not Analyzed
THALLIUM	MG/KG	Not Analyzed	0.77 U	Not Analyzed	0.7 U	Not Analyzed
VANADIUM	MG/KG	Not Analyzed	12.4	Not Analyzed	8	Not Analyzed
ZINC	MG/KG	Not Analyzed	58.3	Not Analyzed	54	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-012	SD-012	SD-012	SD-012
Field Sample Identifier		SVD-SD012 (6-12)	SVD-SD012 (12-18)	SVD-SD900	SVD-SD900	SVD-SD012 (14.5-15)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		6.0-12.0	12.0-18.0	12.0-18.0	12.0-18.0	14.5-15.0
Date of Sample		07/11/18	07/11/18	07/11/18	07/11/18	07/11/18
Parameter	Units			Field Duplicate	Field Duplicate	
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.012 U	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.0017 U	Not Analyzed	0.0019 U	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.012 U	Not Analyzed	0.014 U	Not Analyzed
DALAPON	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.0038 U	Not Analyzed
DICAMBA	MG/KG	Not Analyzed	0.0026 U	Not Analyzed	0.003 U	Not Analyzed
DICHLOROPROP	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.012 U	Not Analyzed
DINOSEB	MG/KG	Not Analyzed	0.0071 U	Not Analyzed	0.0082 U	Not Analyzed
MCPA	MG/KG	Not Analyzed	1.6 U	Not Analyzed	1.9 U	Not Analyzed
MCPP	MG/KG	Not Analyzed	1.7 U	Not Analyzed	1.9 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0013 U	Not Analyzed	0.0015 U	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0031 U	Not Analyzed	0.0036 U	Not Analyzed
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.37 U	Not Analyzed	0.36 U	Not Analyzed
PERCENT MOISTURE	PERCENT	7.3	17	Not Analyzed	19	20
TOTAL ORGANIC CARBON	MG/KG	1,000 J	5,200	Not Analyzed	6,100	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00046 U	Not Analyzed	0.00044 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00089 U	Not Analyzed	0.00086 U
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	Not Analyzed	0.00038 U
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00045 U	Not Analyzed	0.00043 U
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.00077 U	Not Analyzed	0.00074 U
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0012 U	Not Analyzed	0.0011 U
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0012 U	Not Analyzed	0.0011 U
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.00098 U	Not Analyzed	0.00094 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	Not Analyzed	0.00036 U
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00036 U	Not Analyzed	0.00034 U
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00055 U	Not Analyzed	0.00053 U
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.00048 U	Not Analyzed	0.00046 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00044 J	Not Analyzed	0.0004 U
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00047 J	Not Analyzed	0.00039 U
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	Not Analyzed	Not Analyzed	0.0015 U	Not Analyzed	0.0014 U
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	Not Analyzed	Not Analyzed	0.0058 U	Not Analyzed	0.0056 U
BENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00042 U
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0005 U	Not Analyzed	0.00048 U
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00052 U	Not Analyzed	0.0005 U
BROMOFORM	MG/KG	Not Analyzed	Not Analyzed	0.00047 U	Not Analyzed	0.00045 U
BROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0012 U	Not Analyzed	0.0011 U
CARBON DISULFIDE	MG/KG	Not Analyzed	Not Analyzed	0.0011 U	Not Analyzed	0.0013 J
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.00064 U	Not Analyzed	0.00062 U
CHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00041 U	Not Analyzed	0.0004 U
CHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0008 U	Not Analyzed	0.00077 U
CHLOROFORM	MG/KG	Not Analyzed	Not Analyzed	0.00043 U	Not Analyzed	0.00042 U
CHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0023 U	Not Analyzed	0.0022 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0011 U	Not Analyzed	0.0011 U
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.00041 U	Not Analyzed	0.0004 U
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00047 U	Not Analyzed	0.00046 U
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	Not Analyzed	0.00038 U
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00074 U	Not Analyzed	0.00071 U
ETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00065 U	Not Analyzed	0.00062 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	Not Analyzed	0.00081 U	Not Analyzed	0.00078 U
M+P-XYLENE	MG/KG	Not Analyzed	Not Analyzed	0.00087 U	Not Analyzed	0.00084 U
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	0.0016 U	Not Analyzed	0.0016 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.0044 U	Not Analyzed	0.0042 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.0018 U	Not Analyzed	0.0018 U
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00083 U	Not Analyzed	0.0018 J
METHYLENE CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.0029 U	Not Analyzed	0.0052 J
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	Not Analyzed	0.00068 U	Not Analyzed	0.00065 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	Not Analyzed	Not Analyzed	0.00067 U	Not Analyzed	0.00065 U
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.00041 U	Not Analyzed	0.0004 U
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	Not Analyzed	0.00054 U	Not Analyzed	0.00073 J
TOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.00044 U	Not Analyzed	0.00042 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.00078 U	Not Analyzed	0.00075 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	Not Analyzed	0.00037 U
TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0005 U	Not Analyzed	0.00048 U
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	Not Analyzed	0.00089 U	Not Analyzed	0.00086 U
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0008 U	Not Analyzed	0.00076 U
VINYL CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.00055 U	Not Analyzed	0.00053 U
XYLENES, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.00068 U	Not Analyzed	0.00065 U
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.018 UJ	Not Analyzed	0.019 UJ	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	0.021 UJ	Not Analyzed	0.022 UJ	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	0.032 UJ	Not Analyzed	0.033 UJ	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	0.035 UJ	Not Analyzed	0.037 UJ	Not Analyzed
2,4-DINITROPHENOL	MG/KG	Not Analyzed	0.1 UJ	Not Analyzed	0.11 UJ	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	0.016 UJ	Not Analyzed	0.017 UJ	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	0.017 UJ	Not Analyzed	0.018 UJ	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	0.012 UJ	Not Analyzed	0.013 UJ	Not Analyzed
2-CHLOROPHENOL	MG/KG	Not Analyzed	0.038 UJ	Not Analyzed	0.041 UJ	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	0.009 UJ	Not Analyzed	0.0095 UJ	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	0.04 UJ	Not Analyzed	0.042 UJ	Not Analyzed
2-NITROANILINE	MG/KG	Not Analyzed	0.009 UJ	Not Analyzed	0.0094 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	0.046 UJ	Not Analyzed	0.048 UJ	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	0.47 UR	Not Analyzed	0.5 UR	Not Analyzed
3-NITROANILINE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.014 UJ	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	0.053 UJ	Not Analyzed	0.056 UJ	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.047 UJ	Not Analyzed	0.049 UJ	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	0.019 UJ	Not Analyzed	0.02 UJ	Not Analyzed
4-CHLOROANILINE	MG/KG	Not Analyzed	0.028 UJ	Not Analyzed	0.029 UJ	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.012 UJ	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	0.066 UJ	Not Analyzed	0.069 UJ	Not Analyzed
4-NITROANILINE	MG/KG	Not Analyzed	0.027 UJ	Not Analyzed	0.028 UJ	Not Analyzed
4-NITROPHENOL	MG/KG	Not Analyzed	0.26 UJ	Not Analyzed	0.28 UJ	Not Analyzed
ACENAPHTHENE	MG/KG	Not Analyzed	0.0082 UJ	Not Analyzed	0.0086 UJ	Not Analyzed
ACENAPHTHYLENE	MG/KG	Not Analyzed	0.0078 UJ	Not Analyzed	0.0083 UJ	Not Analyzed
ANTHRACENE	MG/KG	Not Analyzed	0.009 UJ	Not Analyzed	0.0095 UJ	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	0.012 UJ	Not Analyzed	0.013 UJ	Not Analyzed
BENZO(A)PYRENE	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.012 UJ	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.014 UJ	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	0.019 UJ	Not Analyzed	0.02 UJ	Not Analyzed
BENZOIC ACID	MG/KG	Not Analyzed	0.15 UJ	Not Analyzed	0.16 UJ	Not Analyzed
BENZYL ALCOHOL	MG/KG	Not Analyzed	0.0089 UJ	Not Analyzed	0.0093 UJ	Not Analyzed

The flags shown were assigned during chemistry validation.

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	0.022 UJ	Not Analyzed	0.023 UJ	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	0.0077 UJ	Not Analyzed	0.0081 UJ	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	0.02 UJ	Not Analyzed	0.021 UJ	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	0.0084 UJ	Not Analyzed	0.0089 UJ	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	0.027 UJ	Not Analyzed	0.028 UJ	Not Analyzed
CARBAZOLE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.013 UJ	Not Analyzed
CHRYSENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	0.029 UJ	Not Analyzed	0.031 UJ	Not Analyzed
DIBENZOFURAN	MG/KG	Not Analyzed	0.0094 UJ	Not Analyzed	0.0099 UJ	Not Analyzed
DIETHYL PHTHALATE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.014 UJ	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	0.012 UJ	Not Analyzed	0.013 UJ	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	0.02 UJ	Not Analyzed	0.021 UJ	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	0.013 UJ	Not Analyzed	0.013 UJ	Not Analyzed
FLUORANTHENE	MG/KG	Not Analyzed	0.018 UJ	Not Analyzed	0.019 UJ	Not Analyzed
FLUORENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
HEXACHLOROBENZENE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	0.017 UJ	Not Analyzed	0.018 UJ	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	0.043 UJ	Not Analyzed	0.045 UJ	Not Analyzed
HEXACHLOROETHANE	MG/KG	Not Analyzed	0.0085 UJ	Not Analyzed	0.0089 UJ	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	0.0095 UJ	Not Analyzed	0.01 UJ	Not Analyzed
ISOPHORONE	MG/KG	Not Analyzed	0.0076 UJ	Not Analyzed	0.008 UJ	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	0.0071 UJ	Not Analyzed	0.0075 UJ	Not Analyzed
NITROBENZENE	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.012 UJ	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	0.009 UJ	Not Analyzed	0.0094 UJ	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	0.01 UJ	Not Analyzed	0.011 UJ	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	0.0089 UJ	Not Analyzed	0.0094 UJ	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.069 UJ	Not Analyzed	0.073 UJ	Not Analyzed
PHENANTHRENE	MG/KG	Not Analyzed	0.0097 UJ	Not Analyzed	0.01 UJ	Not Analyzed
PHENOL	MG/KG	Not Analyzed	0.039 UJ	Not Analyzed	0.042 UJ	Not Analyzed
PYRENE	MG/KG	Not Analyzed	0.011 UJ	Not Analyzed	0.012 UJ	Not Analyzed
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	0.00038 U	Not Analyzed	0.00039 U	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00033 U	Not Analyzed	0.00034 U	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00044 U	Not Analyzed
ALPHA-CHLORDANE	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00044 U	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.0004 U	Not Analyzed	0.00042 U	Not Analyzed
BETA ENDOSULFAN	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00044 U	Not Analyzed
BETA-CHLORDANE	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00044 U	Not Analyzed
CHLORDANE	MG/KG	Not Analyzed	0.0039 U	Not Analyzed	0.0041 U	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	0.00061 U	Not Analyzed	0.00063 U	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	0.00035 U	Not Analyzed	0.00037 U	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	0.00039 U	Not Analyzed	0.00041 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	0.00033 U	Not Analyzed	0.00034 U	Not Analyzed
DIELDRIN	MG/KG	Not Analyzed	0.0004 U	Not Analyzed	0.00042 U	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	0.00042 U	Not Analyzed	0.00044 U	Not Analyzed
ENDRIN	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00045 U	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	0.00044 U	Not Analyzed	0.00046 U	Not Analyzed
ENDRIN KETONE	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00043 U	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	0.00034 U	Not Analyzed	0.00036 U	Not Analyzed
HEPTACHLOR	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00043 U	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	0.00041 U	Not Analyzed	0.00043 U	Not Analyzed
METHOXYCHLOR	MG/KG	Not Analyzed	0.00043 U	Not Analyzed	0.00045 U	Not Analyzed
TOXAPHENE	MG/KG	Not Analyzed	0.0056 U	Not Analyzed	0.0059 U	Not Analyzed
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.0034 U	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	0.0034 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.0035 U	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	0.005 U	Not Analyzed	0.0052 U	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	0.0042 U	Not Analyzed	0.0043 U	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	0.0039 U	Not Analyzed	0.0041 U	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	0.0047 U	Not Analyzed	0.0049 U	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.0034 U	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.0034 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	0.0027 U	Not Analyzed	0.0029 U	Not Analyzed
RADIONUCLIDES						
AMERICIUM-241	PCI/G	0.049 U	-0.023 U	Not Analyzed	-0.048 U	Not Analyzed
CESIUM-137	PCI/G	0.004 U	0.313	Not Analyzed	0.252	Not Analyzed
COBALT-60	PCI/G	0.074 U	0.106 U	Not Analyzed	0.014 U	Not Analyzed
GROSS ALPHA	PCI/G	2.99 J	7.42	Not Analyzed	8.24	Not Analyzed
GROSS BETA	PCI/G	4.52 J	11.6	Not Analyzed	9.56	Not Analyzed
PLUTONIUM-238	PCI/G	0.092 UJ	0.021 U	Not Analyzed	-0.033 U	Not Analyzed
PLUTONIUM-239/240	PCI/G	0.02 UJ	-0.015 U	Not Analyzed	0.072 U	Not Analyzed
POTASSIUM-40	PCI/G	14.573	11.765	Not Analyzed	11.065	Not Analyzed
STRONTIUM-90	PCI/G	0.011 U	0.183 U	Not Analyzed	0.176 U	Not Analyzed
URANIUM-232	PCI/G	-0.009 U	-0.015 U	Not Analyzed	-0.03 U	Not Analyzed
URANIUM-234	PCI/G	0.629 J	0.655	Not Analyzed	0.738	Not Analyzed
URANIUM-235	PCI/G	0.124 J	0.113 J	Not Analyzed	0.058 J	Not Analyzed
URANIUM-238	PCI/G	0.42 J	0.695	Not Analyzed	0.51	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.062 U	0 U	Not Analyzed	0.155 U	Not Analyzed
URANIUM-238	PCI/G	0.052 U	0.942 U	Not Analyzed	0 U	Not Analyzed
METALS						
ALUMINUM	MG/KG	Not Analyzed	5,160	Not Analyzed	7,090	Not Analyzed
ANTIMONY	MG/KG	Not Analyzed	0.47 U	Not Analyzed	0.46 U	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	6.6	Not Analyzed	5.5	Not Analyzed
BARIUM	MG/KG	Not Analyzed	34.7	Not Analyzed	52.6	Not Analyzed
BERYLLIUM	MG/KG	Not Analyzed	0.25	Not Analyzed	0.31	Not Analyzed
CADMIUM	MG/KG	Not Analyzed	0.08 U	Not Analyzed	0.089 J	Not Analyzed
CALCIUM	MG/KG	Not Analyzed	4,090	Not Analyzed	2,360	Not Analyzed
CHROMIUM, TOTAL	MG/KG	Not Analyzed	6.7	Not Analyzed	9.3	Not Analyzed
COBALT	MG/KG	Not Analyzed	4.7 J	Not Analyzed	5.9	Not Analyzed
COPPER	MG/KG	Not Analyzed	11.9	Not Analyzed	13.6	Not Analyzed
IRON	MG/KG	Not Analyzed	14,600	Not Analyzed	15,600	Not Analyzed
LEAD	MG/KG	Not Analyzed	7.2	Not Analyzed	8	Not Analyzed
MAGNESIUM	MG/KG	Not Analyzed	2,570	Not Analyzed	2,620	Not Analyzed
MANGANESE	MG/KG	Not Analyzed	251	Not Analyzed	254	Not Analyzed
MERCURY	MG/KG	Not Analyzed	0.0017 U	Not Analyzed	0.0043 J	Not Analyzed
NICKEL	MG/KG	Not Analyzed	11.5	Not Analyzed	15.2	Not Analyzed
POTASSIUM	MG/KG	Not Analyzed	786 J	Not Analyzed	1,010 J	Not Analyzed
SELENIUM	MG/KG	Not Analyzed	0.74 U	Not Analyzed	0.72 U	Not Analyzed
SILVER	MG/KG	Not Analyzed	0.19 U	Not Analyzed	0.19 U	Not Analyzed
SODIUM	MG/KG	Not Analyzed	89 U	Not Analyzed	87 U	Not Analyzed
THALLIUM	MG/KG	Not Analyzed	0.66 U	Not Analyzed	0.64 U	Not Analyzed
VANADIUM	MG/KG	Not Analyzed	10.1	Not Analyzed	11.7	Not Analyzed
ZINC	MG/KG	Not Analyzed	45.7	Not Analyzed	54.7	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-012	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD012 (18-18.8)	SVD-SD013 (0-6)	SVD-SD013 (3-3.5)	SVD-SD013 (6-12)	SVD-SD013 (9-9.5)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		18.0-18.8	0.0-6.0	3.0-3.5	6.0-12.0	9.0-9.5
Date of Sample		07/11/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.01 U	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.0018 U	Not Analyzed	0.0016 U	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	0.013 U	Not Analyzed	0.012 U	Not Analyzed
DALAPON	MG/KG	Not Analyzed	0.0035 U	Not Analyzed	0.0031 U	Not Analyzed
DICAMBA	MG/KG	Not Analyzed	0.0028 U	Not Analyzed	0.0025 U	Not Analyzed
DICHLOROPROP	MG/KG	Not Analyzed	0.011 U	Not Analyzed	0.01 U	Not Analyzed
DINOSEB	MG/KG	Not Analyzed	0.0076 U	Not Analyzed	0.0068 U	Not Analyzed
MCPA	MG/KG	Not Analyzed	1.7 U	Not Analyzed	1.6 U	Not Analyzed
MCPP	MG/KG	Not Analyzed	1.8 U	Not Analyzed	1.6 U	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed	0.0014 U	Not Analyzed	0.0013 U	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	0.0033 U	Not Analyzed	0.003 U	Not Analyzed
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	0.37 U	Not Analyzed	0.38 U	Not Analyzed
PERCENT MOISTURE	PERCENT	14	12	14	15	11
TOTAL ORGANIC CARBON	MG/KG	2,000 J	5,200	Not Analyzed	8,300	Not Analyzed

The flags shown were assigned during chemistry validation.

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00052 U	0.0005 U	0.0005 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.001 U	0.00098 U	0.00098 U
1,1,2-TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00045 U	0.00044 U	0.00044 U
1,1-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00051 U	0.00049 U	0.00049 U
1,1-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.00087 U	0.00084 U	0.00084 U
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	0.0013 U	0.0013 U
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	0.0013 U	0.0013 U
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.0011 U	0.0011 U	0.0011 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	Not Analyzed	Not Analyzed	0.00043 U	0.00042 U	0.00042 U
1,2-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00039 U	0.00039 U
1,2-DICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00062 U	0.0006 U	0.0006 U
1,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	0.00054 U	0.00052 U	0.00052 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00047 U	0.00046 U	0.00046 U
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00045 U	0.00044 U	0.00044 U
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	Not Analyzed	Not Analyzed	0.0017 U	0.0016 U	0.0016 U
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	Not Analyzed	Not Analyzed	0.189	0.278	0.0462
BENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0005 U	0.00048 U	0.00048 U
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00057 U	0.00055 U	0.00055 U
BROMODICHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00059 U	0.00057 U	0.00057 U
BROMOFORM	MG/KG	Not Analyzed	Not Analyzed	0.00053 U	0.00052 U	0.00052 U
BROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	0.0013 U	0.0013 U
CARBON DISULFIDE	MG/KG	Not Analyzed	Not Analyzed	0.0032	0.0025 J	0.012
CARBON TETRACHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.00073 U	0.00071 U	0.0007 U
CHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00047 U	0.00045 U	0.00045 U
CHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00091 U	0.00088 U	0.00088 U
CHLOROFORM	MG/KG	Not Analyzed	Not Analyzed	0.00049 U	0.00048 U	0.00048 U
CHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0026 U	0.0025 U	0.0025 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	0.0012 U	0.0012 U
CIS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.00046 U	0.00045 U	0.00045 U
CYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00054 U	0.00052 U	0.00052 U
DIBROMOCHLOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00045 U	0.00043 U	0.00043 U
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

The flags shown were assigned during chemistry validation.

U - Not detected above the reported quantitation limit.; R - The data is rejected.; J - The reported concentration is an estimated value.

NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00084 U	0.00081 U	0.00081 U
ETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.00073 U	0.00071 U	0.00071 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	Not Analyzed	Not Analyzed	0.00092 U	0.00089 U	0.00089 U
M+P-XYLENE	MG/KG	Not Analyzed	Not Analyzed	0.00099 U	0.00096 U	0.00096 U
METHYL ACETATE	MG/KG	Not Analyzed	Not Analyzed	0.0018 U	0.0018 U	0.0018 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.0265	0.0409	0.0048 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	Not Analyzed	Not Analyzed	0.0021 U	0.002 U	0.002 U
METHYLCYCLOHEXANE	MG/KG	Not Analyzed	Not Analyzed	0.00093 U	0.00091 U	0.00091 U
METHYLENE CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.0061 J	0.0063 J	0.0059 J
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	Not Analyzed	Not Analyzed	0.00077 U	0.00075 U	0.00075 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	Not Analyzed	Not Analyzed	0.00076 U	0.00074 U	0.00074 U
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.00046 U	0.00045 U	0.00045 U
TETRACHLOROETHYLENE(PCE)	MG/KG	Not Analyzed	Not Analyzed	0.00076 J	0.00088 J	0.0012 J
TOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.0005 U	0.00048 U	0.00048 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	Not Analyzed	Not Analyzed	0.00088 U	0.00086 U	0.00085 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	0.00043 U	0.00042 U	0.00042 U
TRICHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.00056 U	0.00055 U	0.00055 U
TRICHLOROETHYLENE (TCE)	MG/KG	Not Analyzed	Not Analyzed	0.001 U	0.00098 U	0.00098 U
TRICHLOROFLUOROMETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0009 U	0.00087 U	0.00087 U
VINYL CHLORIDE	MG/KG	Not Analyzed	Not Analyzed	0.00062 U	0.0006 U	0.0006 U
XYLENES, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.00077 U	0.00075 U	0.00075 U
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	0.012 UJ	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
2,4,5-TRICHLOROPHENOL	MG/KG	0.021 UJ	0.021 UJ	Not Analyzed	Not Analyzed	0.021 UJ
2,4,6-TRICHLOROPHENOL	MG/KG	0.024 UJ	0.024 UJ	Not Analyzed	Not Analyzed	0.024 UJ
2,4-DICHLOROPHENOL	MG/KG	0.036 UJ	0.037 UJ	Not Analyzed	Not Analyzed	0.037 UJ
2,4-DIMETHYLPHENOL	MG/KG	0.041 UJ	0.041 UJ	Not Analyzed	Not Analyzed	0.042 UJ
2,4-DINITROPHENOL	MG/KG	0.12 UJ	0.12 UJ	Not Analyzed	Not Analyzed	0.12 UJ
2,4-DINITROTOLUENE	MG/KG	0.018 UJ	0.019 UJ	Not Analyzed	Not Analyzed	0.019 UJ
2,6-DINITROTOLUENE	MG/KG	0.02 UJ	0.021 UJ	Not Analyzed	Not Analyzed	0.021 UJ
2-CHLORONAPHTHALENE	MG/KG	0.014 UJ	0.014 UJ	Not Analyzed	Not Analyzed	0.015 UJ
2-CHLOROPHENOL	MG/KG	0.044 UJ	0.045 UJ	Not Analyzed	Not Analyzed	0.045 UJ
2-METHYLNAPHTHALENE	MG/KG	0.01 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ
2-METHYLPHENOL (O-CRESOL)	MG/KG	0.046 UJ	0.047 UJ	Not Analyzed	Not Analyzed	0.047 UJ
2-NITROANILINE	MG/KG	0.01 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	0.052 UJ	0.054 UJ	Not Analyzed	Not Analyzed	0.054 UJ
3,3'-DICHLOROBENZIDINE	MG/KG	0.54 UR	0.55 UR	Not Analyzed	Not Analyzed	0.56 UR
3-NITROANILINE	MG/KG	0.015 UJ	0.015 UJ	Not Analyzed	Not Analyzed	0.015 UJ
4,6-DINITRO-2-METHYLPHENOL	MG/KG	0.061 UJ	0.062 UJ	Not Analyzed	Not Analyzed	0.063 UJ
4-BROMOPHENYL PHENYL ETHER	MG/KG	0.054 UJ	0.055 UJ	Not Analyzed	Not Analyzed	0.055 UJ
4-CHLORO-3-METHYLPHENOL	MG/KG	0.022 UJ	0.023 UJ	Not Analyzed	Not Analyzed	0.023 UJ
4-CHLOROANILINE	MG/KG	0.032 UJ	0.033 UJ	Not Analyzed	Not Analyzed	0.033 UJ
4-CHLOROPHENYL PHENYL ETHER	MG/KG	0.013 UJ	0.013 UJ	Not Analyzed	Not Analyzed	0.013 UJ
4-METHYLPHENOL (P-CRESOL)	MG/KG	0.33 J	0.077 UJ	Not Analyzed	Not Analyzed	0.077 UJ
4-NITROANILINE	MG/KG	0.03 UJ	0.031 UJ	Not Analyzed	Not Analyzed	0.031 UJ
4-NITROPHENOL	MG/KG	0.3 UJ	0.31 UJ	Not Analyzed	Not Analyzed	0.31 UJ
ACENAPHTHENE	MG/KG	0.0094 UJ	0.0096 UJ	Not Analyzed	Not Analyzed	0.0097 UJ
ACENAPHTHYLENE	MG/KG	0.009 UJ	0.0092 UJ	Not Analyzed	Not Analyzed	0.0093 UJ
ANTHRACENE	MG/KG	0.01 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ
BENZO(A)ANTHRACENE	MG/KG	0.018 J	0.014 UJ	Not Analyzed	Not Analyzed	0.014 UJ
BENZO(A)PYRENE	MG/KG	0.019 J	0.013 UJ	Not Analyzed	Not Analyzed	0.013 UJ
BENZO(B)FLUORANTHENE	MG/KG	0.036 J	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
BENZO(G,H,I)PERYLENE	MG/KG	0.015 UJ	0.015 UJ	Not Analyzed	Not Analyzed	0.015 UJ
BENZO(K)FLUORANTHENE	MG/KG	0.022 UJ	0.023 UJ	Not Analyzed	Not Analyzed	0.023 UJ
BENZOIC ACID	MG/KG	0.17 UJ	0.18 UJ	Not Analyzed	Not Analyzed	0.18 UJ
BENZYL ALCOHOL	MG/KG	0.01 UJ	0.01 UJ	Not Analyzed	Not Analyzed	0.01 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	0.025 UJ	0.026 UJ	Not Analyzed	Not Analyzed	0.026 UJ
BIS(2-CHLOROETHOXY) METHANE	MG/KG	0.0088 UJ	0.009 UJ	Not Analyzed	Not Analyzed	0.009 UJ
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	0.023 UJ	0.023 UJ	Not Analyzed	Not Analyzed	0.023 UJ
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	0.0097 UJ	0.0099 UJ	Not Analyzed	Not Analyzed	0.0099 UJ
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	0.031 UJ	0.032 UJ	Not Analyzed	Not Analyzed	0.032 UJ
CARBAZOLE	MG/KG	0.015 UJ	0.015 UJ	Not Analyzed	Not Analyzed	0.015 UJ
CHRYSENE	MG/KG	0.039 J	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
DIBENZ(A,H)ANTHRACENE	MG/KG	0.034 UJ	0.034 UJ	Not Analyzed	Not Analyzed	0.034 UJ
DIBENZOFURAN	MG/KG	0.011 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ
DIETHYL PHTHALATE	MG/KG	0.016 UJ	0.016 UJ	Not Analyzed	Not Analyzed	0.016 UJ
DIMETHYL PHTHALATE	MG/KG	0.014 UJ	0.014 UJ	Not Analyzed	Not Analyzed	0.015 UJ
DI-N-BUTYL PHTHALATE	MG/KG	0.023 UJ	0.023 UJ	Not Analyzed	Not Analyzed	0.023 UJ
DI-N-OCTYLPHTHALATE	MG/KG	0.014 UJ	0.015 UJ	Not Analyzed	Not Analyzed	0.015 UJ
FLUORANTHENE	MG/KG	0.051 J	0.021 UJ	Not Analyzed	Not Analyzed	0.021 UJ
FLUORENE	MG/KG	0.012 UJ	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
HEXACHLOROBENZENE	MG/KG	0.011 UJ	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
HEXACHLOROBUTADIENE	MG/KG	0.019 UJ	0.02 UJ	Not Analyzed	Not Analyzed	0.02 UJ
HEXACHLOROCYCLOPENTADIENE	MG/KG	0.049 UJ	0.05 UJ	Not Analyzed	Not Analyzed	0.05 UJ
HEXACHLOROETHANE	MG/KG	0.0097 UJ	0.01 UJ	Not Analyzed	Not Analyzed	0.01 UJ
INDENO(1,2,3-C,D)PYRENE	MG/KG	0.011 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ
ISOPHORONE	MG/KG	0.0088 UJ	0.009 UJ	Not Analyzed	Not Analyzed	0.009 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	0.0082 UJ	0.0084 UJ	Not Analyzed	Not Analyzed	0.0084 UJ
NITROBENZENE	MG/KG	0.013 UJ	0.013 UJ	Not Analyzed	Not Analyzed	0.013 UJ
N-NITROSODIMETHYLAMINE	MG/KG	0.01 UJ	0.011 UJ	Not Analyzed	Not Analyzed	0.011 UJ
N-NITROSODI-N-PROPYLAMINE	MG/KG	0.012 UJ	0.012 UJ	Not Analyzed	Not Analyzed	0.012 UJ
N-NITROSODIPHENYLAMINE	MG/KG	0.01 UJ	0.01 UJ	Not Analyzed	Not Analyzed	0.011 J
PENTACHLOROPHENOL	MG/KG	0.08 UJ	0.081 UJ	Not Analyzed	Not Analyzed	0.082 UJ
PHENANTHRENE	MG/KG	0.036 J	0.011 UJ	Not Analyzed	Not Analyzed	0.016 J
PHENOL	MG/KG	0.045 UJ	0.046 UJ	Not Analyzed	Not Analyzed	0.047 UJ
PYRENE	MG/KG	0.041 J	0.013 UJ	Not Analyzed	Not Analyzed	0.013 UJ
PESTICIDES						
ALDRIN	MG/KG	0.00044 U	0.00044 U	Not Analyzed	Not Analyzed	0.00044 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00038 U	0.00038 U	Not Analyzed	Not Analyzed	0.00038 U
ALPHA ENDOSULFAN	MG/KG	0.00049 U	0.00049 U	Not Analyzed	Not Analyzed	0.00049 U
ALPHA-CHLORDANE	MG/KG	0.00048 U	0.00049 U	Not Analyzed	Not Analyzed	0.00049 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00046 U	0.00047 U	Not Analyzed	Not Analyzed	0.00047 U
BETA ENDOSULFAN	MG/KG	0.00048 U	0.00049 U	Not Analyzed	Not Analyzed	0.00049 U
BETA-CHLORDANE	MG/KG	0.00048 U	0.00049 U	Not Analyzed	Not Analyzed	0.00049 U
CHLORDANE	MG/KG	0.0045 U	0.0046 U	Not Analyzed	Not Analyzed	0.0046 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	0.0007 U	0.00071 U	Not Analyzed	Not Analyzed	0.00071 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	0.00041 U	0.00041 U	Not Analyzed	Not Analyzed	0.00041 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	0.00045 U	0.00046 U	Not Analyzed	Not Analyzed	0.00046 U

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SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	0.00038 U	0.00038 U	Not Analyzed	Not Analyzed	0.00038 U
DIELDRIN	MG/KG	0.00047 U	0.00047 U	Not Analyzed	Not Analyzed	0.00047 U
ENDOSULFAN SULFATE	MG/KG	0.00049 U	0.00049 U	Not Analyzed	Not Analyzed	0.00049 U
ENDRIN	MG/KG	0.0005 U	0.0005 U	Not Analyzed	Not Analyzed	0.0005 U
ENDRIN ALDEHYDE	MG/KG	0.00051 U	0.00051 U	Not Analyzed	Not Analyzed	0.00051 U
ENDRIN KETONE	MG/KG	0.00047 U	0.00048 U	Not Analyzed	Not Analyzed	0.00048 U
GAMMA BHC (LINDANE)	MG/KG	0.00039 U	0.0004 U	Not Analyzed	Not Analyzed	0.0004 U
HEPTACHLOR	MG/KG	0.00047 U	0.00048 U	Not Analyzed	Not Analyzed	0.00048 U
HEPTACHLOR EPOXIDE	MG/KG	0.00048 U	0.00049 U	Not Analyzed	Not Analyzed	0.00048 U
METHOXYCHLOR	MG/KG	0.0005 U	0.0005 U	Not Analyzed	Not Analyzed	0.0005 U
TOXAPHENE	MG/KG	0.0065 U	0.0066 U	Not Analyzed	Not Analyzed	0.0066 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	0.0038 U	0.0038 U	Not Analyzed	Not Analyzed	0.0038 U
PCB-1016 (AROCHLOR 1016)	MG/KG	0.0039 U	0.0039 U	Not Analyzed	Not Analyzed	0.0039 U
PCB-1221 (AROCHLOR 1221)	MG/KG	0.0039 U	0.0039 U	Not Analyzed	Not Analyzed	0.0039 U
PCB-1232 (AROCHLOR 1232)	MG/KG	0.0058 U	0.0059 U	Not Analyzed	Not Analyzed	0.0059 U
PCB-1242 (AROCHLOR 1242)	MG/KG	0.0048 U	0.0049 U	Not Analyzed	Not Analyzed	0.0049 U
PCB-1248 (AROCHLOR 1248)	MG/KG	0.0045 U	0.0046 U	Not Analyzed	Not Analyzed	0.0046 U
PCB-1254 (AROCHLOR 1254)	MG/KG	0.0055 U	0.0055 U	Not Analyzed	Not Analyzed	0.0055 U
PCB-1260 (AROCHLOR 1260)	MG/KG	0.0038 U	0.0038 U	Not Analyzed	Not Analyzed	0.0038 U
PCB-1262 (AROCHLOR 1262)	MG/KG	0.0038 U	0.0038 U	Not Analyzed	Not Analyzed	0.0038 U

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SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	0.0032 U	0.0032 U	Not Analyzed	Not Analyzed	0.0032 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	-0.2 U	Not Analyzed	Not Analyzed	Not Analyzed	-0.152 U
CESIUM-137	PCI/G	-0.048 U	Not Analyzed	Not Analyzed	Not Analyzed	0.017 U
COBALT-60	PCI/G	0.019 U	Not Analyzed	Not Analyzed	Not Analyzed	0.01 U
GROSS ALPHA	PCI/G	12.3	Not Analyzed	Not Analyzed	Not Analyzed	10
GROSS BETA	PCI/G	13	Not Analyzed	Not Analyzed	Not Analyzed	8.2
PLUTONIUM-238	PCI/G	-0.023 U	Not Analyzed	Not Analyzed	Not Analyzed	0.075 J
PLUTONIUM-239/240	PCI/G	0.052 U	Not Analyzed	Not Analyzed	Not Analyzed	-0.012 U
POTASSIUM-40	PCI/G	18.609	Not Analyzed	Not Analyzed	Not Analyzed	14.383
STRONTIUM-90	PCI/G	-0.004 U	Not Analyzed	Not Analyzed	Not Analyzed	0.042 U
URANIUM-232	PCI/G	-0.018 U	Not Analyzed	Not Analyzed	Not Analyzed	0.076 J
URANIUM-234	PCI/G	0.675	Not Analyzed	Not Analyzed	Not Analyzed	0.429
URANIUM-235	PCI/G	0.077 J	Not Analyzed	Not Analyzed	Not Analyzed	-0.013 U
URANIUM-238	PCI/G	0.938	Not Analyzed	Not Analyzed	Not Analyzed	0.509
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	0.376 U	Not Analyzed	Not Analyzed	Not Analyzed	0 U
URANIUM-238	PCI/G	1.507	Not Analyzed	Not Analyzed	Not Analyzed	0 U
METALS						
ALUMINUM	MG/KG	12,500	11,800	Not Analyzed	Not Analyzed	7,180
ANTIMONY	MG/KG	0.56 U	0.55 U	Not Analyzed	Not Analyzed	0.52 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
METALS						
ARSENIC	MG/KG	9.5	6.6	Not Analyzed	Not Analyzed	6.9
BARIUM	MG/KG	62.7	56.2	Not Analyzed	Not Analyzed	32
BERYLLIUM	MG/KG	0.54	0.54	Not Analyzed	Not Analyzed	0.35
CADMIUM	MG/KG	0.095 U	0.094 U	Not Analyzed	Not Analyzed	0.23 J
CALCIUM	MG/KG	1,820	1,670	Not Analyzed	Not Analyzed	1,720
CHROMIUM, TOTAL	MG/KG	14.5	14.3	Not Analyzed	Not Analyzed	9.4
COBALT	MG/KG	9.1	7.9	Not Analyzed	Not Analyzed	7.8
COPPER	MG/KG	25.5	18.7	Not Analyzed	Not Analyzed	16.9
IRON	MG/KG	25,200	23,900	Not Analyzed	Not Analyzed	13,200
LEAD	MG/KG	40.5	11	Not Analyzed	Not Analyzed	9.1
MAGNESIUM	MG/KG	3,280	3,210	Not Analyzed	Not Analyzed	2,370
MANGANESE	MG/KG	420	276	Not Analyzed	Not Analyzed	121
MERCURY	MG/KG	0.022	0.012 J	Not Analyzed	Not Analyzed	0.0068 J
NICKEL	MG/KG	22.4	21.5	Not Analyzed	Not Analyzed	18
POTASSIUM	MG/KG	1,550	1,690	Not Analyzed	Not Analyzed	1,240 J
SELENIUM	MG/KG	0.88 U	0.87 U	Not Analyzed	Not Analyzed	0.82 U
SILVER	MG/KG	0.23 U	0.23 U	Not Analyzed	Not Analyzed	0.21 U
SODIUM	MG/KG	110 U	100 U	Not Analyzed	Not Analyzed	98 U
THALLIUM	MG/KG	0.79 U	0.78 U	Not Analyzed	Not Analyzed	0.73 U
VANADIUM	MG/KG	18.3	19.6	Not Analyzed	Not Analyzed	13.5
ZINC	MG/KG	69.3	65.7	Not Analyzed	Not Analyzed	57.9

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-013	SD-013	SD-013	SD-013	SD-013
Field Sample Identifier		SVD-SD013 (12-18)	SVD-SD013 (12-18)-D	SVD-SD013 (15-15.5)	SVD-SD013 (15-15.5)-D	SVD-SD013 (18-19.6)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		12.0-18.0	12.0-18.0	15.0-15.5	15.0-15.5	18.0-19.6
Date of Sample		07/19/18	07/19/18	07/19/18	07/19/18	07/19/18
Parameter	Units		Field Duplicate		Field Duplicate	
HERBICIDES						
2,4 DB	MG/KG	0.012 U	0.013 U	Not Analyzed	Not Analyzed	0.011 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	0.0019 U	0.002 U	Not Analyzed	Not Analyzed	0.0017 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	0.014 U	0.015 U	Not Analyzed	Not Analyzed	0.013 U
DALAPON	MG/KG	0.0038 U	0.0039 U	Not Analyzed	Not Analyzed	0.0034 U
DICAMBA	MG/KG	0.003 U	0.0031 U	Not Analyzed	Not Analyzed	0.0027 U
DICHLOROPROP	MG/KG	0.012 U	0.013 U	Not Analyzed	Not Analyzed	0.011 U
DINOSEB	MG/KG	0.0083 U	0.0085 U	Not Analyzed	Not Analyzed	0.0074 U
MCPA	MG/KG	1.9 U	1.9 U	Not Analyzed	Not Analyzed	1.7 U
MCPP	MG/KG	1.9 U	2 U	Not Analyzed	Not Analyzed	1.7 U
PENTACHLOROPHENOL	MG/KG	0.0015 U	0.0016 U	Not Analyzed	Not Analyzed	0.0014 U
SILVEX (2,4,5-TP)	MG/KG	0.0036 U	0.0037 U	Not Analyzed	Not Analyzed	0.0032 U
MISCELLANEOUS						
CYANIDE	MG/KG	0.42 U	0.44 U	Not Analyzed	Not Analyzed	0.44 U
PERCENT MOISTURE	PERCENT	23	25	24	22	24
TOTAL ORGANIC CARBON	MG/KG	7,700	6,900	Not Analyzed	Not Analyzed	4,000

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00059 U	0.00052 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.0012 U	0.001 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-TRICHLOROETHANE	MG/KG	0.00052 U	0.00046 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1-DICHLOROETHANE	MG/KG	0.00058 U	0.00051 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1-DICHLOROETHENE	MG/KG	0.00099 U	0.00087 U	Not Analyzed	Not Analyzed	Not Analyzed
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0015 U	0.0013 U	Not Analyzed	Not Analyzed	Not Analyzed
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0015 U	0.0013 U	Not Analyzed	Not Analyzed	Not Analyzed
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.0013 U	0.0011 U	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.00049 U	0.00043 U	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROBENZENE	MG/KG	0.00046 U	0.00047 J	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROETHANE	MG/KG	0.00071 U	0.00063 U	Not Analyzed	Not Analyzed	Not Analyzed
1,2-DICHLOROPROPANE	MG/KG	0.00062 U	0.00054 U	Not Analyzed	Not Analyzed	Not Analyzed
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00054 U	0.00071 J	Not Analyzed	Not Analyzed	Not Analyzed
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00052 U	0.00081 J	Not Analyzed	Not Analyzed	Not Analyzed
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
2-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
2-HEXANONE	MG/KG	0.0019 U	0.0017 U	Not Analyzed	Not Analyzed	Not Analyzed
4-CHLOROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ACETONE	MG/KG	0.379	0.186	Not Analyzed	Not Analyzed	Not Analyzed
BENZENE	MG/KG	0.00057 U	0.0005 U	Not Analyzed	Not Analyzed	Not Analyzed
BROMOBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00065 U	0.00057 U	Not Analyzed	Not Analyzed	Not Analyzed
BROMODICHLOROMETHANE	MG/KG	0.00067 U	0.00059 U	Not Analyzed	Not Analyzed	Not Analyzed
BROMOFORM	MG/KG	0.00061 U	0.00054 U	Not Analyzed	Not Analyzed	Not Analyzed
BROMOMETHANE	MG/KG	0.0015 U	0.0013 U	Not Analyzed	Not Analyzed	Not Analyzed
CARBON DISULFIDE	MG/KG	0.0026 J	0.005	Not Analyzed	Not Analyzed	Not Analyzed
CARBON TETRACHLORIDE	MG/KG	0.00083 U	0.00073 U	Not Analyzed	Not Analyzed	Not Analyzed
CHLOROBENZENE	MG/KG	0.00054 U	0.00047 U	Not Analyzed	Not Analyzed	Not Analyzed
CHLOROETHANE	MG/KG	0.001 U	0.00092 U	Not Analyzed	Not Analyzed	Not Analyzed
CHLOROFORM	MG/KG	0.00056 U	0.0005 U	Not Analyzed	Not Analyzed	Not Analyzed
CHLOROMETHANE	MG/KG	0.003 U	0.0026 U	Not Analyzed	Not Analyzed	Not Analyzed
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0014 U	0.0013 U	Not Analyzed	Not Analyzed	Not Analyzed
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00053 U	0.00047 U	Not Analyzed	Not Analyzed	Not Analyzed
CYCLOHEXANE	MG/KG	0.00062 U	0.00054 U	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOCHLOROMETHANE	MG/KG	0.00051 U	0.00045 U	Not Analyzed	Not Analyzed	Not Analyzed
DIBROMOMETHANE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
DICHLORODIFLUOROMETHANE	MG/KG	0.00096 U	0.00085 U	Not Analyzed	Not Analyzed	Not Analyzed
ETHYLBENZENE	MG/KG	0.00084 U	0.00074 U	Not Analyzed	Not Analyzed	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.0011 U	0.00093 U	Not Analyzed	Not Analyzed	Not Analyzed
M+P-XYLENE	MG/KG	0.0011 U	0.00099 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ACETATE	MG/KG	0.0021 U	0.0019 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.0847	0.0277	Not Analyzed	Not Analyzed	Not Analyzed
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0024 U	0.0021 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYLCYCLOHEXANE	MG/KG	0.0011 U	0.00094 U	Not Analyzed	Not Analyzed	Not Analyzed
METHYLENE CHLORIDE	MG/KG	0.0063 J	0.008	Not Analyzed	Not Analyzed	Not Analyzed
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00088 U	0.00078 U	Not Analyzed	Not Analyzed	Not Analyzed
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
STYRENE	MG/KG	0.00087 U	0.00077 U	Not Analyzed	Not Analyzed	Not Analyzed
T-BUTYLBENZENE	MG/KG	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00053 U	0.00047 U	Not Analyzed	Not Analyzed	Not Analyzed
TETRACHLOROETHYLENE(PCE)	MG/KG	0.0013 J	0.00062 U	Not Analyzed	Not Analyzed	Not Analyzed
TOLUENE	MG/KG	0.00057 U	0.0005 U	Not Analyzed	Not Analyzed	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
VOLATILE ORGANIC ANALYSES						
TRANS-1,2-DICHLOROETHENE	MG/KG	0.001 U	0.00089 U	Not Analyzed	Not Analyzed	Not Analyzed
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.0005 U	0.00044 U	Not Analyzed	Not Analyzed	Not Analyzed
TRICHLOROETHANE	MG/KG	0.00065 U	0.00057 U	Not Analyzed	Not Analyzed	Not Analyzed
TRICHLOROETHYLENE (TCE)	MG/KG	0.0012 U	0.001 U	Not Analyzed	Not Analyzed	Not Analyzed
TRICHLOROFLUOROMETHANE	MG/KG	0.001 U	0.00091 U	Not Analyzed	Not Analyzed	Not Analyzed
VINYL CHLORIDE	MG/KG	0.00071 U	0.00063 U	Not Analyzed	Not Analyzed	Not Analyzed
XYLENES, TOTAL	MG/KG	0.00088 U	0.00078 U	Not Analyzed	Not Analyzed	Not Analyzed
SEMI-VOLATILE ORGANIC ANALYSES						
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.01 UJ	0.012 UJ	0.011 UJ
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.018 UJ	0.021 UJ	0.019 UJ
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.02 UJ	0.024 UJ	0.022 UJ
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.031 UJ	0.037 UJ	0.033 UJ
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.034 UJ	0.041 UJ	0.037 UJ
2,4-DINITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.1 UJ	0.12 UJ	0.11 UJ
2,4-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.016 UJ	0.019 UJ	0.017 UJ
2,6-DINITROTOLUENE	MG/KG	Not Analyzed	Not Analyzed	0.017 UJ	0.02 UJ	0.018 UJ
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	0.014 UJ	0.013 UJ
2-CHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.037 UJ	0.045 UJ	0.04 UJ
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 UJ	0.011 UJ	0.0095 UJ
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.038 UJ	0.046 UJ	0.042 UJ
2-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 UJ	0.01 UJ	0.0094 UJ

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
2-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.044 UJ	0.053 UJ	0.048 UJ
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed	Not Analyzed	0.46 UR	0.55 UR	0.5 UR
3-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	0.015 UJ	0.014 UJ
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.051 UJ	0.062 UJ	0.056 UJ
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.045 UJ	0.055 UJ	0.049 UJ
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.022 UJ	0.02 UJ
4-CHLOROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.027 UJ	0.032 UJ	0.029 UJ
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed	Not Analyzed	0.011 UJ	0.013 UJ	0.012 UJ
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed	Not Analyzed	0.063 UJ	0.076 UJ	0.069 UJ
4-NITROANILINE	MG/KG	Not Analyzed	Not Analyzed	0.026 UJ	0.031 UJ	0.028 UJ
4-NITROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.26 UJ	0.31 UJ	0.28 UJ
ACENAPHTHENE	MG/KG	Not Analyzed	Not Analyzed	0.0079 UJ	0.0095 UJ	0.0086 UJ
ACENAPHTHYLENE	MG/KG	Not Analyzed	Not Analyzed	0.0076 UJ	0.0091 UJ	0.0083 UJ
ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.0087 UJ	0.01 UJ	0.0095 UJ
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.014 J	0.014 UJ	0.013 UJ
BENZO(A)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.011 J	0.013 UJ	0.012 UJ
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.021 J	0.012 UJ	0.011 UJ
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed	Not Analyzed	0.013 UJ	0.015 UJ	0.014 UJ
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.022 UJ	0.02 UJ
BENZOIC ACID	MG/KG	Not Analyzed	Not Analyzed	0.14 UJ	0.17 UJ	0.16 UJ
BENZYL ALCOHOL	MG/KG	Not Analyzed	Not Analyzed	0.0086 UJ	0.01 UJ	0.0093 UJ

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NOTE: Detection limits shown are MDL.

APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.021 UJ	0.025 UJ	0.023 UJ
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed	Not Analyzed	0.0074 UJ	0.0089 UJ	0.0081 UJ
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.023 UJ	0.021 UJ
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed	Not Analyzed	0.0081 UJ	0.0098 UJ	0.0089 UJ
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.026 UJ	0.031 UJ	0.028 UJ
CARBAZOLE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	0.015 UJ	0.013 UJ
CHRYSENE	MG/KG	Not Analyzed	Not Analyzed	0.022 J	0.012 UJ	0.011 UJ
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed	Not Analyzed	0.028 UJ	0.034 UJ	0.031 UJ
DIBENZOFURAN	MG/KG	Not Analyzed	Not Analyzed	0.0091 UJ	0.011 UJ	0.0099 UJ
DIETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.013 UJ	0.016 UJ	0.014 UJ
DIMETHYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	0.014 UJ	0.013 UJ
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.019 UJ	0.023 UJ	0.021 UJ
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed	Not Analyzed	0.012 UJ	0.14 J	0.013 UJ
FLUORANTHENE	MG/KG	Not Analyzed	Not Analyzed	0.034 J	0.021 UJ	0.019 UJ
FLUORENE	MG/KG	Not Analyzed	Not Analyzed	0.01 UJ	0.012 UJ	0.011 UJ
HEXACHLOROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.0097 UJ	0.012 UJ	0.011 UJ
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.016 UJ	0.02 UJ	0.018 UJ
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed	Not Analyzed	0.041 UJ	0.05 UJ	0.045 UJ
HEXACHLOROETHANE	MG/KG	Not Analyzed	Not Analyzed	0.0082 UJ	0.0099 UJ	0.0089 UJ
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.0092 UJ	0.011 UJ	0.01 UJ
ISOPHORONE	MG/KG	Not Analyzed	Not Analyzed	0.0074 UJ	0.0089 UJ	0.008 UJ

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
SEMI-VOLATILE ORGANIC ANALYSES						
NAPHTHALENE	MG/KG	Not Analyzed	Not Analyzed	0.0093 J	0.0083 UJ	0.0075 UJ
NITROBENZENE	MG/KG	Not Analyzed	Not Analyzed	0.011 UJ	0.013 UJ	0.012 UJ
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0087 UJ	0.01 UJ	0.0094 UJ
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0099 UJ	0.012 UJ	0.011 UJ
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed	Not Analyzed	0.0086 UJ	0.01 UJ	0.0094 UJ
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.067 UJ	0.081 UJ	0.073 UJ
PHENANTHRENE	MG/KG	Not Analyzed	Not Analyzed	0.021 J	0.011 UJ	0.01 UJ
PHENOL	MG/KG	Not Analyzed	Not Analyzed	0.038 UJ	0.046 UJ	0.042 UJ
PYRENE	MG/KG	Not Analyzed	Not Analyzed	0.027 J	0.013 UJ	0.012 UJ
PESTICIDES						
ALDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00036 U	0.00044 U	0.00039 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	0.00038 U	0.00034 U
ALPHA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00049 U	0.00044 U
ALPHA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00049 U	0.00044 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	0.00047 U	0.00042 U
BETA ENDOSULFAN	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00049 U	0.00043 U
BETA-CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00049 U	0.00044 U
CHLORDANE	MG/KG	Not Analyzed	Not Analyzed	0.0037 U	0.0045 U	0.0041 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00058 U	0.00071 U	0.00063 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed	Not Analyzed	0.00034 U	0.00041 U	0.00037 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed	Not Analyzed	0.00038 U	0.00046 U	0.00041 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
PESTICIDES						
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed	Not Analyzed	0.00031 U	0.00038 U	0.00034 U
DIELDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.00047 U	0.00042 U
ENDOSULFAN SULFATE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00049 U	0.00044 U
ENDRIN	MG/KG	Not Analyzed	Not Analyzed	0.00041 U	0.0005 U	0.00045 U
ENDRIN ALDEHYDE	MG/KG	Not Analyzed	Not Analyzed	0.00042 U	0.00051 U	0.00046 U
ENDRIN KETONE	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.00048 U	0.00043 U
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed	Not Analyzed	0.00033 U	0.0004 U	0.00035 U
HEPTACHLOR	MG/KG	Not Analyzed	Not Analyzed	0.00039 U	0.00048 U	0.00043 U
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed	Not Analyzed	0.0004 U	0.00048 U	0.00043 U
METHOXYCHLOR	MG/KG	Not Analyzed	Not Analyzed	0.00041 U	0.0005 U	0.00045 U
TOXAPHENE	MG/KG	Not Analyzed	Not Analyzed	0.0054 U	0.0065 U	0.0058 U
POLYCHLORINATED BIPHENYLS						
PCB, TOTAL	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0038 U	0.0034 U
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	0.0039 U	0.0035 U
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	0.0039 U	0.0035 U
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed	Not Analyzed	0.0048 U	0.0059 U	0.0052 U
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed	Not Analyzed	0.004 U	0.0049 U	0.0043 U
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed	Not Analyzed	0.0038 U	0.0046 U	0.0041 U
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed	Not Analyzed	0.0045 U	0.0055 U	0.0049 U
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0038 U	0.0034 U
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed	Not Analyzed	0.0031 U	0.0038 U	0.0034 U

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
POLYCHLORINATED BIPHENYLS						
PCB-1268 (AROCHLOR 1268)	MG/KG	Not Analyzed	Not Analyzed	0.0026 U	0.0032 U	0.0028 U
RADIONUCLIDES						
AMERICIUM-241	PCI/G	Not Analyzed	Not Analyzed	0.034 U	-0.359 U	-0.028 U
CESIUM-137	PCI/G	Not Analyzed	Not Analyzed	0.319	-0.012 U	0.125 U
COBALT-60	PCI/G	Not Analyzed	Not Analyzed	0.003 U	0.1 U	0.002 U
GROSS ALPHA	PCI/G	Not Analyzed	Not Analyzed	18.5	11	12.1
GROSS BETA	PCI/G	Not Analyzed	Not Analyzed	18.1	20.5	15.2
PLUTONIUM-238	PCI/G	Not Analyzed	Not Analyzed	0.015 U	-0.073 U	-0.044 U
PLUTONIUM-239/240	PCI/G	Not Analyzed	Not Analyzed	-0.022 U	-0.027 U	0.011 U
POTASSIUM-40	PCI/G	Not Analyzed	Not Analyzed	14.04	25.91	16.14
STRONTIUM-90	PCI/G	Not Analyzed	Not Analyzed	0.033 U	-0.091 U	-0.096 U
URANIUM-232	PCI/G	Not Analyzed	Not Analyzed	0.029 U	0.101 J	0.092 J
URANIUM-234	PCI/G	Not Analyzed	Not Analyzed	0.807	1.15	0.739
URANIUM-235	PCI/G	Not Analyzed	Not Analyzed	0.142	0.055 J	0.163
URANIUM-238	PCI/G	Not Analyzed	Not Analyzed	0.525	0.96	0.683
RADIONUCLIDES (GAMMA SPEC)						
URANIUM-235	PCI/G	Not Analyzed	Not Analyzed	0.512 U	0 U	0 U
URANIUM-238	PCI/G	Not Analyzed	Not Analyzed	1.023 U	1.459 U	1.316 U
METALS						
ALUMINUM	MG/KG	Not Analyzed	Not Analyzed	5,790	16,500	9,650
ANTIMONY	MG/KG	Not Analyzed	Not Analyzed	0.46 U	0.52 U	0.45 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
METALS						
ARSENIC	MG/KG	Not Analyzed	Not Analyzed	6.3	14.6	7.7
BARIUM	MG/KG	Not Analyzed	Not Analyzed	35.3	79.4	49
BERYLLIUM	MG/KG	Not Analyzed	Not Analyzed	0.26	0.75	0.44
CADMIUM	MG/KG	Not Analyzed	Not Analyzed	0.078 U	0.089 U	0.077 U
CALCIUM	MG/KG	Not Analyzed	Not Analyzed	7,540	2,250	1,440
CHROMIUM, TOTAL	MG/KG	Not Analyzed	Not Analyzed	6.7	20.1	11.1
COBALT	MG/KG	Not Analyzed	Not Analyzed	4.7 J	12.3	8
COPPER	MG/KG	Not Analyzed	Not Analyzed	11.4	26.2	17.6
IRON	MG/KG	Not Analyzed	Not Analyzed	14,200	34,000	22,400
LEAD	MG/KG	Not Analyzed	Not Analyzed	8.5	14.3	11.7
MAGNESIUM	MG/KG	Not Analyzed	Not Analyzed	3,120	4,840	2,760
MANGANESE	MG/KG	Not Analyzed	Not Analyzed	330	440	235
MERCURY	MG/KG	Not Analyzed	Not Analyzed	0.0036 J	0.022	0.0095 J
NICKEL	MG/KG	Not Analyzed	Not Analyzed	11.8	31.9	19.8
POTASSIUM	MG/KG	Not Analyzed	Not Analyzed	845 J	2,420	1,310
SELENIUM	MG/KG	Not Analyzed	Not Analyzed	0.72 U	4.1 U	0.72 U
SILVER	MG/KG	Not Analyzed	Not Analyzed	0.19 U	1.1 U	0.19 U
SODIUM	MG/KG	Not Analyzed	Not Analyzed	86 U	99 U	86 U
THALLIUM	MG/KG	Not Analyzed	Not Analyzed	0.64 U	3.7 U	0.64 U
VANADIUM	MG/KG	Not Analyzed	Not Analyzed	9.1	24.4	16.2
ZINC	MG/KG	Not Analyzed	Not Analyzed	41	81.6	65.1

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014	SD-014	SD-014	SD-014	SD-014
Field Sample Identifier		SVD-SD014 (5.5-6)	SVD-SD014 (9-9.5)	SVD-SD014 (0-6)	SVD-SD014 (6-12)	SVD-SD014 (12-17.8)
Sample Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		5.5-6.0	9.0-9.5	0.0-6.0	6.0-12.0	12.0-17.8
Date of Sample		07/19/18	07/19/18	07/20/18	07/20/18	07/20/18
Parameter	Units					
HERBICIDES						
2,4 DB	MG/KG	Not Analyzed	Not Analyzed	0.01 U	0.013 U	0.01 U
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.0016 U	0.002 U	0.0016 U
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed	Not Analyzed	0.012 U	0.015 U	0.012 U
DALAPON	MG/KG	Not Analyzed	Not Analyzed	0.0032 U	0.004 U	0.0032 U
DICAMBA	MG/KG	Not Analyzed	Not Analyzed	0.0025 U	0.0031 U	0.0025 U
DICHLOROPROP	MG/KG	Not Analyzed	Not Analyzed	0.01 U	0.013 U	0.01 U
DINOSEB	MG/KG	Not Analyzed	Not Analyzed	0.0069 U	0.0086 U	0.0069 U
MCPA	MG/KG	Not Analyzed	Not Analyzed	1.6 U	2 U	1.6 U
MCPP	MG/KG	Not Analyzed	Not Analyzed	1.6 U	2 U	1.6 U
PENTACHLOROPHENOL	MG/KG	Not Analyzed	Not Analyzed	0.0013 U	0.0016 U	0.0013 U
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed	Not Analyzed	0.003 U	0.0037 U	0.003 U
MISCELLANEOUS						
CYANIDE	MG/KG	Not Analyzed	Not Analyzed	0.35 U	0.43 U	0.39 U
PERCENT MOISTURE	PERCENT	34	25	7.1	24	15
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed	Not Analyzed	6,300	7,100	3,100 J

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
VOLATILE ORGANIC ANALYSES		
1,1,1,2-TETRACHLOROETHANE	MG/KG	Not Analyzed
1,1,2,2-TETRACHLOROETHANE	MG/KG	0.00048 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	MG/KG	0.00095 U
1,1,2-TRICHLOROETHANE	MG/KG	0.00043 U
1,1-DICHLOROETHANE	MG/KG	0.00048 U
1,1-DICHLOROETHENE	MG/KG	0.00082 U
1,1-DICHLOROPROPENE	MG/KG	Not Analyzed
1,2,3-TRICHLOROBENZENE	MG/KG	0.0012 U
1,2,3-TRICHLOROPROPANE	MG/KG	Not Analyzed
1,2,4-TRICHLOROBENZENE	MG/KG	0.0012 U
1,2,4-TRIMETHYLBENZENE	MG/KG	Not Analyzed
1,2-DIBROMO-3-CHLOROPROPANE	MG/KG	0.001 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	MG/KG	0.0004 U
1,2-DICHLOROBENZENE	MG/KG	0.00038 U
1,2-DICHLOROETHANE	MG/KG	0.00058 U
1,2-DICHLOROPROPANE	MG/KG	0.00051 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	MG/KG	Not Analyzed
1,3-DICHLOROBENZENE	MG/KG	0.00047 J
1,3-DICHLOROPROPANE	MG/KG	Not Analyzed
1,4-DICHLOROBENZENE	MG/KG	0.00054 J
2,2-DICHLOROPROPANE	MG/KG	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
VOLATILE ORGANIC ANALYSES		
2-CHLOROTOLUENE	MG/KG	Not Analyzed
2-HEXANONE	MG/KG	0.0016 U
4-CHLOROTOLUENE	MG/KG	Not Analyzed
ACETONE	MG/KG	0.0808
BENZENE	MG/KG	0.00047 U
BROMOBENZENE	MG/KG	Not Analyzed
BROMOCHLOROMETHANE	MG/KG	0.00053 U
BROMODICHLOROMETHANE	MG/KG	0.00055 U
BROMOFORM	MG/KG	0.0005 U
BROMOMETHANE	MG/KG	0.0012 U
CARBON DISULFIDE	MG/KG	0.0012 U
CARBON TETRACHLORIDE	MG/KG	0.00068 U
CHLOROBENZENE	MG/KG	0.00044 U
CHLOROETHANE	MG/KG	0.00085 U
CHLOROFORM	MG/KG	0.00046 U
CHLOROMETHANE	MG/KG	0.0024 U
CIS-1,2-DICHLOROETHYLENE	MG/KG	0.0012 U
CIS-1,3-DICHLOROPROPENE	MG/KG	0.00044 U
CYCLOHEXANE	MG/KG	0.0005 U
DIBROMOCHLOROMETHANE	MG/KG	0.00042 U
DIBROMOMETHANE	MG/KG	Not Analyzed

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
VOLATILE ORGANIC ANALYSES		
DICHLORODIFLUOROMETHANE	MG/KG	0.00079 U
ETHYLBENZENE	MG/KG	0.00069 U
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed
ISOPROPYLBENZENE (CUMENE)	MG/KG	0.00087 U
M+P-XYLENE	MG/KG	0.00093 U
METHYL ACETATE	MG/KG	0.0017 U
METHYL ETHYL KETONE (2-BUTANONE)	MG/KG	0.005 J
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	MG/KG	0.0019 U
METHYLCYCLOHEXANE	MG/KG	0.00088 U
METHYLENE CHLORIDE	MG/KG	0.0089
NAPHTHALENE	MG/KG	Not Analyzed
N-BUTYLBENZENE	MG/KG	Not Analyzed
N-PROPYLBENZENE	MG/KG	Not Analyzed
O-XYLENE (1,2-DIMETHYLBENZENE)	MG/KG	0.00072 U
P-CYMENE (P-ISOPROPYLTOLUENE)	MG/KG	Not Analyzed
SEC-BUTYLBENZENE	MG/KG	Not Analyzed
STYRENE	MG/KG	0.00071 U
T-BUTYLBENZENE	MG/KG	Not Analyzed
TERT-BUTYL METHYL ETHER	MG/KG	0.00044 U
TETRACHLOROETHYLENE(PCE)	MG/KG	0.00057 U
TOLUENE	MG/KG	0.00047 U

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SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
VOLATILE ORGANIC ANALYSES		
TRANS-1,2-DICHLOROETHENE	MG/KG	0.00083 U
TRANS-1,3-DICHLOROPROPENE	MG/KG	0.00041 U
TRICHLOROETHANE	MG/KG	0.00053 U
TRICHLOROETHYLENE (TCE)	MG/KG	0.00095 U
TRICHLOROFLUOROMETHANE	MG/KG	0.00085 U
VINYL CHLORIDE	MG/KG	0.00058 U
XYLENES, TOTAL	MG/KG	0.00072 U
SEMI-VOLATILE ORGANIC ANALYSES		
1,2,4-TRICHLOROBENZENE	MG/KG	Not Analyzed
2,4,5-TRICHLOROPHENOL	MG/KG	Not Analyzed
2,4,6-TRICHLOROPHENOL	MG/KG	Not Analyzed
2,4-DICHLOROPHENOL	MG/KG	Not Analyzed
2,4-DIMETHYLPHENOL	MG/KG	Not Analyzed
2,4-DINITROPHENOL	MG/KG	Not Analyzed
2,4-DINITROTOLUENE	MG/KG	Not Analyzed
2,6-DINITROTOLUENE	MG/KG	Not Analyzed
2-CHLORONAPHTHALENE	MG/KG	Not Analyzed
2-CHLOROPHENOL	MG/KG	Not Analyzed
2-METHYLNAPHTHALENE	MG/KG	Not Analyzed
2-METHYLPHENOL (O-CRESOL)	MG/KG	Not Analyzed
2-NITROANILINE	MG/KG	Not Analyzed

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APPENDIX
SEDIMENT ANALYTICAL RESULTS
SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
SEMI-VOLATILE ORGANIC ANALYSES		
2-NITROPHENOL	MG/KG	Not Analyzed
3,3'-DICHLOROBENZIDINE	MG/KG	Not Analyzed
3-NITROANILINE	MG/KG	Not Analyzed
4,6-DINITRO-2-METHYLPHENOL	MG/KG	Not Analyzed
4-BROMOPHENYL PHENYL ETHER	MG/KG	Not Analyzed
4-CHLORO-3-METHYLPHENOL	MG/KG	Not Analyzed
4-CHLOROANILINE	MG/KG	Not Analyzed
4-CHLOROPHENYL PHENYL ETHER	MG/KG	Not Analyzed
4-METHYLPHENOL (P-CRESOL)	MG/KG	Not Analyzed
4-NITROANILINE	MG/KG	Not Analyzed
4-NITROPHENOL	MG/KG	Not Analyzed
ACENAPHTHENE	MG/KG	Not Analyzed
ACENAPHTHYLENE	MG/KG	Not Analyzed
ANTHRACENE	MG/KG	Not Analyzed
BENZO(A)ANTHRACENE	MG/KG	Not Analyzed
BENZO(A)PYRENE	MG/KG	Not Analyzed
BENZO(B)FLUORANTHENE	MG/KG	Not Analyzed
BENZO(G,H,I)PERYLENE	MG/KG	Not Analyzed
BENZO(K)FLUORANTHENE	MG/KG	Not Analyzed
BENZOIC ACID	MG/KG	Not Analyzed
BENZYL ALCOHOL	MG/KG	Not Analyzed

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Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
SEMI-VOLATILE ORGANIC ANALYSES		
BENZYL BUTYL PHTHALATE	MG/KG	Not Analyzed
BIS(2-CHLOROETHOXY) METHANE	MG/KG	Not Analyzed
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	MG/KG	Not Analyzed
BIS(2-CHLOROISOPROPYL) ETHER	MG/KG	Not Analyzed
BIS(2-ETHYLHEXYL) PHTHALATE	MG/KG	Not Analyzed
CARBAZOLE	MG/KG	Not Analyzed
CHRYSENE	MG/KG	Not Analyzed
DIBENZ(A,H)ANTHRACENE	MG/KG	Not Analyzed
DIBENZOFURAN	MG/KG	Not Analyzed
DIETHYL PHTHALATE	MG/KG	Not Analyzed
DIMETHYL PHTHALATE	MG/KG	Not Analyzed
DI-N-BUTYL PHTHALATE	MG/KG	Not Analyzed
DI-N-OCTYLPHTHALATE	MG/KG	Not Analyzed
FLUORANTHENE	MG/KG	Not Analyzed
FLUORENE	MG/KG	Not Analyzed
HEXACHLOROBENZENE	MG/KG	Not Analyzed
HEXACHLOROBUTADIENE	MG/KG	Not Analyzed
HEXACHLOROCYCLOPENTADIENE	MG/KG	Not Analyzed
HEXACHLOROETHANE	MG/KG	Not Analyzed
INDENO(1,2,3-C,D)PYRENE	MG/KG	Not Analyzed
ISOPHORONE	MG/KG	Not Analyzed

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Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
SEMI-VOLATILE ORGANIC ANALYSES		
NAPHTHALENE	MG/KG	Not Analyzed
NITROBENZENE	MG/KG	Not Analyzed
N-NITROSODIMETHYLAMINE	MG/KG	Not Analyzed
N-NITROSODI-N-PROPYLAMINE	MG/KG	Not Analyzed
N-NITROSODIPHENYLAMINE	MG/KG	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed
PHENANTHRENE	MG/KG	Not Analyzed
PHENOL	MG/KG	Not Analyzed
PYRENE	MG/KG	Not Analyzed
PESTICIDES		
ALDRIN	MG/KG	Not Analyzed
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed
ALPHA ENDOSULFAN	MG/KG	Not Analyzed
ALPHA-CHLORDANE	MG/KG	Not Analyzed
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed
BETA ENDOSULFAN	MG/KG	Not Analyzed
BETA-CHLORDANE	MG/KG	Not Analyzed
CHLORDANE	MG/KG	Not Analyzed
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	MG/KG	Not Analyzed
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	MG/KG	Not Analyzed
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	MG/KG	Not Analyzed

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SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
PESTICIDES		
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	MG/KG	Not Analyzed
DIELDRIN	MG/KG	Not Analyzed
ENDOSULFAN SULFATE	MG/KG	Not Analyzed
ENDRIN	MG/KG	Not Analyzed
ENDRIN ALDEHYDE	MG/KG	Not Analyzed
ENDRIN KETONE	MG/KG	Not Analyzed
GAMMA BHC (LINDANE)	MG/KG	Not Analyzed
HEPTACHLOR	MG/KG	Not Analyzed
HEPTACHLOR EPOXIDE	MG/KG	Not Analyzed
METHOXYCHLOR	MG/KG	Not Analyzed
TOXAPHENE	MG/KG	Not Analyzed
POLYCHLORINATED BIPHENYLS		
PCB, TOTAL	MG/KG	Not Analyzed
PCB-1016 (AROCHLOR 1016)	MG/KG	Not Analyzed
PCB-1221 (AROCHLOR 1221)	MG/KG	Not Analyzed
PCB-1232 (AROCHLOR 1232)	MG/KG	Not Analyzed
PCB-1242 (AROCHLOR 1242)	MG/KG	Not Analyzed
PCB-1248 (AROCHLOR 1248)	MG/KG	Not Analyzed
PCB-1254 (AROCHLOR 1254)	MG/KG	Not Analyzed
PCB-1260 (AROCHLOR 1260)	MG/KG	Not Analyzed
PCB-1262 (AROCHLOR 1262)	MG/KG	Not Analyzed

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SPRINGVILLE DAM

Location Identifier		SD-014
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Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
POLYCHLORINATED BIPHENYLS		
PCB-1268 (AROCHEOR 1268)	MG/KG	Not Analyzed
RADIONUCLIDES		
AMERICIUM-241	PCI/G	Not Analyzed
CESIUM-137	PCI/G	Not Analyzed
COBALT-60	PCI/G	Not Analyzed
GROSS ALPHA	PCI/G	Not Analyzed
GROSS BETA	PCI/G	Not Analyzed
PLUTONIUM-238	PCI/G	Not Analyzed
PLUTONIUM-239/240	PCI/G	Not Analyzed
POTASSIUM-40	PCI/G	Not Analyzed
STRONTIUM-90	PCI/G	Not Analyzed
URANIUM-232	PCI/G	Not Analyzed
URANIUM-234	PCI/G	Not Analyzed
URANIUM-235	PCI/G	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed
RADIONUCLIDES (GAMMA SPEC)		
URANIUM-235	PCI/G	Not Analyzed
URANIUM-238	PCI/G	Not Analyzed
METALS		
ALUMINUM	MG/KG	Not Analyzed
ANTIMONY	MG/KG	Not Analyzed

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Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
METALS		
ARSENIC	MG/KG	Not Analyzed
BARIUM	MG/KG	Not Analyzed
BERYLLIUM	MG/KG	Not Analyzed
CADMIUM	MG/KG	Not Analyzed
CALCIUM	MG/KG	Not Analyzed
CHROMIUM, TOTAL	MG/KG	Not Analyzed
COBALT	MG/KG	Not Analyzed
COPPER	MG/KG	Not Analyzed
IRON	MG/KG	Not Analyzed
LEAD	MG/KG	Not Analyzed
MAGNESIUM	MG/KG	Not Analyzed
MANGANESE	MG/KG	Not Analyzed
MERCURY	MG/KG	Not Analyzed
NICKEL	MG/KG	Not Analyzed
POTASSIUM	MG/KG	Not Analyzed
SELENIUM	MG/KG	Not Analyzed
SILVER	MG/KG	Not Analyzed
SODIUM	MG/KG	Not Analyzed
THALLIUM	MG/KG	Not Analyzed
VANADIUM	MG/KG	Not Analyzed
ZINC	MG/KG	Not Analyzed

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SPRINGVILLE DAM

Location Identifier		SD-014
Field Sample Identifier		SVD-SD014 (13-14)
Sample Matrix		Sediment
Depth Interval (ft)		13.0-14.0
Date of Sample		07/20/18
Parameter	Units	
HERBICIDES		
2,4 DB	MG/KG	Not Analyzed
2,4,5-T (TRICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed
2,4-D (DICHLOROPHOXYACETIC ACID)	MG/KG	Not Analyzed
DALAPON	MG/KG	Not Analyzed
DICAMBA	MG/KG	Not Analyzed
DICHLOROPROP	MG/KG	Not Analyzed
DINOSEB	MG/KG	Not Analyzed
MCPA	MG/KG	Not Analyzed
MCPP	MG/KG	Not Analyzed
PENTACHLOROPHENOL	MG/KG	Not Analyzed
SILVEX (2,4,5-TP)	MG/KG	Not Analyzed
MISCELLANEOUS		
CYANIDE	MG/KG	Not Analyzed
PERCENT MOISTURE	PERCENT	20
TOTAL ORGANIC CARBON	MG/KG	Not Analyzed

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