



OHIO VALLEY ELECTRIC CORPORATION

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WRITER'S DIRECT DIAL NO:
740-897-7768

October 14, 2020

Delivered Electronically

Ms. Laurie Stevenson, Director
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Dear Ms. Stevenson:

**Re: Ohio Valley Electric Corporation
Notification of Revision to Groundwater Monitoring Reports**

As required by 40 CFR 257.106(h)(4), the Ohio Valley Electric Corporation (OVEC) is providing notification to the Director of the Ohio Environmental Protection Agency that revisions have been made to the 2017, 2018 and 2019 Annual Groundwater Monitoring and Corrective Actions reports for OVEC's Kyger Creek Station. These revisions were completed in accordance with 40 CFR 257.90(e) of the Federal CCR Rule, and were necessary to resolve an error discovered in the previously determined groundwater flow direction at the station's South Fly Ash Pond facility.

The updated reports have been placed in the facility's operating record in accordance with 40 CFR 257.105(h)(1), as well as on the company's publicly accessible internet site in accordance with 40 CFR 257.107(h)(1). The facility's publicly accessible internet site can be viewed at <https://www.ovec.com/CCRCCompliance.php>.

If you have any questions, or require any additional information, please call me at (740) 897-7768.

Sincerely,

A handwritten signature in black ink that reads "Tim Fulk".

Tim Fulk
Engineer II

TLF:klr



Stantec Consulting Services Inc.
11687 Lebanon Road, Cincinnati OH 45241-2012

October 13, 2020

File: 175534017, 200.201

Ohio Valley Electric Corporation
Indiana-Kentucky Electric Corporation
Attention: Mr. Gabriel Coriell
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

**Reference: 2018 Annual Groundwater Monitoring and Corrective Action Report (Rev. 2.0)
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Generating Station
Cheshire, Ohio**

Dear Mr. Coriell,

The EPA Final CCR Rule requires owners or operators of existing CCR landfills and surface impoundments to prepare an annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by 40 CFR 257.90(e). For the Ohio Valley Electric Corporation (OVEC), this applies to the Kyger Creek Station's South Fly Ash Pond, Boiler Slag Pond, and CCR Landfill.

The annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
2. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
3. In addition to all the monitoring data obtained under §§257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
4. A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in

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October 13, 2020
Mr. Gabriel Coriell
Page 2 of 2

**Reference: 2018 Annual Groundwater Monitoring and Corrective Action Report (Rev. 2.0)
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Generating Station
Cheshire, Ohio**

addition to identifying the constituent(s) detected at a statistically significant increase over background level); and

5. Other information required to be included in the annual report as specified in §§257.90 through 257.98.

OVEC has retained Applied Geology and Environmental Science, Inc. of Clinton, Pennsylvania (AGES) to perform the Kyger Creek Station's groundwater monitoring and corrective action support under the EPA Final CCR Rule. The 2018 CCR Regulation Groundwater Monitoring and Corrective Action Report (GWCAR) was prepared by AGES to present the annual groundwater monitoring at the South Fly Ash Pond, Boiler Slag Pond, and CCR Landfill of the Kyger Creek Station. AGES (2019a) was posted to the Kyger Creek Station's operating record by January 31, 2019. AGES (2019b, Rev. 1.0) revised the annual report's discussion of the groundwater protection standards and the projected activities to summarize the results of the statistical evaluations. AGES (2020, Rev. 2.0) corrected groundwater elevation data for wells at the South Fly Ash Pond. Stantec Consulting Services Inc. (Stantec) has reviewed AGES (2019a, 2019b Rev. 1.0, and 2020 Rev. 2.0), and they meet the requirements specified in 40 CFR 257.90(e).

Please contact us with any questions or concerns. We appreciate the opportunity to continue to work with the Kyger Creek Generating Station and the Ohio Valley Electric Corporation.

Regards,

Stantec Consulting Services Inc.

Jacqueline S. Harmon, P.E.
Senior Associate
Phone: (513) 842-8200 ext 8220
Fax: (513) 842-8250
Jacqueline.Harmon@stantec.com

Attachment: AGES (2020). Coal Combustion Residuals Regulation, 2018 Groundwater Monitoring and Corrective Action Report, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Ohio, January. October, Revision 2.0.

c. Stan Harris, John Griggs, John McInnes

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AGES
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**COAL COMBUSTION RESIDUALS REGULATION
2018 GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT**

**OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO**

**JANUARY 2019
FEBRUARY 2019 REVISION 1.0
OCTOBER 2020 REVISION 2.0**

Prepared for:

OHIO VALLEY ELECTRIC CORPORATION (OVEC)

By:

APPLIED GEOLOGY AND ENVIRONMENTAL SCIENCE, INC.

**COAL COMBUSTION RESIDUALS REGULATION
2018 GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO**

**JANUARY 2019
FEBRUARY 2019 REVISION 1.0
OCTOBER 2020 REVISION 2.0**

Prepared for:

OHIO VALLEY ELECTRIC CORPORATION (OVEC)

Prepared By:

Applied Geology and Environmental Science, Inc.



Bethany Flaherty
Senior Scientist



Robert W. King, P.G.
President/Chief Hydrogeologist

**COAL COMBUSTION RESIDUALS REGULATION
2018 GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO**

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2018 GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO**

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LIST OF ACRONYMS

AGES	Applied Geology and Environmental Science, Inc.
ASD	Alternate Source Demonstration
BSP	Boiler Slag Pond
CCR	Coal Combustion Residuals
GMPP	Groundwater Monitoring Program Plan
GWPS	Groundwater Protection Standard
Landfill	Class III Residual Waste Landfill
MCL	Maximum Contaminant Level
OEPA	Ohio Environmental Protection Agency
OVEC	Ohio Valley Electric Corporation
PTI	Permit to Install
RCRA	Resource Conservation and Recovery Act
SAP	Statistical Analysis Plan
SFAP	South Fly Ash Pond
Stantec	Stantec Consulting Services, Inc.
SSI	Statistically Significant Increase
S.U.	Standard Unit
TDS	Total Dissolved Solids
U.S. EPA	United States Environmental Protection Agency

**COAL COMBUSTION RESIDUALS REGULATION
2018 GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO**

1.0 INTRODUCTION

On December 19, 2014, the United States Environmental Protection Agency (U.S. EPA) issued their final Coal Combustion Residuals (CCR) regulation which regulates CCR as a non-hazardous waste under Subtitle D of Resource Conservation and Recovery Act (RCRA) and became effective six (6) months from the date of its publication (April 17, 2015) in the Federal Register, referred to as the “CCR Rule.” The rule applies to new and existing landfills, and surface impoundments used to dispose of or otherwise manage CCR generated by electric utilities and independent power producers. Because the rule was promulgated under Subtitle D of RCRA, it does not require regulated facilities to obtain permits, does not require state adoption, and cannot be enforced by U.S. EPA. The only compliance mechanism is for a state or citizen group to bring a RCRA suit in federal district court against any facility that is alleged to be in non-compliance with the new requirements.

The original version (January 2019) and Revision 1.0 (February 2019) of this Groundwater Monitoring and Corrective Action Report were prepared in accordance with §257.90 (e) of the CCR Rule and documented the status of the groundwater monitoring and corrective action program for each CCR unit, summarized key actions completed during 2018, described any known problems encountered, discussed actions to resolve the problems, and projected key activities for the upcoming year.

This update (Revision 2.0-October 2020) of the 2018 Groundwater Monitoring and Corrective Action Report has been prepared to present corrected groundwater elevation data and an updated statistical analysis for wells at the South Fly Ash Pond (SFAP), a CCR unit at the Kyger Creek Station. In April 2019, a review of historic water level data for SFAP revealed that an error had been made in groundwater elevation calculations for that unit in 2016 that was carried through the 2017 and 2018 calculations. After the error was discovered, groundwater elevations at the SFAP were recalculated, which led to a significant change in the interpretation of groundwater flow directions at the unit and modifications of the upgradient and downgradient designations of several SFAP wells. As a result of these corrections, statistical calculations for groundwater at the unit were re-done and are presented in this revised report.

2.0 BACKGROUND

The Kyger Creek Station, located in Cheshire, Ohio, is a 1.1 gigawatt coal-fired generating station operated by Ohio Valley Electric Corporation (OVEC). The Kyger Creek Station has five (5), 217-megawatt generating units and has been in operation since 1955. Beginning in 1955, CCRs were sluiced to surface impoundments located in the plant site. During the course of plant operations, CCRs have been managed in various units at the station.

There are three (3) CCR units at the Kyger Creek Station (Figure 1):

- Class III Residual Waste Landfill (Landfill);
- Boiler Slag Pond (BSP); and,
- SFAP.

A discussion of the status of the groundwater monitoring program for each CCR unit is presented in the following sections of this report.

3.0 CLASS III RESIDUAL WASTE LANDFILL

The Landfill is a residual solid waste landfill located approximately one-half mile south of the intersection of Little Kyger Creek Road and Shaver Road in Addison Township, Gallia County, Ohio (Figure 1). The Landfill is bordered on the east by Shaver Road, and on the west, north and south by vacant, forested land owned by OVEC. The proposed permitted footprint of the Landfill occupies approximately 98 acres and is capable of managing approximately 20.4 million cubic yards (approximately 4,000 tons per day) of Class III residual waste generated by the coal-powered Kyger Creek Plant located approximately two (2) miles southeast of the Landfill.

3.1 Groundwater Monitoring Network

As detailed in the *Monitoring Well Installation Report* (Applied Geology and Environmental Science, Inc. [AGES] 2016a), the CCR groundwater monitoring network for the Landfill consists of the following 13 wells:

- BUSW-1 (downgradient);
- BUSW-2 (upgradient);
- BUSW-3 (variable: usually side or downgradient);
- BUSW-4 (downgradient);
- BUSW-5 (upgradient);
- IMW-1BU (upgradient);
- BUSW-8 (upgradient);
- BUSW-10 (downgradient);

- MW-3D (upgradient);
- IMW-2BU (upgradient);
- MW-4D (upgradient);
- CCR-1BU (downgradient); and
- CCR-2BU (downgradient).

The locations of all of the wells in the groundwater monitoring network are shown on Figure 2. As listed above and shown on Table 3-1, the CCR groundwater monitoring network for the Landfill includes seven (7) upgradient monitoring wells and six (6) downgradient monitoring wells, which satisfies the requirements of the CCR Rule. Groundwater levels measured in 2018 are included in Appendix A. Groundwater flow maps for the two (2) monitoring events completed in 2018 are included in Appendix B.

3.2 Groundwater Sampling

In accordance with §257.94 of the CCR Rule, OVEC completed two (2) rounds of groundwater monitoring in accordance with the requirements of the Detection Monitoring Program at the Landfill. The first round of Detection Monitoring samples was collected between March 5 and March 12, 2018. The second round of Detection Monitoring groundwater samples was collected between September 17 and September 25, 2018. In accordance with §257.90(e)(3), Table 3-2 presents a summary, including the number of groundwater samples collected for analysis for each background and downgradient well and the dates the samples were collected. Table 3-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were collected in accordance with the Groundwater Monitoring Program Plan (GMPP) (AGES 2016b) and shipped to an analytical laboratory to be analyzed for all of the parameters listed in Appendix III of the CCR Rule (Appendix C).

3.3 Analytical Results

Upon receipt of the March 2018 analytical results, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the Statistical Analysis Plan (SAP) (Stantec Consulting Services, Inc. [Stantec] 2018). The initial statistical evaluation of the Detection Monitoring data collected in March 2018 indicated one (1) potential Statistically Significant Increase (SSI) for pH in one (1) well, CCR-1BU. As discussed in Section 6.0, a faulty pH meter was suspected to be the cause of the potential SSI. Therefore, the well was re-sampled in May 2018. Based on the results of the re-sampling, the potential SSI for pH was not confirmed and the Landfill remained in Detection Monitoring. No potential SSIs were identified during the September 2018 Detection Monitoring event. Therefore, the Landfill will remain in Detection Monitoring. Appendix D summarizes the analytical results for groundwater samples collected in 2018.

4.0 BOILER SLAG POND

The BSP is located at the south end of the Kyger Creek Station and is approximately 32 acres in size (Figure 3). The BSP was built in 1955 to serve as a process and disposal area for the coal combustion waste products generated at the station. Overflow from the BSP is carried into a reinforced concrete intake structure at the south end of the Boiler Slag Complex. Water entering the intake structure is discharged into the Clearwater Pond. The Clearwater Pond was built in 1980, is approximately nine (9) acres in size and is located to the southwest end of the BSP. The Clearwater Pond is not a CCR unit and monitoring is not required.

4.1 Groundwater Monitoring Network

As detailed in the *Monitoring Well Installation Report* (AGES 2016a), the CCR groundwater monitoring network for the BSP consists of the following eight (8) wells:

- KC-15-01 (Upgradient);
- KC-15-02 (Upgradient);
- KC-15-03 (Upgradient);
- KC-15-04 (Downgradient);
- KC-15-05 (Downgradient);
- KC-15-06 (Downgradient);
- KC-15-07 (Downgradient); and
- KC-15-08 (Downgradient).

The locations of all the wells in the groundwater monitoring network are shown on Figure 3. As listed above and shown on Table 4-1, the CCR groundwater monitoring network for the BSP includes three (3) upgradient wells and five (5) downgradient wells, which satisfies the requirements of the CCR Rule.

Groundwater levels measured in 2018 are included in Appendix A. Groundwater flow maps for the two (2) monitoring events completed in 2018 are included in Appendix B. Groundwater in the BSP flows from the northwest to the south and southeast toward the Ohio River. Because the BSP is located adjacent to the Ohio River, during periods when the water level in the Ohio River rises significantly and flooding occurs, groundwater flow in the uppermost aquifer will temporarily reverse and groundwater will flow toward the north and west beneath the BSP. Such a flow reversal is evident in groundwater levels measured during the February/March 2018 monitoring event (Appendix A and Figure B-3).

4.2 Groundwater Sampling

In accordance with §257.94 of the CCR Rule, OVEC completed the first round of Detection Monitoring between February 26 and March 2, 2018 at the BSP. Based on the results of the

statistical evaluation of the Detection Monitoring data (see section 4.3), the BSP entered into Assessment Monitoring on September 11, 2018. The first round of Assessment Monitoring groundwater samples was collected in accordance with §257.95 of the CCR Rule between September 17 and September 26, 2018.

All samples were collected in accordance with the GMPP (AGES 2016b) and analyzed for all Appendix III constituents for Detection Monitoring and all Appendix III and Appendix IV constituents for Assessment Monitoring. In accordance with §257.90(e)(3), Table 3-2 presents a summary, including the number of groundwater samples collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection or the Assessment Monitoring program. Table 3-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were shipped to an analytical laboratory to be analyzed for all of the parameters listed in Appendix III and/or Appendix IV of the CCR Rule (Appendix C) as appropriate.

4.3 Analytical Results

Upon receipt, the February/March 2018 groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the SAP (Stantec 2018) for the Kyger Creek Station CCR program. Appendix D summarizes the analytical results for groundwater samples collected in 2018. The initial statistical evaluation identified potential SSIs of one (1) or more Appendix III constituents in monitoring wells KC-15-04 through KC-15-08 at the BSP. In accordance with the SAP, OVEC resampled the wells for those constituents with potential SSIs between May 14 and May 16, 2018. Based on the results of the resampling event, the following SSIs for Appendix III constituents were confirmed at the BSP (Table 4-4):

Appendix III SSIs

KC-15-04: Boron, Total Dissolved Solids (TDS), and Sulfate;

KC-15-05: Boron, TDS, and Sulfate; and

KC-15-08: Boron, Calcium, TDS and Sulfate.

Upon receipt, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the SAP (Stantec 2018) for the Kyger Creek Station CCR program. The initial statistical evaluation identified potential SSIs of one (1) or more Appendix III and Appendix IV constituents in monitoring wells KC-15-04, KC-15-05, KC-15-07 and KC-15-08 at the BSP. In accordance with the SAP, OVEC resampled the wells for those constituents with potential SSIs on December 11 and December 12, 2018.

Based on the results of the resampling event, the following Appendix III and Appendix IV SSIs were confirmed at the BSP (Table 4-4):

Appendix III SSIs

KC-15-04: Total Dissolved Solids (TDS); and
KC-15-05: Calcium, TDS and Sulfate.

Appendix IV SSIs

KC-15-05: Radium 226/228; and
KC-15-07: Arsenic.

4.4 Groundwater Protection Standards

Based on the first round of Assessment Monitoring at the BSP, SSIs were confirmed for two (2) Appendix IV constituents: Radium 226/228 and Arsenic. Therefore, OVEC established a Groundwater Protection Standard (GWPS) for each Appendix IV constituent in accordance with the §257.95(h)(1) through §257.95(h)(3) as follows:

- (1) The GWPS shall be the Maximum Contaminant Level (MCL) for constituents for which the U.S. EPA has established a MCL.
- (2) On July 30, 2018, the U.S. EPA published alternate limits to be used for several constituents that did not have previously established MCLs.
- (3) For constituents for which the background level is higher than the MCL or the alternate limits, the background concentration shall be the GWPS for that constituent.

Table 4-5 presents the list of GWPS for the Assessment Monitoring program at the BSP that was developed in accordance with the above requirements. During the sampling event, Radium 226/228 concentrations detected in well KC-15-05 in September 2018 (3.086 pCi/L) and in December 2018 (2.68 pCi/L) were less than the GWPS for Radium 226/228 of 5 pCi/L. Arsenic concentrations detected in well KC-15-07 in September 2018 (152 ug/L) and December 2018 (15.3 ug/L) were greater than the GWPS of 10 ug/L.

Based on the results above, the Arsenic concentration in KC-15-07 was further evaluated to determine if Arsenic was present at a Statistically Significant Level (SSL) above the GWPS. In accordance with the SAP (Stantec 2018), a 95% Lower Confidence Limit (LCL) of the mean Arsenic concentration was calculated using the 11 samples collected from KC-15-07 throughout the CCR groundwater monitoring program. The 95% LCL for Arsenic in KC-15-07 (72.05 ug/L) was greater than the Arsenic GWPS (10 ug/L). The statistical evaluation therefore concluded that Arsenic in KC-15-07 was present at a SSL above the GWPS.

5.0 SOUTH FLY ASH POND

The SFAP is located at the northwest end of the station (Figure 4). The SFAP was built in 1955 to serve as a process and disposal area for the coal combustion waste products generated at the station. This collection pond is approximately 67 acres in size and banked on all sides.

5.1 Groundwater Monitoring Network

As detailed in the *Monitoring Well Installation Report* (AGES 2016a), the CCR groundwater monitoring network for the SFAP consist of the following 14 wells. The wells, along with revised location designations based on updated groundwater flow directions, are:

- KC-15-09 (Upgradient);
- KC-15-10 (Upgradient);
- KC-15-11 (Upgradient);
- KC-15-12 (Upgradient);
- KC-15-13 (Upgradient);
- KC-15-14 (Upgradient);
- KC-15-15 (Variable);
- KC-15-16 (Variable);
- KC-15-17 (Variable);
- KC-15-18 (Downgradient);
- KC-15-19 (Downgradient);
- KC-15-20 (Downgradient);
- KC-15-21 (Downgradient); and
- KC-15-22 (Downgradient).

The locations of the monitoring wells are shown on Figure 4. As listed above and shown on Table 5-1, the CCR groundwater monitoring network for the SFAP includes six (6) upgradient and five (5) downgradient wells, which satisfies the requirements of the CCR Rule.

As noted in the 2017 Annual Groundwater Monitoring and Corrective Action Report for the site, due to fluctuations in the stage of the nearby Ohio River, well KC-15-17 was located upgradient of the northeast portion of the SFAP during five (5) of the nine (9) monitoring events conducted from October 2015 through September 2017 (prior to the Detection Monitoring period at the unit). Well KC-15-17 was downgradient of the area during three (3) events and sidegradient during one (1) event. Well KC-15-15 was located upgradient of the northeast portion of the SFAP during three (3) of the nine (9) events, downgradient of the area during five (5) events, and sidegradient during one (1) event. Because of this high degree of variability in flow direction, wells KC-15-15 and KC-15-17 (and well KC-15-16 which is located between the wells) could not be designated as either upgradient or downgradient. These wells are therefore not included in the statistical evaluations for the SFAP.

Groundwater levels measured during 2018 are included in Appendix A. Groundwater flow maps for 2018 are included in Appendix B. Based on the groundwater level measurements, groundwater in the central portion of the SFAP flows generally from the north to the south/southeast toward the Ohio River (September 2018: Figure B-6 in Appendix B). However, due to the close proximity of the SFAP to the Ohio River, changes in the stage of the river have a significant impact on the direction of groundwater flow at the unit. During periods when the stage of the Ohio River rises, groundwater flow at the unit reverses direction and flows toward the north/northwest (February 2018: Figure B-5 in Appendix B). When the Ohio River stage lowers, groundwater levels also begin to lower and return to a more typical flow pattern. With these fluctuations in groundwater levels, the assignment of the upgradient and downgradient well designations above may fluctuate as well.

5.2 Groundwater Sampling

In accordance with §257.94 of the CCR Rule, OVEC completed the first round of Detection Monitoring between February 26 and March 15, 2018. Based on the results of the statistical evaluation of the Detection Monitoring data (see section 5.3), the SFAP entered into Assessment Monitoring on September 11, 2018. The first round of Assessment Monitoring groundwater samples was collected in accordance with §257.95 of the CCR Rule between September 17 and October 1, 2018. In accordance with §257.90(e)(3), Table 5-2 presents a summary, including the number of groundwater samples collected for analysis for each background and downgradient well and the dates the samples were collected. Table 5-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were collected in accordance with the GMPP (AGES 2016b) and shipped to an analytical laboratory to be analyzed for all of the parameters listed in Appendix III (February/March 2018 and September 2018) and Appendix IV (September/October 2018) of the CCR Rule (Appendix C).

5.3 Analytical Results

Upon receipt of the February/March 2018 analytical results, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the SAP (Stantec 2018). Appendix D summarizes the analytical results for groundwater samples collected in 2018. The initial statistical evaluation identified potential SSIs of one (1) or more Appendix III constituents in monitoring wells KC-15-19, KC-15-20, KC-15-21 and KC-15-22 at the SFAP. In accordance with the SAP, OVEC would have resampled all of the wells with potential SSIs; however, due to groundwater elevation calculation error described above, the wells were incorrectly designated as upgradient and resampling was only conducted at well KC-15-22. In the absence of resampling data, the potential SSIs were assumed to be confirmed. Based on the results, the following Appendix III SSIs were confirmed at the SFAP (Table 5-4):

Appendix III SSIs

KC-15-19: Calcium, Total Dissolved Solids (TDS), and Sulfate;

KC-15-20: Calcium, TDS, and Sulfate; and

KC-15-21: Calcium.

Upon receipt of the September/October 2018 analytical results, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the SAP (Stantec 2018). The statistical evaluation identified potential SSIs of one (1) or more Appendix III constituents in monitoring wells KC-15-18, KC-15-19, KC-15-20 and KC-15-21 at the SFAP. As noted above, due to groundwater elevation calculation error described above, resampling was not conducted. In the absence of resampling data, the potential SSIs were assumed to be confirmed. Based on the results, the following Appendix III SSIs were confirmed at the SFAP (Table 5-4):

Appendix III SSIs

KC-15-18: Calcium;

KC-15-19: Calcium, TDS, and Sulfate;

KC-15-20: Calcium, TDS, and Sulfate; and

KC-15-21: Calcium.

5.4 Groundwater Protection Standards

Table 5-5 presents the list of the selected GWPS for the Assessment Monitoring program at the SFAP that was developed in accordance with the requirements listed in Section 4.4. All of the September/October 2018 Appendix IV results were compared to the GWPSs and none of the results exceeded the applicable GWPS (Table 5-5 and Appendix D).

6.0 PROBLEMS ENCOUNTERED

6.1 pH Meter

During the February/March 2018 Detection Monitoring event, potential SSIs for pH were reported in all downgradient wells at the BSP (ranging from 8.45 standard units [S.U.] to 12.44 S.U.); in one (1) downgradient well (KC-15-21) at the SFAP (5.59 S.U.); and one (1) downgradient well (CCR-1BU) at the Landfill (9.99 S.U.). A thorough review of historic pH data for all the wells at the BSP, historic pH data for SFAP well KC-15-21, historic pH data for Landfill well CCR-1BU, and well purging and sampling forms from the February/March 2018 event indicated that the elevated pH readings were the result of a faulty pH meter.

The range of historic pH values measured at all the BSP wells was 5.57 S.U. to 8.83 S.U. with the average historic pH being 7.49 S.U. The highest pH value measured during the February/March 2018 event (12.44 S.U.) was more than three (3) orders of magnitude higher

than the highest historic pH (8.83 S.U.) at the BSP. The historic pH values for SFAP well KC-15-21 ranged from 6.69 S.U. to 10.51 S.U. with the average being 7.55 S.U. The February/March 2018 pH value (5.59 S.U.) was almost two (2) orders of magnitude less than the historic average for KC-15-21. The historic pH values for Landfill well CCR-1BU ranged from 6.95 S.U. to 8.8 S.U. with the average being 7.61 S.U. The February/March 2018 pH value (9.99 S.U.) was two (2) orders of magnitude higher than the historic average for CCR-1BU. In addition, all the BSP wells, SFAP well KC-15-21, and Landfill well CCR-1BU were sampled by the same field crew using the same pH meter. Only wells monitored by that field crew exhibited higher than normal pH readings.

Prior to the resampling event in May 2018, a new pH meter and new calibration solutions were acquired, and all field staff were re-trained on proper calibration methods. During the May 2018 sampling event, all affected wells were purged until stabilization of field parameters was achieved in accordance with the methods detailed in the GMPP (AGES 2016b). After stabilization of the field parameters, the pH of water collected from each well was measured and recorded on the purge forms. None of the previously identified SSIs for pH were confirmed by the resampling.

6.2 Water Level Indicator

Review of the water level data collected from the Landfill monitoring wells during the September 2018 Detection Monitoring event at the Landfill indicated that the measured water levels and measured depths to bottoms of several wells throughout the Landfill were not what was expected based on a comparison to historic water level and depth to bottom data. Water level and depth to bottom data from the BSP and SFAP were comparable to historic data. Therefore, it was determined that there was a malfunction of the electronic water level indicator used to measure depth to water and depth to bottom at the Landfill. The water level meter used at the Landfill was serviced, the battery replaced, and a complete round of water levels was collected from all of the Landfill wells on November 28, 2018. The data collected on November 28, 2018, was used to generate the groundwater flow map (Figure B-2).

7.0 PROJECTED ACTIVITIES FOR 2019

The Landfill will remain in Detection Monitoring and continue to be sampled on a semi-annual basis.

The BSP entered into Assessment Monitoring on September 11, 2018, and two (2) confirmed Appendix IV SSIs (Arsenic and Radium 226/228) were reported during the September 2018 monitoring event. Arsenic was the only Appendix IV constituent detected at a SSL above the GWPS. Therefore, OVEC will characterize the nature and extent of the release, complete required notifications, and complete an alternate source demonstration or initiate an assessment of corrective measures in accordance with §257.95(g).

The SFAP entered into Assessment Monitoring on September 11, 2018; however, all results for Appendix IV constituents during the September 2018 sampling event were less than the applicable GWPS. The SFAP will therefore remain in Assessment Monitoring and continue to be sampled on a semi-annual basis.

8.0 REFERENCES

Applied Geology and Environmental Science, Inc. (AGES), 2016a. Coal Combustion Residuals Regulation Monitoring Well Installation Report, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. August 2016.

Applied Geology and Environmental Science, Inc. (AGES), 2016b. Coal Combustion Residuals Regulation Groundwater Monitoring Program Plan, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. May 2016.

Applied Geology and Environmental Science, Inc. (AGES), 2018. Coal Combustion Residuals Regulation Alternate Source Demonstration Report, February/March 2018 Detection Monitoring Event, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. September 2018.

Stantec Consulting Services, Inc. (Stantec), 2018. Coal Combustion Residuals Regulation Statistical Analysis Plan, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. April 2018.

TABLES

**TABLE 3-1
GROUNDWATER MONITORING NETWORK
CLASS III RESIDUAL WASTE LANDFILL
KYGER CREEK PLANT**

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft) ²	Top of Casing Elevation (ft) ²	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
CCR Unit Boundary Wells									
BUSW-1	Downgradient	6/20/2006	335756.52	2063859.43	781.46	784.21	521.21	508.10	276.11
BUSW-2	Upgradient	-	336285.22	2062985.02	792.19	794.98	526.69	506.69	288.56
BUSW-3	Variable	9/13/2007	336746.19	2062430.81	787.57	790.01	529.57	504.57	283.56
BUSW-4	Downgradient	5/17/2006	337738.57	2062566.35	780.99	783.46	535.76	525.76	257.70
BUSW-5	Upgradient	8/2/2007	338123.59	2063553.15	781.06	783.27	542.06	502.06	281.12
IMW-1BU	Upgradient	9/6/2007	337177.94	2064160.50	699.89	702.29	519.39	499.39	202.97
CCR-1BU	Downgradient	10/13/2015	337641.36	2063220.23	783.41	785.80	524.41	504.41	281.39
CCR-2BU	Downgradient	10/21/2015	336302.19	2064286.87	742.28	744.69	514.78	494.78	249.91
Supplemental CCR Wells									
BUSW-8	Upgradient	4/17/2006	337692.04	2065706.88	630.59	633.48	498.12	498.12	145.36
BUSW-10	Downgradient	6/29/2007	336364.75	2065495.79	617.26	619.76	513.85	498.85	120.91
IMW-2BU	Upgradient	9/10/2007	337417.23	2065170.91	609.77	612.44	508.96	493.96	118.48
MW-3D	Upgradient	5/1/2006	338184.68	2065077.38	741.11	743.53	515.58	505.58	237.95
MW-4D	Upgradient	5/10/2006	336365.51	2066044.36	576.87	579.51	504.94	494.94	84.57

Notes:

1. The well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.
2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988

Table 3-2
Kyger Creek Station
Class III Residual Waste Landfill
CCR Groundwater Monitoring Program
Samples Collected During 2018

Well ID	Designation	Mar-18	May-18	Sep-18
BUSW-1	Downgradient	DM	NS	DM
BUSW-2	Upgradient	DM	NS	DM
BUSW-3	Variable	DM	NS	DM
BUSW-4	Downgradient	DM	NS	DM
BUSW-5	Upgradient	DM	NS	DM
BUSW-8	Upgradient	DM	NS	DM
BUSW-10	Downgradient	DM	NS	DM
IMW-1BU	Upgradient	DM	NS	DM
IMW-2BU	Upgradient	DM	NS	DM
CCR-1BU	Downgradient	DM	DM	DM
CCR-2BU	Downgradient	DM	NS	DM
MW-3D	Upgradient	DM	NS	DM
MW-4D	Upgradient	DM	NS	DM

DM: Detection Monitoring Program
AM: Assessment Monitoring Program
NS: Not Sampled

Table 3-3
Kyger Creek Plant
Class III Residual Waste Landfill
CCR Monitoring Program
Summary of Measured Field Parameters - 2018

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
BUSW-1	Mar-18	11.14	210	9.12	-17.8	0.15	7.98
BUSW-2	Mar-18	10.47	9213	8.19	53.8	13.19	4.23
BUSW-3	Mar-18	15.00	46340	8.92	27.3	7.94	4.32
BUSW-4	Mar-18	11.34	34774	7.15	-156.7	3.57	84.2
BUSW-5	Mar-18	11.26	44356	9.8	-33	10.76	4.05
BUSW-8	Mar-18	9.8	36450	9.93	-27.3	12.67	4.32
BUSW-10	Mar-18	11.28	10501	7.74	98.4	8.25	4.8
IMW-1BU	Mar-18	8.68	20333	6.59	34.8	2.07	3.53
IMW-2BU	Mar-18	8.75	28716	7.54	-6.4	2.14	3.98
MW-3D	Mar-18	10.71	51587	9.59	-31.4	10.89	4.17
MW-4D	Mar-18	11.58	2117	11.29	-47.2	12.44	4.92
CCR-1BU	Mar-18	9.34	25110	9.99	-30.1	13.68	4.4
CCR-2BU	Mar-18	11.57	3625	7.96	114.7	2.93	2.78
CCR-1BU	May-18	20.73	25200	7.44	-124	0.15	2.33
BUSW-1	Sep-18	18.23	6950	7.45	58	0.08	2.89
BUSW-2	Sep-18	24.71	9660	7.43	-107	1	4.32
BUSW-3	Sep-18	23.24	49200	6.89	-36	0.14	3.62
BUSW-4	Sep-18	19.86	382000	7.06	119	5.32	28.6
BUSW-5	Sep-18	23.76	44000	7.21	-134	0.17	1.76
BUSW-8	Sep-18	20.22	36500	7.47	-116	0.1	2.61
BUSW-10	Sep-18	22.22	9480	7.6	-168	0.62	3.32
IMW-1BU	Sep-18	19.54	26300	7.59	-149	0.08	1.97
IMW-2BU	Sep-18	18.8	38300	7.51	-140.1	0.2	3.84
MW-3D	Sep-18	21.26	53.1	7.16	-94	0.09	1.66
MW-4D	Sep-18	17.88	2870	7.31	-148	0.28	1.31
CCR-1BU	Sep-18	19.91	29800	7.61	-131	0.56	3.85
CCR-2BU	Sep-18	24.48	6260	7.09	68	0.15	3.01

°C: Degrees Celcius

µohms/cm: Micro-ohms per centimeter

S.U.: Standard Units

mV: Millivolts

mg/L: Milligrams per liter

NTUs: Nephelometric Turbidity Units

**TABLE 4-1
GROUNDWATER MONITORING NETWORK
BOILER SLAG POND
KYGER CREEK PLANT**

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft) ²	Top of Casing Elevation (ft) ²	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
KC-15-01	Upgradient	8/5/2015	332114.55	2072393.84	579.77	579.20	519.77	509.77	69.43
KC-15-02	Upgradient	8/7/2012	332500.654	2072569.222	580.79	580.25	520.79	510.79	69.46
KC-15-03	Variable	8/12/2015	332546.402	2073001.342	582.03	581.55	520.03	510.03	71.52
KC-15-04	Downgradient	8/12/2015	331782.439	2073755.607	579.89	579.37	519.89	509.89	69.48
KC-15-05	Downgradient	8/19/2015	331569.994	2073574.832	580.52	580.07	520.52	510.52	69.55
KC-15-06	Downgradient	8/18/2015	331218.52	2073210.42	579.98	579.48	519.98	509.98	69.50
KC-15-07	Downgradient	8/11/2015	331291.75	2072957.79	578.54	578.04	508.54	498.54	79.50
KC-15-08	Downgradient	8/10/2015	331460.59	2072675.87	579.41	578.75	509.41	499.41	79.34

Notes:

1. The well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.
2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988

Table 4-2
Kyger Creek Station
Boiler Slag Pond
CCR Groundwater Monitoring Program
Samples Collected During 2018

Well ID	Designation	Feb-18	May-18	Sep-18	Dec-18
KC-15-01	Upgradient	DM	NS	AM	NS
KC-15-02	Upgradient	DM	NS	AM	NS
KC-15-03	Upgradient	DM	NS	AM	NS
KC-15-04	Downgradient	DM	DM	AM	AM
KC-15-05	Downgradient	DM	DM	AM	AM
KC-15-06	Downgradient	DM	DM	AM	NS
KC-15-07	Downgradient	DM	DM	AM	AM
KC-15-08	Downgradient	DM	DM	AM	AM

DM: Detection Monitoring
AM: Assessment Monitoring
NS: Not Sampled

Table 4-3
Kyger Creek Plant
Boiler Slag Pond
CCR Monitoring Program
Summary of Measured Field Parameters - 2018

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
KC-15-01	Mar-18	14.96	636	9.09	13.9	9.54	4.49
KC-15-02	Feb-18	14.43	630	12.44	30.6	9.96	2.3
KC-15-03	Feb-18	15.58	690	11	28.4	9.09	4.78
KC-15-04	Feb-18	16.49	710	10.2	44.6	8.47	8.22
KC-15-05	Mar-18	14.89	844	9.01	6	9.58	4.91
KC-15-06	Mar-18	15.23	679	9.33	15.5	9.34	7.84
KC-15-07	Feb-18	15.55	749	8.45	90.6	9.18	6.18
KC-15-08	Feb-18	16.51	1040	8.45	99.1	8.45	5.36
KC-15-04	May-18	24.24	732	6.49	29	8.44	4.08
KC-15-05	May-18	24.31	819	6.57	142	7.61	3.97
KC-15-06	May-18	24.35	680	6.67	48	6.7	2.89
KC-15-07	May-18	18.81	737	6.02	-7	0	4.4
KC-15-08	May-18	20.28	1360	6.28	23	0	4.58
KC-15-01	Sep-18	21.47	624	5.64	371	4.57	3.91
KC-15-02	Sep-18	21.59	669	6.42	118	2.25	4.71
KC-15-03	Sep-18	22.81	2	6.31	307	7.61	4.6
KC-15-04	Sep-18	20.55	775	6.34	202	7.27	4.93
KC-15-05	Sep-18	20.72	897	6.35	354	7.73	4.82
KC-15-06	Sep-18	22.5	770	6.52	-10.1	0.2	3.11
KC-15-07	Sep-18	23.59	681	6.27	-101	0.21	3.25
KC-15-08	Sep-18	26.41	980	6.85	319	6.54	4.81
KC-15-04	Dec-18	14.66	675	6.25	260	8.05	4.61
KC-15-05	Dec-18	12.65	840	6.6	252	6.02	3.12
KC-15-07	Dec-18	12.28	1460	6.71	154	8.51	2.57
KC-15-08	Dec-18	10.82	688	6.61	141	9.81	3.98

°C: Degrees Celcius

µohms/cm: Micro-ohms per centimeter

S.U.: Standard Units

mV: Millivolts

mg/L: Milligrams per liter

NTUs: Nephelometric Turbidity Units

TABLE 4-4
 CCR ASSESSMENT MONITORING
 SUMMARY OF POTENTIAL AND CONFIRMED SSIs
 BOILER SLAG POND
 KYGER CREEK STATION
 CHESHIRE, OHIO

Well Id	Appendix III or IV	Parameter	1st Detection Monitoring Event February/March 2018	1st Detection Monitoring Resampling May 2018	1st Assessment Monitoring Event September 2018	1st Assessment Monitoring Resampling December 2018
			Potential SSI	Confirmed SSI (Yes/No)	Potential SSI	Confirmed SSI (Yes/No)
KC-15-04	III	Boron	Yes	Yes	Yes	No
	III	pH	Yes	No	No	--
	III	TDS	Yes	Yes	Yes	Yes
	III	Sulfate	Yes	Yes	Yes	No
	IV	Lithium	--	--	Yes	No
KC-15-05	III	Boron	Yes	Yes	No	--
	III	Calcium	Yes	No	Yes	Yes
	III	pH	Yes	No	No	--
	III	TDS	Yes	Yes	Yes	Yes
	III	Sulfate	Yes	Yes	Yes	Yes
	IV	Lithium	--	--	Yes	No
	IV	Radium	--	--	Yes	Yes
IV	Thallium	--	--	Yes	No	
KC-15-06	III	pH	Yes	No	No	--
KC-15-07	III	Calcium	Yes	No	No	--
	III	pH	Yes	No	No	--
	IV	Arsenic	--	--	Yes	Yes
	IV	Barium	--	--	Yes	No
KC-15-08	III	Boron	Yes	Yes	No	--
	III	Calcium	Yes	Yes	Yes	No
	III	pH	Yes	No	No	--
	III	TDS	Yes	Yes	Yes	No
	III	Sulfate	Yes	Yes	Yes	No
	IV	Lithium	--	--	Yes	No

SSI: Statistically Significant Increase

-- : Not evaluated

**TABLE 4-5
KYGER CREEK STATION
BOILER SLAG POND
CCR ASSESSMENT MONITORING PROGRAM
GROUNDWATER PROTECTION STANDARDS**

Appendix IV Constituents			
Constituent	Background	MCL/SMCL	Groundwater Protection Standard
Antimony, Sb	0.3273 (µg/L)	6 (µg/L)	6 (µg/L)
Arsenic, As	7.604 (µg/L)	10 (µg/L)	10 (µg/L)
Barium, Ba	133.7 (µg/L)	2000 (µg/L)	2000 (µg/L)
Beryllium, Be	0.094 (µg/L)	4 (µg/L)	4 (µg/L)
Cadmium, Cd	0.1482 (µg/L)	5 (µg/L)	5 (µg/L)
Chromium, Cr	1.959 (µg/L)	100 (µg/L)	100 (µg/L)
Cobalt, Co	9.745 (µg/L)	6 (µg/L)*	9.745 (µg/L)
Fluoride, F	1.29 (mg/L)	4 (mg/L)	4 (mg/L)
Lithium, Li	0.0125 (µg/L)	40 (µg/L)*	40 (µg/L)
Lead, Pb	0.5159 (µg/L)	15 (µg/L)*	15 (µg/L)
Mercury, Hg	0.25 (µg/L)	2 (µg/L)	2 (µg/L)
Molybdenum, Mo	6.122 (µg/L)	100 (µg/L)*	100 (µg/L)
Radium 226 & 228 (combined)	1.695 (pCi/L)	5 (pCi/L)	5 (pCi/L)
Selenium, Se	0.4 (µg/L)	50 (µg/L)	50 (µg/L)
Thallium, Tl	0.03 (µg/L)	2 (µg/L)	2 (µg/L)

* Established by EPA as part of 2018 decision.

**TABLE 5-1
GROUNDWATER MONITORING NETWORK
SOUTH FLY ASH POND
KYGER CREEK PLANT**

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft) ²	Top of Casing Elevation (ft) ²	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
KC-15-09	Upgradient	9/15/2015	334631.959	2072494.446	587.85	587.47	516.85	506.85	80.62
KC-15-10	Upgradient	9/16/2015	335018.949	2072695.744	587.75	587.45	523.75	513.75	73.70
KC-15-11	Upgradient	8/20/2015	335426.144	2072970.304	588.07	587.71	524.07	514.07	73.64
KC-15-12	Upgradient	9/17/2015	335867.034	2073268.666	588.40	587.94	524.40	514.40	73.54
KC-15-13	Upgradient	9/1/2015	336047.047	2073665.155	588.23	587.86	521.23	511.23	76.73
KC-15-14	Upgradient	8/20/2015	335808.537	2074057.138	588.85	587.80	524.85	513.85	72.95
KC-15-15	Variable	9/2/2015	335558.54	2074472.666	587.95	587.63	523.95	513.95	73.68
KC-15-16	Variable	9/3/2015	335223.916	2074799.53	588.82	588.38	524.82	514.82	73.50
KC-15-17	Variable	9/3/2015	334881.253	2074480.308	588.68	588.13	524.68	514.68	73.45
KC-15-18	Downgradient	8/25/2015	334507.455	2074126.888	588.27	587.72	524.27	514.27	73.45
KC-15-19	Downgradient	9/9/2015	334132.454	2073771.27	588.47	588.18	524.47	514.47	73.71
KC-15-20	Downgradient	8/27/2015	333841.393	2073452.842	589.45	588.72	525.45	515.45	73.26
KC-15-21	Downgradient	8/27/2015	334089.953	2073009.526	588.28	587.84	518.28	508.28	79.56
KC-15-22	Downgradient	9/10/2015	334307.567	2072647.434	587.51	587.27	518.51	508.51	78.76

Notes:

1. The Well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.
2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988

Table 5-2
Kyger Creek Station
South Fly Ash Pond
CCR Groundwater Monitoring Program
Samples Collected During 2018

Well ID	Designation	Mar-18	May-18	Sep-18	Dec-18
KC-15-09	Upgradient	DM	NS	AM	NS
KC-15-10	Upgradient	DM	NS	AM	NS
KC-15-11	Upgradient	DM	NS	AM	NS
KC-15-12	Upgradient	DM	NS	AM	NS
KC-15-13	Upgradient	DM	NS	AM	NS
KC-15-14	Upgradient	DM	NS	AM	NS
KC-15-15	Variable	DM	NS	AM	NS
KC-15-16	Variable	DM	NS	AM	NS
KC-15-17	Variable	DM	NS	AM	NS
KC-15-18	Downgradient	DM	NS	AM	NS
KC-15-19	Downgradient	DM	NS	AM	NS
KC-15-20	Downgradient	DM	NS	AM	NS
KC-15-21	Downgradient	DM	NS	AM	NS
KC-15-22	Downgradient	DM	DM	AM	NS

DM: Detection Monitoring
AM: Assessment Monitoring
NS: Not Sampled

Table 5-3
Kyger Creek Plant
South Fly Ash Pond
CCR Monitoring Program
Summary of Measured Field Parameters - 2018

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
KC-15-09	Feb-18	13.97	658	6.77	-27.2	0.4	3.82
KC-15-10	Mar-18	12.56	696	6.78	-91	1.75	3.64
KC-15-11	Feb-18	13.59	691	6.87	-98	0.37	3.51
KC-15-12	Feb-18	14.66	980	6.59	-17	0.37	3.75
KC-15-13	Feb-18	13.84	926	6.12	-44	0.45	4.02
KC-15-14	Feb-18	13.48	1090	6.28	205	0.75	3.78
KC-15-15	Feb-18	15.23	916	5.67	191	0.2	4.12
KC-15-16	Feb-18	17.79	1070	6.46	-11	0.23	3.21
KC-15-17	Mar-18	15.02	1930	6.65	-64	0.31	4.01
KC-15-18	Mar-18	15.2	894	6.58	-57	0.22	4.17
KC-15-19	Mar-18	11.9	1420	6.24	51	0.51	4.01
KC-15-20	Mar-18	11.55	1502	6.68	-76	0.41	3.71
KC-15-21	Mar-18	12.6	1040	5.59	119	2.51	107
KC-15-22	Mar-18	16.45	592	6.96	-99	7.46	4.21
KC-15-21	May-18	19.73	875	6.69	77	8.84	3.87
KC-15-09	Sep-18	20.67	375	7.14	138	4.28	4.17
KC-15-10	Sep-18	18.19	457	6.78	28	0.98	3.32
KC-15-11	Sep-18	18.91	531	6.74	40	0.91	4.78
KC-15-12	Sep-18	20.14	654	7.05	52	1.05	4.3
KC-15-13	Sep-18	18.84	899	6.4	-5.3	1.39	4.8
KC-15-14	Sep-18	20.27	958	6.36	-15.3	0.85	4.78
KC-15-15	Sep-18	18.28	669	5.62	182	0.81	3.71
KC-15-16	Sep-18	19.13	1085	6.92	12	3.19	4.72
KC-15-17	Sep-18	19.17	2227	6.65	-12	0.21	4.7
KC-15-18	Sep-18	16.62	1015	6.49	11.2	0.22	4
KC-15-19	Sep-18	16.83	1432	6.53	100	0.21	4.92
KC-15-20	Oct-18	19.77	1375	6.85	-50	0.2	4.61
KC-15-21	Oct-18	18.95	941	6.78	44.2	0.22	4.78
KC-15-22	Oct-18	17.97	761	7.35	-139	0.2	3.64

°C: Degrees Celcius

µohms/cm: Micro-ohms per centimeter

S.U.: Standard Units

mV: Millivolts

mg/L: Milligrams per liter

NTUs: Nephelometric Turbidity Units

TABLE 5-4
 CCR ASSESSMENT MONITORING
 SUMMARY OF POTENTIAL AND CONFIRMED SSIs
 SOUTH FLY ASH POND
 KYGER CREEK STATION
 CHESHIRE, OHIO

Well Id	Parameter	1st Detection Monitoring Event February/March 2018	1st Detection Monitoring Resampling May 2018	1st Assessment Monitoring Event September 2018	1st Assessment Monitoring Resampling December 2018
		Potential SSI	Confirmed SSI (Yes/No)	Potential SSI	Confirmed SSI (Yes/No)
KC-15-18	Calcium	No	No	Yes	Yes
KC-15-19	Calcium	Yes	Yes	Yes	Yes
	TDS	Yes	Yes	Yes	Yes
	Sulfate	Yes	Yes	Yes	Yes
KC-15-20	Calcium	Yes	Yes	Yes	Yes
	TDS	Yes	Yes	Yes	Yes
	Sulfate	Yes	Yes	Yes	Yes
KC-15-21	Calcium	Yes	Yes	Yes	Yes
KC-15-22	Calcium	Yes	No	No	No

SSI: Statistically Significant Increase

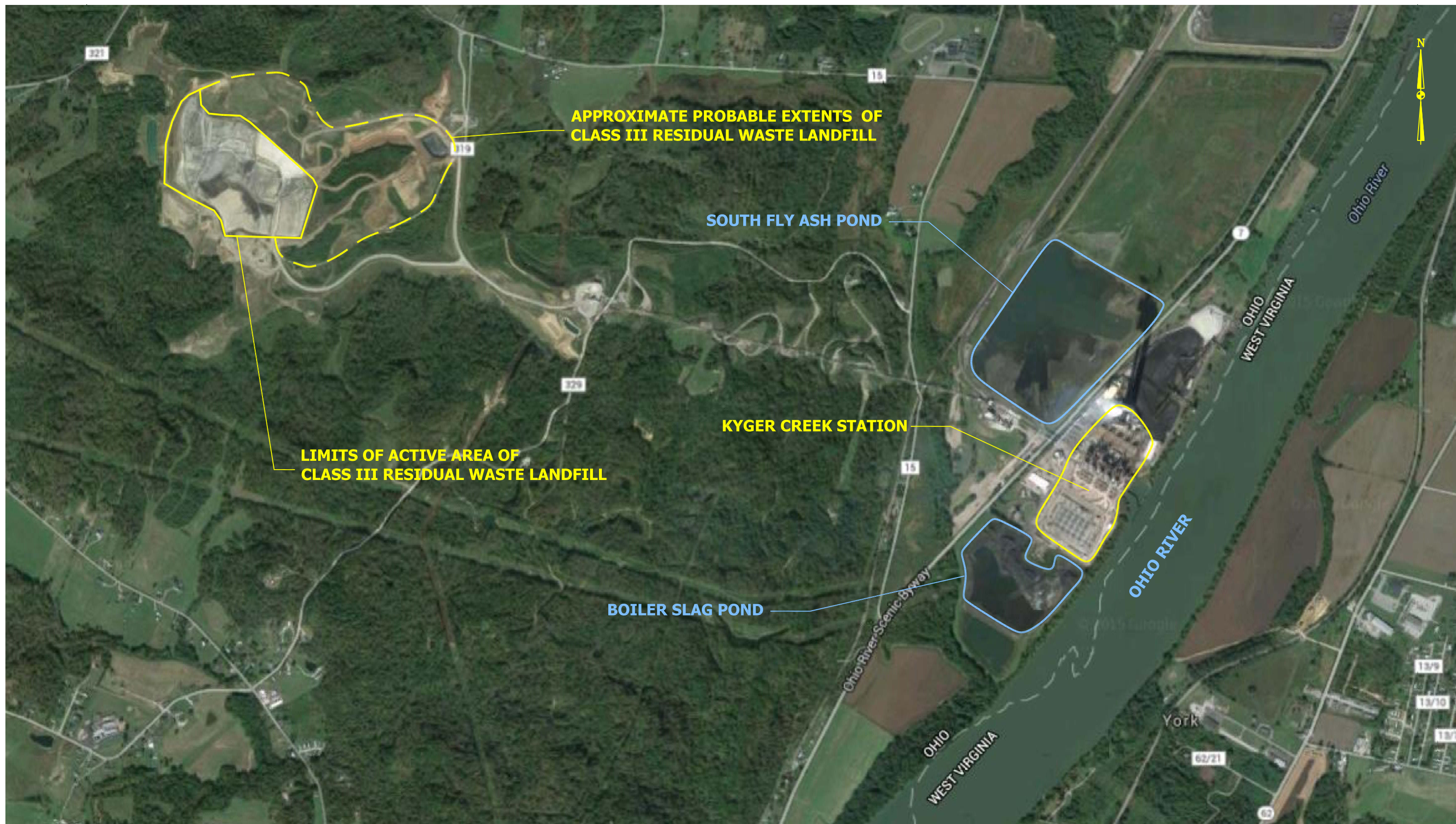
-- : Not evaluated

**TABLE 5-5
 KYGER CREEK STATION
 SOUTH FLY ASH POND
 CCR ASSESSMENT MONITORING PROGRAM
 GROUNDWATER PROTECTION STANDARDS**

Appendix IV Constituents			
Constituent	Background	MCL/SMCL	Groundwater Protection Standard
Antimony, Sb	0.15 (µg/L)	6 (µg/L)	6 (µg/L)
Arsenic, As	5.2 (µg/L)	10 (µg/L)	10 (µg/L)
Barium, Ba	143 (µg/L)	2000 (µg/L)	2000 (µg/L)
Beryllium, Be	0.04 (µg/L)	4 (µg/L)	4 (µg/L)
Cadmium, Cd	1.2 (µg/L)	5 (µg/L)	5 (µg/L)
Chromium, Cr	1.5 (µg/L)	100 (µg/L)	100 (µg/L)
Cobalt, Co	12.8 (µg/L)	6 (µg/L)*	12.8 (µg/L)
Fluoride, F	0.252 (mg/L)	4 (mg/L)	4 (mg/L)
Lithium, Li	0.7 (µg/L)	40 (µg/L)*	40 (µg/L)
Lead, Pb	0.03 (µg/L)	15 (µg/L)*	15 (µg/L)
Mercury, Hg	0.25 (µg/L)	2 (µg/L)	2 (µg/L)
Molybdenum, Mo	6.2 (µg/L)	100 (µg/L)*	100 (µg/L)
Radium 226 & 228 (combined)	2.4 (pCi/L)	5 (pCi/L)	5 (pCi/L)
Selenium, Se	0.3 (µg/L)	50 (µg/L)	50 (µg/L)
Thallium, Tl	0.1 (µg/L)	2 (µg/L)	2 (µg/L)

* Established by EPA as part of 2018 decision.

FIGURES



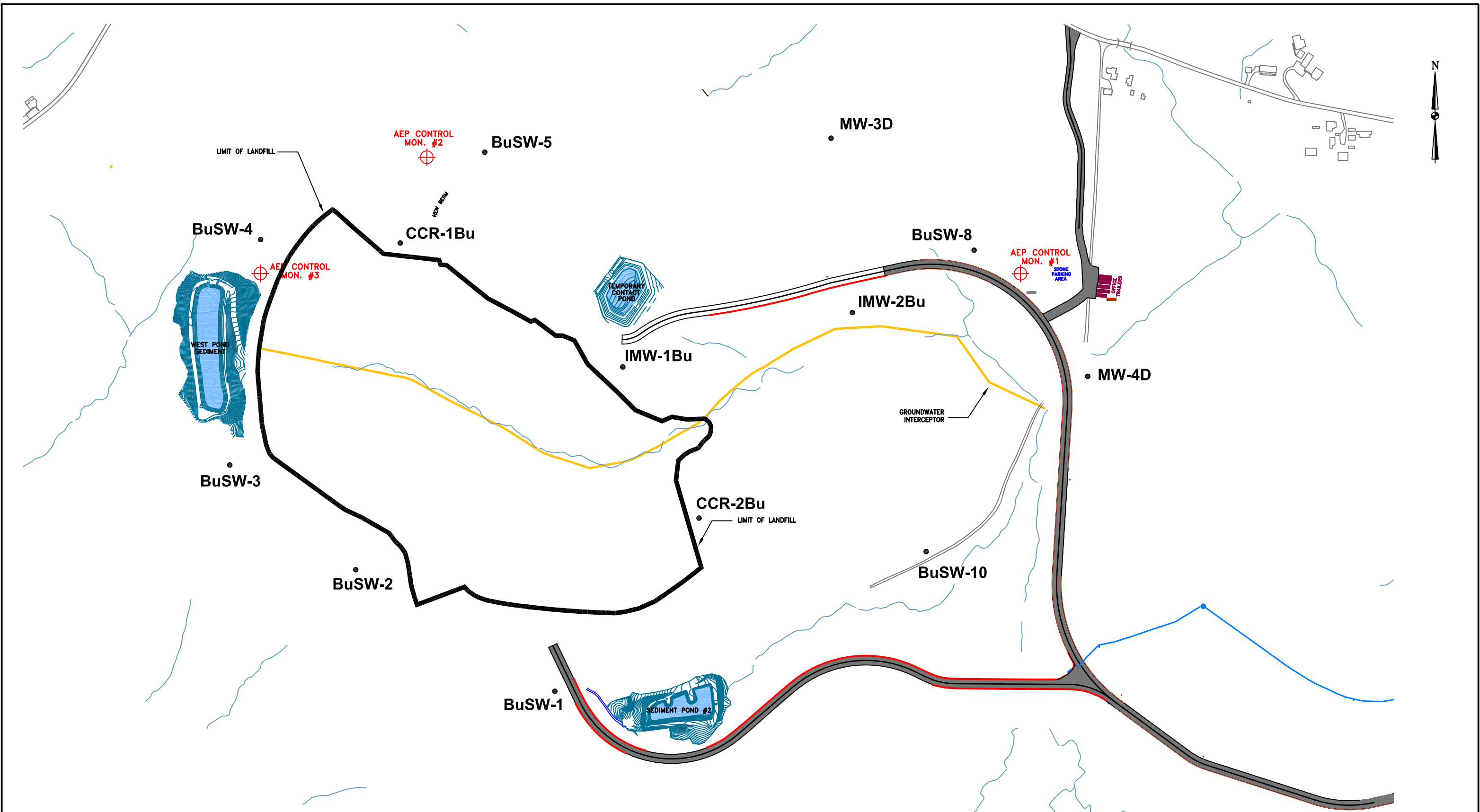
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DATE	
CHECKED BY	
JOB NO.	2017110-KYG
DWG. FILE	KYGER Corrective Action_CCR_Aerial Site b01.dwg
DRAWING SCALE	NOT TO SCALE

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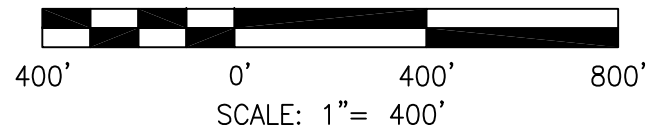
OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SITE LOCATION MAP

DRAWING NAME	FIGURE 1	REV.	0
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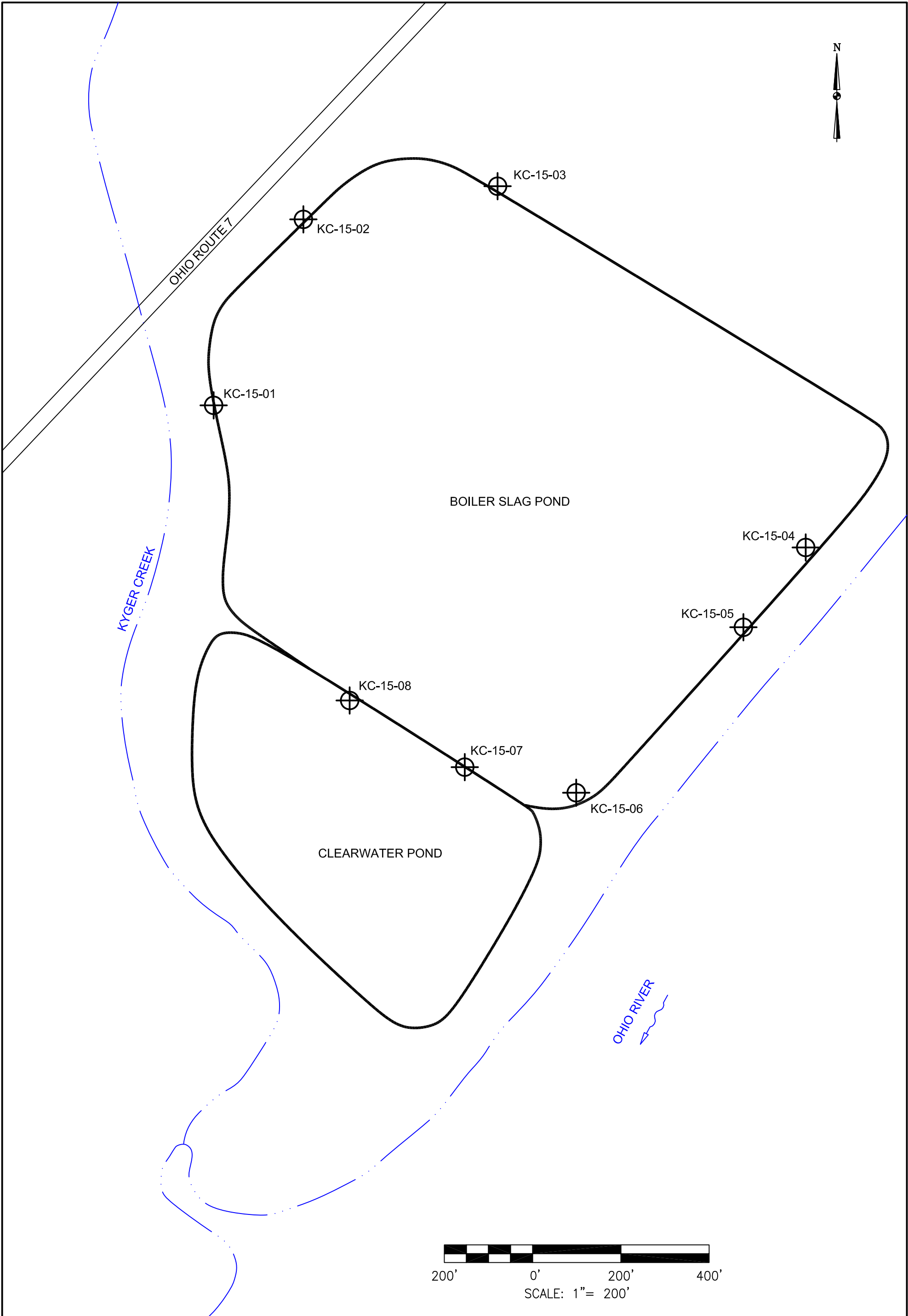
LEGEND:
 ● BuSW-1 BUFFALO SANDSTONE WELL



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2017110-KYGER
DWG FILE	KYGER Corrective Action_CCR_Well Locs b02.dwg
DRAWING SCALE	AS SHOWN

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OHIO VALLEY ELECTRIC COMPANY	
KYGER CREEK STATION CHESHIRE, GALLIA COUNTY, OHIO CLASS III RESIDUAL WASTE LANDFILL GROUNDWATER MONITORING WELL LOCATIONS	
DRAWING NAME	FIGURE 2
REV.	0



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2017110-KYGER
DWG FILE	KYGER Corrective Action_CCR_Ponds+MWs b03.dwg
DRAWING SCALE	1"=200'



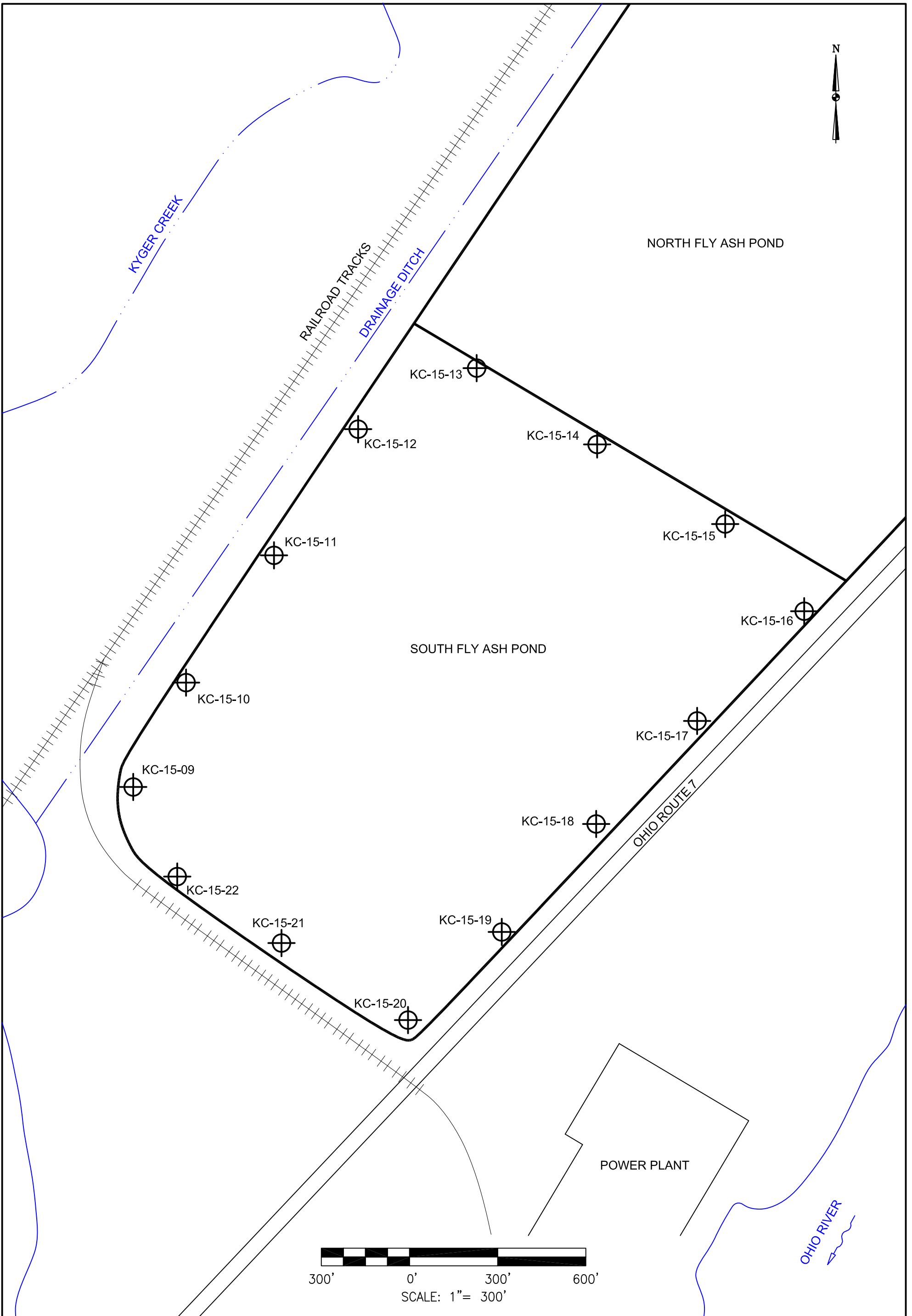
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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
BOILER SLAG POND
GROUNDWATER MONITORING WELL LOCATIONS

DRAWING NAME	FIGURE 3	REV.	0
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<p>DRAWN BY: JM</p> <p>DATE:</p> <p>CHECKED BY:</p> <p>JOB NO.: 2017110-KYGER</p> <p>DWG FILE: KYGER Corrective Action_CCR_Ponds+MWs b04.dwg</p> <p>DRAWING SCALE: 1"=300'</p>	 <p>AGES Applied Geology And Environmental Science, Inc.</p> <p>2402 Hookstown Grade Road, Suite 200 Clinton, PA 15026 412.264.6453</p>	<p>OHIO VALLEY ELECTRIC COMPANY</p> <p>KYGER CREEK STATION CHESHIRE, GALLIA COUNTY, OHIO SOUTH FLY ASH POND GROUNDWATER MONITORING WELL LOCATIONS</p> <p>DRAWING NAME: FIGURE 4</p> <p>REV. 0</p>
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APPENDIX A

GROUNDWATER ELEVATIONS

**TABLE A-1
KYGER CREEK PLANT
SUMMARY OF 2018 GROUNDWATER ELEVATION DATA**

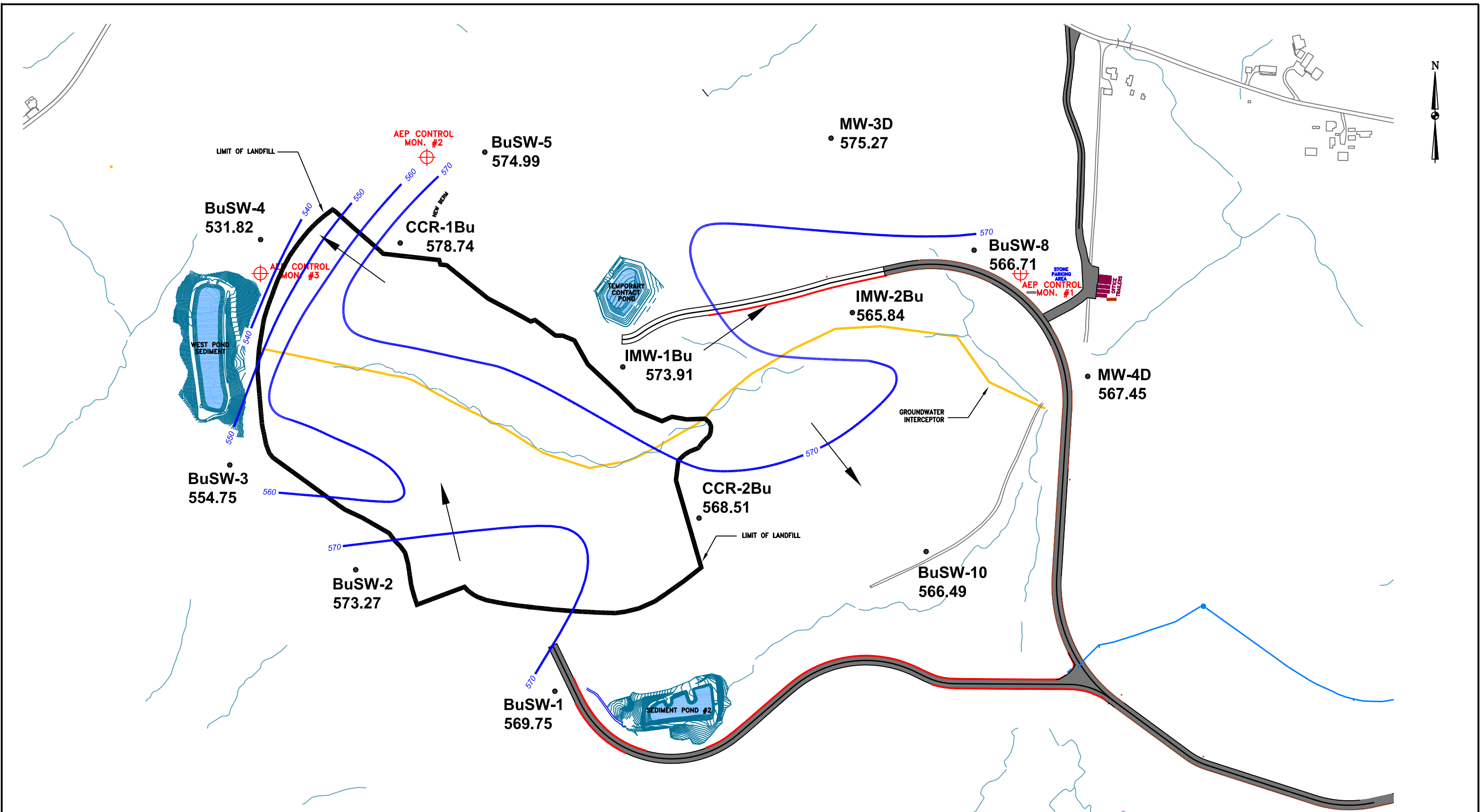
Monitoring Well Designation	Feb-Mar 2018 Groundwater Elevation (ft)	May-18 Groundwater Elevation (ft)	Sept-18* Groundwater Elevation (ft)	Dec-18 Groundwater Elevation (ft)
CLASS III RESIDUAL WASTE LANDFILL				
BuSW-1	569.75	569.54	569.54	Not Measured
BuSW-2	573.27	572.26	572.65	Not Measured
BuSW-3	554.75	552.68	553.61	Not Measured
BuSW-4	531.82	531.07	531.33	Not Measured
BuSW-5	574.99	576.58	575.66	Not Measured
BuSW-8	566.71	565.74	566.12	Not Measured
BuSW-10	566.49	566.64	566.45	Not Measured
1MW-1Bu	573.91	573.66	573.69	Not Measured
1MW-2Bu	565.84	566.00	565.79	Not Measured
MW-4D	567.45	567.27	567.13	Not Measured
MW-3D	575.27	572.55	573.80	Not Measured
CCR-1BU	578.74	560.37	569.45	Not Measured
CCR-2BU	568.51	568.09	567.20	Not Measured
BOILER SLAG POND				
KC-15-01	553.81	540.05	539.52	540.17
KC-15-02	553.32	540.35	539.89	540.48
KC-15-03	553.17	539.57	539.62	540.27
KC-15-04	554.94	538.96	538.32	538.83
KC-15-05	554.87	538.86	538.42	538.77
KC-15-06	554.87	538.78	537.82	538.68
KC-15-07	554.64	546.90	538.47	538.79
KC-15-08	554.14	539.42	538.74	539.47
SOUTH FLY ASH POND				
KC-15-09	551.48	542.05	541.39	Not Measured
KC-15-10	551.03	542.35	541.69	Not Measured
KC-15-11	550.60	542.69	542.03	Not Measured
KC-15-12	550.02	542.89	542.24	Not Measured
KC-15-13	549.91	542.88	542.22	Not Measured
KC-15-14	550.62	542.55	541.90	Not Measured
KC-15-15	551.49	542.10	541.43	Not Measured
KC-15-16	552.01	541.75	541.10	Not Measured
KC-15-17	552.13	541.85	541.19	Not Measured
KC-15-18	552.22	541.55	540.89	Not Measured
KC-15-19	552.47	541.33	540.67	Not Measured
KC-15-20	552.62	541.09	540.44	Not Measured
KC-15-21	552.34	541.44	540.78	Not Measured
KC-15-22	552.09	542.75	542.09	Not Measured

*Due to equipment error, a complete round of water levels was collected at the Landfill in November 2018.

The November 2018 water levels for the Landfill are presented here and used throughout this report.

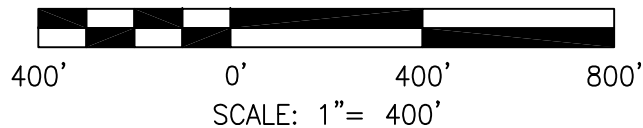
APPENDIX B

GROUNDWATER FLOW MAPS



LEGEND:

● BuSW-1 BUFFALO SANDSTONE WELL



DRAWN BY	JM
DATE	
CHECKED BY	
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DWG. FILE	KYGER_CCR_Contours b02_SITE_FEB-18.dwg
DRAWING SCALE	AS SHOWN

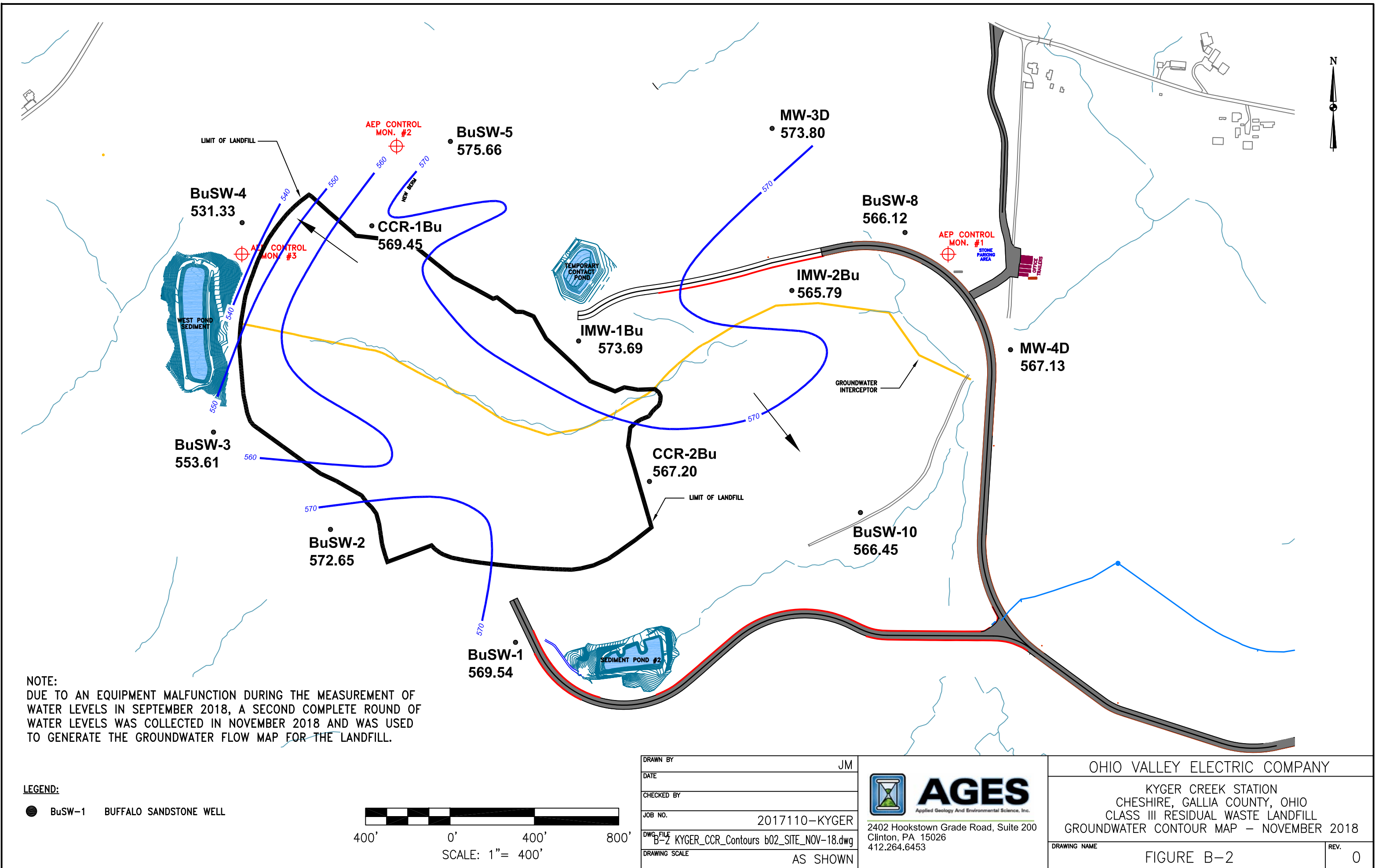


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KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
CLASS III RESIDUAL WASTE LANDFILL
GROUNDWATER CONTOUR MAP - FEBRUARY 2018

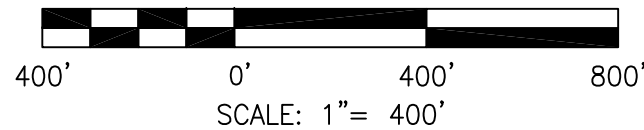
DRAWING NAME	FIGURE B-1	REV.	0
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NOTE:
 DUE TO AN EQUIPMENT MALFUNCTION DURING THE MEASUREMENT OF
 WATER LEVELS IN SEPTEMBER 2018, A SECOND COMPLETE ROUND OF
 WATER LEVELS WAS COLLECTED IN NOVEMBER 2018 AND WAS USED
 TO GENERATE THE GROUNDWATER FLOW MAP FOR THE LANDFILL.

LEGEND:

● BuSW-1 BUFFALO SANDSTONE WELL



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2017110-KYGER
DWG. FILE	B-2 KYGER_CCR_Contours b02_SITE_NOV-18.dwg
DRAWING SCALE	AS SHOWN

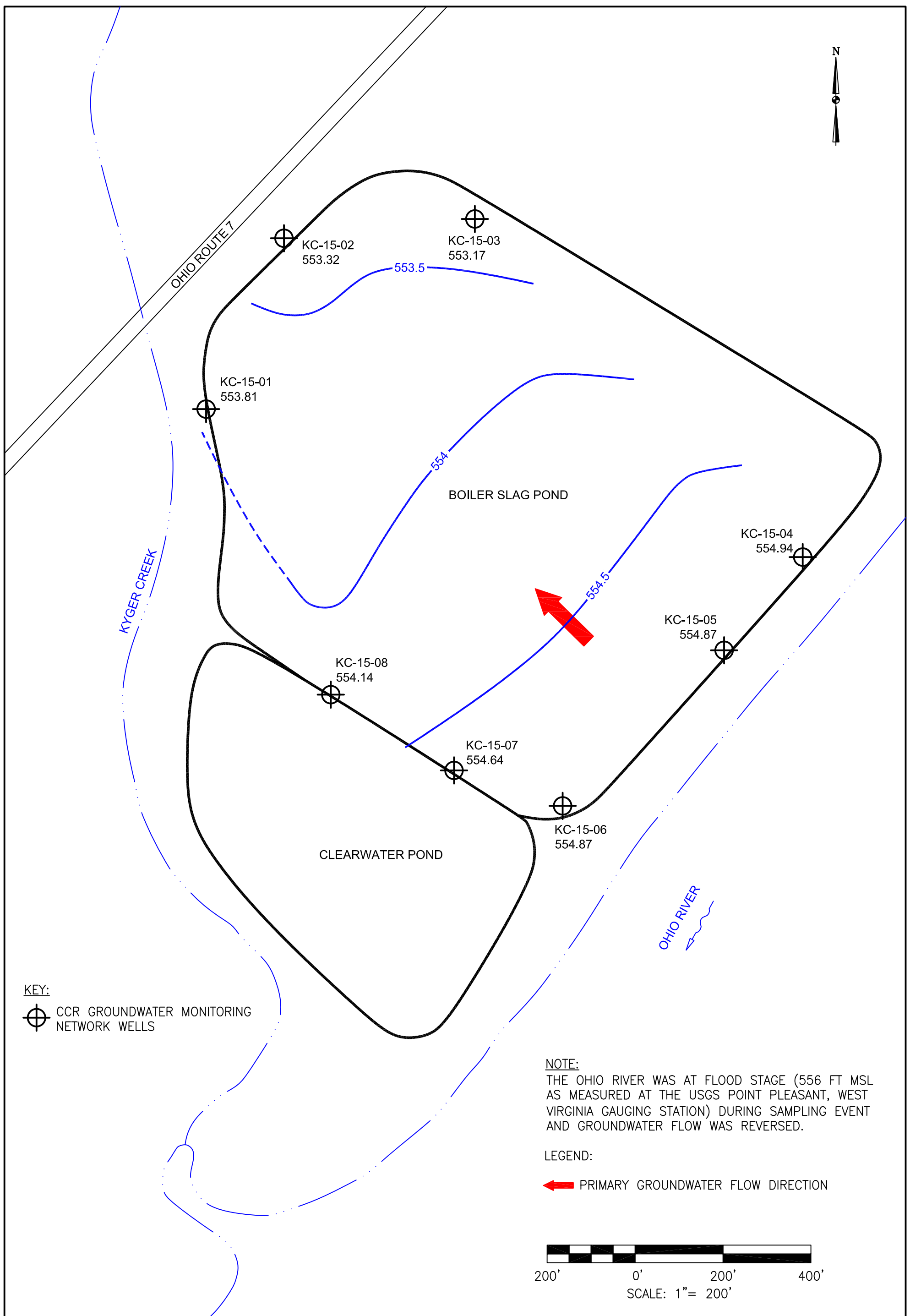


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KYGER CREEK STATION
 CHESHIRE, GALLIA COUNTY, OHIO
 CLASS III RESIDUAL WASTE LANDFILL
 GROUNDWATER CONTOUR MAP - NOVEMBER 2018

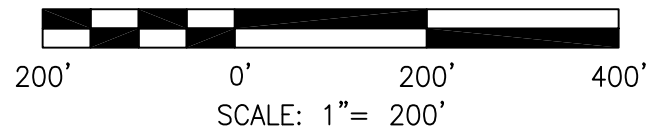
DRAWING NAME	FIGURE B-2	REV.	0
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KEY:
 CCR GROUNDWATER MONITORING NETWORK WELLS

NOTE:
 THE OHIO RIVER WAS AT FLOOD STAGE (556 FT MSL AS MEASURED AT THE USGS POINT PLEASANT, WEST VIRGINIA GAUGING STATION) DURING SAMPLING EVENT AND GROUNDWATER FLOW WAS REVERSED.

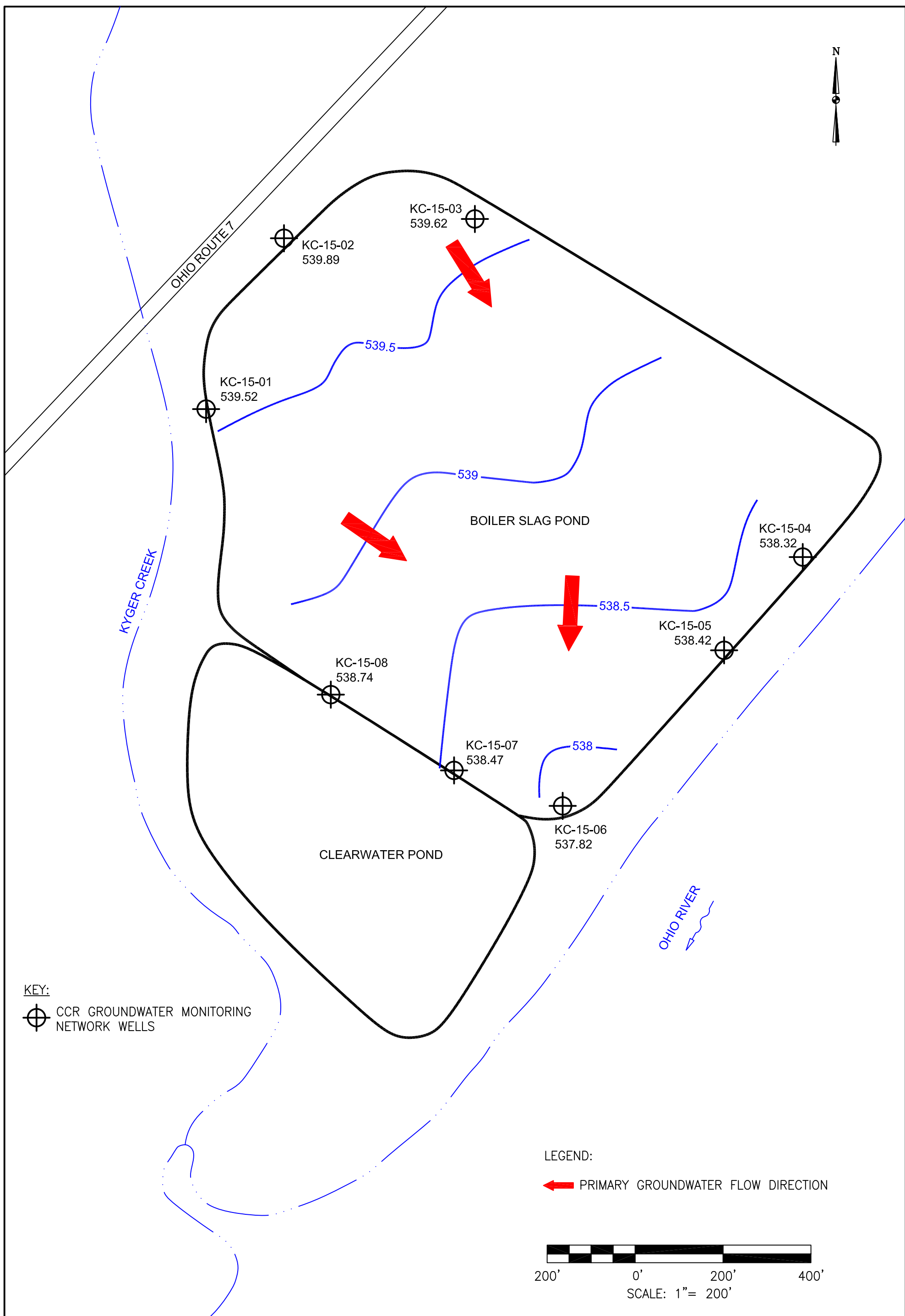
LEGEND:
 PRIMARY GROUNDWATER FLOW DIRECTION



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2017110-KYGER
DWG FILE	B-3 KYGER_CCR_Slag_Contours b10R_FEB-18.dwg
DRAWING SCALE	1"=200'

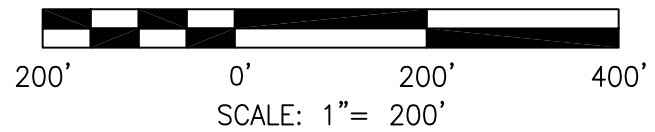
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OHIO VALLEY ELECTRIC COMPANY	
KYGER CREEK STATION CHESHIRE, GALLIA COUNTY, OHIO BOILER SLAG POND GROUNDWATER CONTOUR MAP - FEBRUARY 2018	
DRAWING NAME	FIGURE B-3
REV.	0




KEY:
 CCR GROUNDWATER MONITORING NETWORK WELLS

LEGEND:
 PRIMARY GROUNDWATER FLOW DIRECTION



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2017110-KYGER
DWG FILE	B-4 KYGER_CCR_Slag_Contours b10R_SEPT-18.dwg
DRAWING SCALE	1"=200'



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OHIO VALLEY ELECTRIC COMPANY	
KYGER CREEK STATION CHESHIRE, GALLIA COUNTY, OHIO BOILER SLAG POND GROUNDWATER CONTOUR MAP - SEPTEMBER 2018	
DRAWING NAME	FIGURE B-4
REV.	0



NOTE:
 THE OHIO RIVER WAS AT FLOOD STAGE (556 FT MSL AS MEASURED AT THE USGS POINT PLEASANT, WEST VIRGINIA GAUGING STATION) DURING SAMPLING EVENT AND GROUNDWATER FLOW WAS REVERSED.

KYGER CREEK

RAILROAD TRACKS

DRAINAGE DITCH

NORTH FLY ASH POND

KC-15-13
549.91

KC-15-12
550.02

KC-15-14
550.62

KC-15-15
551.49

KC-15-11
550.60

KC-15-16
552.01

SOUTH FLY ASH POND

KC-15-10
551.03

KC-15-17
552.13

KC-15-09
551.48

KC-15-18
552.22

KC-15-22
552.09

OHIO ROUTE 7

KC-15-21
552.34

KC-15-19
552.47

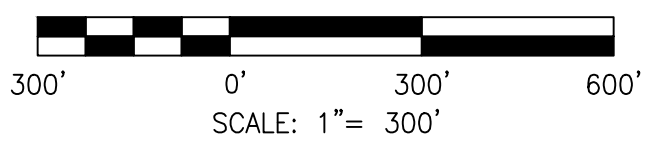
KC-15-20
552.62

POWER PLANT

OHIO RIVER

LEGEND:

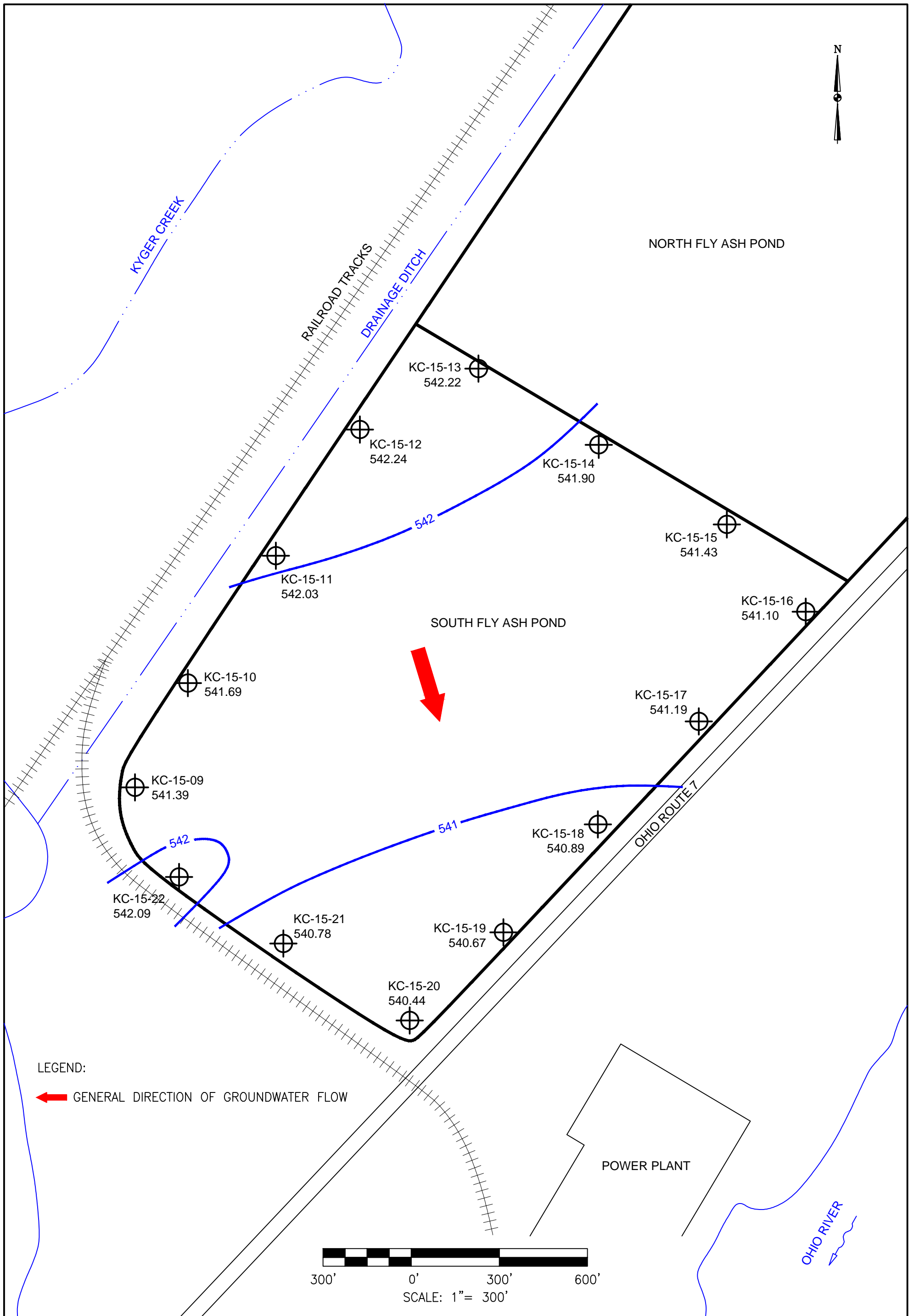
GENERAL DIRECTION OF GROUNDWATER FLOW



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DATE	
CHECKED BY	
JOB NO.	2020016-KYG
DWG FILE	B-5_RVSD_KYGER_SFAP_GW_FLOW_FEB18.dwg
DRAWING SCALE	1"=300'

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OHIO VALLEY ELECTRIC COMPANY	
KYGER CREEK STATION CHESHIRE, GALLIA COUNTY, OHIO SOUTH FLY ASH POND GROUNDWATER CONTOUR MAP-FEBRUARY 2018	
DRAWING NAME	FIGURE B-5
REV.	0



LEGEND:

GENERAL DIRECTION OF GROUNDWATER FLOW

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020016-KYG
DWG FILE	B-6_RVSD_KYGER_SFAP_GW_FLOW_SEP18.dwg
DRAWING SCALE	1"=300'



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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SOUTH FLY ASH POND
GROUNDWATER CONTOUR MAP-SEPTEMBER 2018

DRAWING NAME	FIGURE B-6	REV.	0
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APPENDIX C

APPENDIX III AND APPENDIX IV CONSTITUENTS

APPENDIX III AND APPENDIX IV CONSTITUENTS

Appendix III Constituents (Detection Monitoring)
Constituent
Boron, B
Calcium, Ca
Chloride, Cl
Fluoride, F
pH (units=SU)
Sulfate, SO4
Total Dissolved Solids (TDS)
Appendix IV Constituents (Assessment Monitoring)
Constituent
Antimony, Sb
Arsenic, As
Barium, Ba
Beryllium, Be
Cadmium, Cd
Chromium, Cr
Cobalt, Co
Fluoride, F
Lithium, Li
Lead, Pb
Mercury, Hg
Molybdenum, Mo
Radium 226 & 228 (combined)(units=pCi/L)
Selenium, Se
Thallium, Tl

APPENDIX D

ANALYTICAL RESULTS

BuSW-1
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.411	0.38
Calcium, Ca	mg/L	13.5	11.5
Chloride, Cl	mg/L	2100	2030
Fluoride, F	mg/L	1.09	1.27
pH	s.u.	9.12	7.45
Sulfate, SO4	mg/L	79.1	104
Total Dissolved Solids (TDS)	mg/L	3720	3560

BuSW-2
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.471	0.498
Calcium, Ca	mg/L	39.8	36.1
Chloride, Cl	mg/L	2980	2890
Fluoride, F	mg/L	1.03	1.26
pH	s.u.	8.19	7.43
Sulfate, SO4	mg/L	0.7	0.5 U
Total Dissolved Solids (TDS)	mg/L	5100	4660

BuSW-3
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.471	0.529
Calcium, Ca	mg/L	877	956
Chloride, Cl	mg/L	17900	18500
Fluoride, F	mg/L	2 U	2 U
pH	s.u.	8.92	6.89
Sulfate, SO4	mg/L	50.7	39.7
Total Dissolved Solids (TDS)	mg/L	27300	28900

BuSW-4
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.05 U	0.409
Calcium, Ca	mg/L	830	961
Chloride, Cl	mg/L	18700	18300
Fluoride, F	mg/L	0.7 J	2 U
pH	s.u.	7.15	7.06
Sulfate, SO4	mg/L	14.8	22.2
Total Dissolved Solids (TDS)	mg/L	29000	31300

BuSW-5
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.348	0.406
Calcium, Ca	mg/L	790	753
Chloride, Cl	mg/L	16000	16300
Fluoride, F	mg/L	2 U	2 U
pH	s.u.	9.8	7.21
Sulfate, SO4	mg/L	2.9	2 U
Total Dissolved Solids (TDS)	mg/L	26100	25600

BuSW-8
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.372	0.434
Calcium, Ca	mg/L	577	528
Chloride, Cl	mg/L	12700	13500
Fluoride, F	mg/L	0.8 U	2 U
pH	s.u.	9.93	7.47
Sulfate, SO4	mg/L	9.4	2 U
Total Dissolved Solids (TDS)	mg/L	21300	22100

BuSW-10
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.379	0.405
Calcium, Ca	mg/L	34.7	33.2
Chloride, Cl	mg/L	3090	3030
Fluoride, F	mg/L	1 J	1.22
pH	s.u.	7.74	7.6
Sulfate, SO4	mg/L	9.8	1 U
Total Dissolved Solids (TDS)	mg/L	5050	4380

CCR-1BU
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.336	0.324
Calcium, Ca	mg/L	329	421
Chloride, Cl	mg/L	8990	10400
Fluoride, F	mg/L	0.8 U	0.8 U
pH	s.u.	9.99	7.61
Sulfate, SO4	mg/L	7.5	3.8
Total Dissolved Solids (TDS)	mg/L	14600	17900

CCR-2BU
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.265	0.288
Calcium, Ca	mg/L	5.93	46.9
Chloride, Cl	mg/L	981	1880
Fluoride, F	mg/L	1.03	1.13
pH	s.u.	7.96	7.09
Sulfate, SO4	mg/L	32.7	52.6
Total Dissolved Solids (TDS)	mg/L	1740	3200

IMW-1BU
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.438	0.432
Calcium, Ca	mg/L	186	252
Chloride, Cl	mg/L	7190	8370
Fluoride, F	mg/L	0.9 J	0.8 J
pH	s.u.	6.59	7.59
Sulfate, SO4	mg/L	6.9	2 U
Total Dissolved Solids (TDS)	mg/L	10700	13800

IMW-2BU
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.434	0.353
Calcium, Ca	mg/L	369	553
Chloride, Cl	mg/L	10500	14200
Fluoride, F	mg/L	2 U	2 U
pH	s.u.	7.54	7.51
Sulfate, SO4	mg/L	3.1	2 U
Total Dissolved Solids (TDS)	mg/L	15600	22400

MW-3D
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.353	0.352
Calcium, Ca	mg/L	1150	1120
Chloride, Cl	mg/L	19500	20000
Fluoride, F	mg/L	2 U	2 U
pH	s.u.	9.59	7.16
Sulfate, SO4	mg/L	1 J	2 U
Total Dissolved Solids (TDS)	mg/L	31400	33400

MW-4D
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.375	0.459
Calcium, Ca	mg/L	3.26	10.5
Chloride, Cl	mg/L	239	380
Fluoride, F	mg/L	1.64	1.79
pH	s.u.	11.29	7.31
Sulfate, SO4	mg/L	275	268
Total Dissolved Solids (TDS)	mg/L	1210	1350

KC-15-01
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.35	0.416
Calcium, Ca	mg/L	85	77.6
Chloride, Cl	mg/L	30.2	24.9
Fluoride, F	mg/L	0.04 J	0.04 J
pH	s.u.	9.09	5.64
Sulfate, SO4	mg/L	239	257
Total Dissolved Solids (TDS)	mg/L	460	453
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.07
Arsenic, As	ug/L	NA	0.33
Barium, Ba	ug/L	NA	23.4
Beryllium, Be	ug/L	NA	0.067
Cadmium, Cd	ug/L	NA	0.02
Chromium, Cr	ug/L	NA	0.171
Cobalt, Co	ug/L	NA	4.3
Fluoride, F	mg/L	NA	0.04 J
Lithium, Li	mg/L	NA	0.018
Lead, Pb	ug/L	NA	0.06
Mercury, Hg	ug/L	NA	0.005
Molybdenum, Mo	ug/L	NA	0.29
Radium 226 & 228 (combined)	pCi/L	NA	2.0065
Selenium, Se	ug/L	NA	0.1
Thallium, Tl	ug/L	NA	0.03 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-02
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.03	0.128
Calcium, Ca	mg/L	112	101
Chloride, Cl	mg/L	34.1	36.4
Fluoride, F	mg/L	0.1 J	0.1 J
pH	s.u.	12.44	6.42
Sulfate, SO4	mg/L	109	105
Total Dissolved Solids (TDS)	mg/L	478	452
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.03 J
Arsenic, As	ug/L	NA	2.39
Barium, Ba	ug/L	NA	85.7
Beryllium, Be	ug/L	NA	0.009 J
Cadmium, Cd	ug/L	NA	0.14
Chromium, Cr	ug/L	NA	0.391
Cobalt, Co	ug/L	NA	2.26
Fluoride, F	mg/L	NA	0.1 J
Lithium, Li	mg/L	NA	0.0007 J
Lead, Pb	ug/L	NA	0.189
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	1.25
Radium 226 & 228 (combined)	pCi/L	NA	0.976
Selenium, Se	ug/L	NA	0.08 J
Thallium, Tl	ug/L	NA	0.02 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-03
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.096	0.131
Calcium, Ca	mg/L	109	105
Chloride, Cl	mg/L	28.1	29.1
Fluoride, F	mg/L	0.08	0.1 J
pH	s.u.	11	6.31
Sulfate, SO4	mg/L	192	181
Total Dissolved Solids (TDS)	mg/L	490	472
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.02 J
Arsenic, As	ug/L	NA	1.44
Barium, Ba	ug/L	NA	66.5
Beryllium, Be	ug/L	NA	0.02 U
Cadmium, Cd	ug/L	NA	0.06
Chromium, Cr	ug/L	NA	0.103
Cobalt, Co	ug/L	NA	7.58
Fluoride, F	mg/L	NA	0.1 J
Lithium, Li	mg/L	NA	0.032
Lead, Pb	ug/L	NA	0.02 J
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	0.89
Radium 226 & 228 (combined)	pCi/L	NA	0.285
Selenium, Se	ug/L	NA	0.1 U
Thallium, Tl	ug/L	NA	0.05 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-04
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	May-18	Sep-18	Dec-18
Appendix III Constituents					
Boron, B	mg/L	0.717	1.01	0.924	0.781
Calcium, Ca	mg/L	105	NA	109	NA
Chloride, Cl	mg/L	24.6	NA	28.3	NA
Fluoride, F	mg/L	0.06	NA	0.09	NA
pH	s.u.	10.2	6.49	6.34	NA
Sulfate, SO ₄	mg/L	344	369	358	300
Total Dissolved Solids (TDS)	mg/L	600	660	600	585
Appendix IV Constituents					
Antimony, Sb	ug/L	NA	NA	0.17	NA
Arsenic, As	ug/L	NA	NA	1.66	NA
Barium, Ba	ug/L	NA	NA	58.3	NA
Beryllium, Be	ug/L	NA	NA	0.01 J	NA
Cadmium, Cd	ug/L	NA	NA	0.03	NA
Chromium, Cr	ug/L	NA	NA	0.161	NA
Cobalt, Co	ug/L	NA	NA	8.83	NA
Fluoride, F	mg/L	NA	NA	0.09	NA
Lithium, Li	mg/L	NA	NA	0.014	NA
Lead, Pb	ug/L	NA	NA	0.081	NA
Mercury, Hg	ug/L	NA	NA	0.003 J	NA
Molybdenum, Mo	ug/L	NA	NA	0.52	NA
Radium 226 & 228 (combined)	pCi/L	NA	NA	0.403	NA
Selenium, Se	ug/L	NA	NA	0.1	NA
Thallium, Tl	ug/L	NA	NA	0.02 J	NA

Notes:

NA = Sample not analyzed for the parameter

KC-15-05
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	May-18	Sep-18	Dec-18
Appendix III Constituents					
Boron, B	mg/L	0.889	0.815	0.762	NA
Calcium, Ca	mg/L	136	109	129	129
Chloride, Cl	mg/L	27.9	NA	28.9	NA
Fluoride, F	mg/L	0.09	NA	0.13	NA
pH	s.u.	9.01	6.57	6.35	NA
Sulfate, SO4	mg/L	363	318	346	333
Total Dissolved Solids (TDS)	mg/L	691	652	664	689
Appendix IV Constituents					
Antimony, Sb	ug/L	NA	NA	0.02 J	NA
Arsenic, As	ug/L	NA	NA	0.88	NA
Barium, Ba	ug/L	NA	NA	35.4	NA
Beryllium, Be	ug/L	NA	NA	0.005 J	NA
Cadmium, Cd	ug/L	NA	NA	0.07	NA
Chromium, Cr	ug/L	NA	NA	0.21	NA
Cobalt, Co	ug/L	NA	NA	5.27	NA
Fluoride, F	mg/L	NA	NA	0.13	NA
Lithium, Li	mg/L	NA	NA	0.027	NA
Lead, Pb	ug/L	NA	NA	0.07	NA
Mercury, Hg	ug/L	NA	NA	0.004 J	NA
Molybdenum, Mo	ug/L	NA	NA	0.57	NA
Radium 226 & 228 (combined)	pCi/L	NA	NA	3.086	NA
Selenium, Se	ug/L	NA	NA	0.1	NA
Thallium, Tl	ug/L	NA	NA	0.04 J	NA

Notes:

NA = Sample not analyzed for the parameter

KC-15-06
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.275	0.306
Calcium, Ca	mg/L	108	94.8
Chloride, Cl	mg/L	38	36.1
Fluoride, F	mg/L	0.09 J	0.1 J
pH	s.u.	9.33	6.52
Sulfate, SO4	mg/L	177	144
Total Dissolved Solids (TDS)	mg/L	502	465
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.01 J
Arsenic, As	ug/L	NA	1.58
Barium, Ba	ug/L	NA	110
Beryllium, Be	ug/L	NA	0.02 U
Cadmium, Cd	ug/L	NA	0.13
Chromium, Cr	ug/L	NA	0.238
Cobalt, Co	ug/L	NA	2.76
Fluoride, F	mg/L	NA	0.1 J
Lithium, Li	mg/L	NA	0.001
Lead, Pb	ug/L	NA	0.044
Mercury, Hg	ug/L	NA	0.002 J
Molybdenum, Mo	ug/L	NA	0.37
Radium 226 & 228 (combined)	pCi/L	NA	0.916
Selenium, Se	ug/L	NA	0.06 J
Thallium, Tl	ug/L	NA	0.02 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-07
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	May-18	Sep-18	Dec-18
Appendix III Constituents					
Boron, B	mg/L	0.256	NA	0.078	NA
Calcium, Ca	mg/L	123	78.8	69.3	NA
Chloride, Cl	mg/L	39.8	NA	30.9	NA
Fluoride, F	mg/L	0.08 J	NA	0.07 J	NA
pH	s.u.	8.45	6.02	6.27	NA
Sulfate, SO4	mg/L	191	NA	46.1	NA
Total Dissolved Solids (TDS)	mg/L	544	NA	367	NA
Appendix IV Constituents					
Antimony, Sb	ug/L	NA	NA	0.01 J	NA
Arsenic, As	ug/L	NA	NA	152	15.3
Barium, Ba	ug/L	NA	NA	510	40
Beryllium, Be	ug/L	NA	NA	0.006 J	NA
Cadmium, Cd	ug/L	NA	NA	0.01 J	NA
Chromium, Cr	ug/L	NA	NA	0.189	NA
Cobalt, Co	ug/L	NA	NA	0.132	NA
Fluoride, F	mg/L	NA	NA	0.07 J	NA
Lithium, Li	mg/L	NA	NA	0.004	NA
Lead, Pb	ug/L	NA	NA	0.01 J	NA
Mercury, Hg	ug/L	NA	NA	0.004 J	NA
Molybdenum, Mo	ug/L	NA	NA	0.75	NA
Radium 226 & 228 (combined)	pCi/L	NA	NA	1.62	NA
Selenium, Se	ug/L	NA	NA	0.09 J	NA
Thallium, Tl	ug/L	NA	NA	0.01 J	NA

Notes:

NA = Sample not analyzed for the parameter

KC-15-08
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	May-18	Sep-18	Dec-18
Appendix III Constituents					
Boron, B	mg/L	0.58	0.495	0.332	NA
Calcium, Ca	mg/L	245	187	153	105
Chloride, Cl	mg/L	42.9	NA	39.7	NA
Fluoride, F	mg/L	0.08	NA	0.12	NA
pH	s.u.	8.45	6.25	6.85	NA
Sulfate, SO4	mg/L	599	510	375	150
Total Dissolved Solids (TDS)	mg/L	1130	1070	842	510
Appendix IV Constituents					
Antimony, Sb	ug/L	NA	NA	0.02 J	NA
Arsenic, As	ug/L	NA	NA	3.86	NA
Barium, Ba	ug/L	NA	NA	50.2	NA
Beryllium, Be	ug/L	NA	NA	0.02 U	NA
Cadmium, Cd	ug/L	NA	NA	0.02	NA
Chromium, Cr	ug/L	NA	NA	0.479	NA
Cobalt, Co	ug/L	NA	NA	5.99	NA
Fluoride, F	mg/L	NA	NA	0.12	NA
Lithium, Li	mg/L	NA	NA	0.024	NA
Lead, Pb	ug/L	NA	NA	0.02 J	NA
Mercury, Hg	ug/L	NA	NA	0.003 J	NA
Molybdenum, Mo	ug/L	NA	NA	0.56	NA
Radium 226 & 228 (combined)	pCi/L	NA	NA	0.582	NA
Selenium, Se	ug/L	NA	NA	0.04 J	NA
Thallium, Tl	ug/L	NA	NA	0.01 J	NA

Notes:

NA = Sample not analyzed for the parameter

KC-15-09
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.045	0.097
Calcium, Ca	mg/L	92	52.4
Chloride, Cl	mg/L	12.1	5.81
Fluoride, F	mg/L	0.13	0.11
pH	s.u.	6.77	7.14
Sulfate, SO4	mg/L	65	47.2
Total Dissolved Solids (TDS)	mg/L	346	228
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.04 J
Arsenic, As	ug/L	NA	0.6
Barium, Ba	ug/L	NA	37.2
Beryllium, Be	ug/L	NA	0.008 J
Cadmium, Cd	ug/L	NA	0.02 J
Chromium, Cr	ug/L	NA	0.298
Cobalt, Co	ug/L	NA	1.3
Fluoride, F	mg/L	NA	0.11
Lithium, Li	mg/L	NA	0.003
Lead, Pb	ug/L	NA	0.098
Mercury, Hg	ug/L	NA	0.004 J
Molybdenum, Mo	ug/L	NA	0.77
Radium 226 & 228 (combined)	pCi/L	NA	1.184
Selenium, Se	ug/L	NA	0.08 J
Thallium, Tl	ug/L	NA	0.05 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-10
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.051	0.128
Calcium, Ca	mg/L	104	59.8
Chloride, Cl	mg/L	10.2	9.7
Fluoride, F	mg/L	0.19	0.2
pH	s.u.	6.78	6.78
Sulfate, SO4	mg/L	77.2	61.9
Total Dissolved Solids (TDS)	mg/L	358	266
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.05 U
Arsenic, As	ug/L	NA	1.87
Barium, Ba	ug/L	NA	32.2
Beryllium, Be	ug/L	NA	0.01 J
Cadmium, Cd	ug/L	NA	0.01 J
Chromium, Cr	ug/L	NA	0.197
Cobalt, Co	ug/L	NA	1.02
Fluoride, F	mg/L	NA	0.2
Lithium, Li	mg/L	NA	0.022
Lead, Pb	ug/L	NA	0.117
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	0.09 J
Radium 226 & 228 (combined)	pCi/L	NA	NA
Selenium, Se	ug/L	NA	0.05 J
Thallium, Tl	ug/L	NA	0.05 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-11
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	0.112	0.041
Calcium, Ca	mg/L	109	70.7
Chloride, Cl	mg/L	11.9	12
Fluoride, F	mg/L	0.14	0.19
pH	s.u.	6.87	6.74
Sulfate, SO4	mg/L	76.3	73.8
Total Dissolved Solids (TDS)	mg/L	385	344
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.02 J
Arsenic, As	ug/L	NA	0.63
Barium, Ba	ug/L	NA	35.3
Beryllium, Be	ug/L	NA	0.01 J
Cadmium, Cd	ug/L	NA	0.14
Chromium, Cr	ug/L	NA	0.22
Cobalt, Co	ug/L	NA	1.37
Fluoride, F	mg/L	NA	0.19
Lithium, Li	mg/L	NA	0.001 U
Lead, Pb	ug/L	NA	0.174
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	0.13
Radium 226 & 228 (combined)	pCi/L	NA	0.348
Selenium, Se	ug/L	NA	0.1 U
Thallium, Tl	ug/L	NA	0.02 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-12
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	1.48	0.339
Calcium, Ca	mg/L	137	95.2
Chloride, Cl	mg/L	60.5	25.3
Fluoride, F	mg/L	0.1 J	0.1 J
pH	s.u.	6.59	7.05
Sulfate, SO4	mg/L	218	94.7
Total Dissolved Solids (TDS)	mg/L	573	399
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.02 J
Arsenic, As	ug/L	NA	0.63
Barium, Ba	ug/L	NA	63.3
Beryllium, Be	ug/L	NA	0.007 J
Cadmium, Cd	ug/L	NA	0.05
Chromium, Cr	ug/L	NA	0.221
Cobalt, Co	ug/L	NA	1.68
Fluoride, F	mg/L	NA	0.1 J
Lithium, Li	mg/L	NA	0.01
Lead, Pb	ug/L	NA	0.077
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	0.75
Radium 226 & 228 (combined)	pCi/L	NA	0.493
Selenium, Se	ug/L	NA	0.04 J
Thallium, Tl	ug/L	NA	0.02 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-13
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	3.28	3.78
Calcium, Ca	mg/L	82.7	84.1
Chloride, Cl	mg/L	46.6	53.5
Fluoride, F	mg/L	0.06 J	0.1 J
pH	s.u.	6.12	6.4
Sulfate, SO4	mg/L	299	320
Total Dissolved Solids (TDS)	mg/L	564	618
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.03 J
Arsenic, As	ug/L	NA	2.8
Barium, Ba	ug/L	NA	63.5
Beryllium, Be	ug/L	NA	0.022
Cadmium, Cd	ug/L	NA	0.03
Chromium, Cr	ug/L	NA	0.422
Cobalt, Co	ug/L	NA	7.98
Fluoride, F	mg/L	NA	0.1 J
Lithium, Li	mg/L	NA	0.02
Lead, Pb	ug/L	NA	0.345
Mercury, Hg	ug/L	NA	0.004 J
Molybdenum, Mo	ug/L	NA	0.77
Radium 226 & 228 (combined)	pCi/L	NA	1.722
Selenium, Se	ug/L	NA	0.2
Thallium, Tl	ug/L	NA	0.04 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-14
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	15.2	13.5
Calcium, Ca	mg/L	98.5	104
Chloride, Cl	mg/L	48.4	36.8
Fluoride, F	mg/L	0.17	0.1
pH	s.u.	6.28	6.36
Sulfate, SO4	mg/L	447	384
Total Dissolved Solids (TDS)	mg/L	744	676
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.04 J
Arsenic, As	ug/L	NA	1.32
Barium, Ba	ug/L	NA	53.3
Beryllium, Be	ug/L	NA	0.01 J
Cadmium, Cd	ug/L	NA	0.38
Chromium, Cr	ug/L	NA	0.05
Cobalt, Co	ug/L	NA	5.18
Fluoride, F	mg/L	NA	0.1
Lithium, Li	mg/L	NA	0.011
Lead, Pb	ug/L	NA	0.01 J
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	0.72
Radium 226 & 228 (combined)	pCi/L	NA	1.214
Selenium, Se	ug/L	NA	0.04 J
Thallium, Tl	ug/L	NA	0.069

Notes:

NA = Sample not analyzed for the parameter

KC-15-15
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	7.85	11.8
Calcium, Ca	mg/L	67.3	59.2
Chloride, Cl	mg/L	72.2	59
Fluoride, F	mg/L	0.05 J	0.09
pH	s.u.	5.67	5.62
Sulfate, SO4	mg/L	282	203
Total Dissolved Solids (TDS)	mg/L	535	418
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.01 J
Arsenic, As	ug/L	NA	0.14
Barium, Ba	ug/L	NA	18.3
Beryllium, Be	ug/L	NA	0.01 J
Cadmium, Cd	ug/L	NA	0.58
Chromium, Cr	ug/L	NA	0.05 J
Cobalt, Co	ug/L	NA	11.5
Fluoride, F	mg/L	NA	0.09
Lithium, Li	mg/L	NA	0.018
Lead, Pb	ug/L	NA	0.035
Mercury, Hg	ug/L	NA	0.004 J
Molybdenum, Mo	ug/L	NA	0.03 J
Radium 226 & 228 (combined)	pCi/L	NA	0.972
Selenium, Se	ug/L	NA	0.04 J
Thallium, Tl	ug/L	NA	0.03 J

Notes:

NA = Sample not analyzed for the parameter

KC-15-16
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	7.4	8.52
Calcium, Ca	mg/L	119	145
Chloride, Cl	mg/L	68.9	67.4
Fluoride, F	mg/L	0.03 J	0.06 J
pH	s.u.	6.46	6.92
Sulfate, SO4	mg/L	384	422
Total Dissolved Solids (TDS)	mg/L	700	820
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.02 J
Arsenic, As	ug/L	NA	2.15
Barium, Ba	ug/L	NA	58
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.12
Chromium, Cr	ug/L	NA	0.216
Cobalt, Co	ug/L	NA	8.87
Fluoride, F	mg/L	NA	0.06 J
Lithium, Li	mg/L	NA	0.02 J
Lead, Pb	ug/L	NA	0.09 J
Mercury, Hg	ug/L	NA	0.006 J
Molybdenum, Mo	ug/L	NA	1 J
Radium 226 & 228 (combined)	pCi/L	NA	0.651
Selenium, Se	ug/L	NA	0.07 J
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-17
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	14.4	16.1
Calcium, Ca	mg/L	214	271
Chloride, Cl	mg/L	99.9	113
Fluoride, F	mg/L	0.2 U	0.06 J
pH	s.u.	6.65	6.65
Sulfate, SO4	mg/L	843	1080
Total Dissolved Solids (TDS)	mg/L	1360	1780
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.1 U
Arsenic, As	ug/L	NA	3.22
Barium, Ba	ug/L	NA	37.2
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.37
Chromium, Cr	ug/L	NA	0.05 J
Cobalt, Co	ug/L	NA	29.3
Fluoride, F	mg/L	NA	0.06 J
Lithium, Li	mg/L	NA	0.037
Lead, Pb	ug/L	NA	0.03 J
Mercury, Hg	ug/L	NA	0.01 U
Molybdenum, Mo	ug/L	NA	1 J
Radium 226 & 228 (combined)	pCi/L	NA	0.801
Selenium, Se	ug/L	NA	0.1 J
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-18
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	12.3	14.5
Calcium, Ca	mg/L	104	129
Chloride, Cl	mg/L	36.6	56.6
Fluoride, F	mg/L	0.06 J	0.09
pH	s.u.	6.58	6.49
Sulfate, SO4	mg/L	313	401
Total Dissolved Solids (TDS)	mg/L	591	782
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.1 U
Arsenic, As	ug/L	NA	2.5
Barium, Ba	ug/L	NA	25
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.13
Chromium, Cr	ug/L	NA	0.1 J
Cobalt, Co	ug/L	NA	6.23
Fluoride, F	mg/L	NA	0.09
Lithium, Li	mg/L	NA	0.037
Lead, Pb	ug/L	NA	0.03 J
Mercury, Hg	ug/L	NA	0.004 J
Molybdenum, Mo	ug/L	NA	1 J
Radium 226 & 228 (combined)	pCi/L	NA	0.618
Selenium, Se	ug/L	NA	0.04 J
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-19
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	13.9	13
Calcium, Ca	mg/L	203	216
Chloride, Cl	mg/L	34.8	37.7
Fluoride, F	mg/L	0.07	0.11
pH	s.u.	6.24	6.53
Sulfate, SO4	mg/L	644	706
Total Dissolved Solids (TDS)	mg/L	1060	1210
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.1 U
Arsenic, As	ug/L	NA	0.45
Barium, Ba	ug/L	NA	16.3
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.18
Chromium, Cr	ug/L	NA	0.09 J
Cobalt, Co	ug/L	NA	10.6
Fluoride, F	mg/L	NA	0.11
Lithium, Li	mg/L	NA	0.02 J
Lead, Pb	ug/L	NA	0.04 J
Mercury, Hg	ug/L	NA	0.005 J
Molybdenum, Mo	ug/L	NA	0.5 J
Radium 226 & 228 (combined)	pCi/L	NA	0.648
Selenium, Se	ug/L	NA	0.06 J
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-20
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	10.1	10.2
Calcium, Ca	mg/L	213	215
Chloride, Cl	mg/L	32.3	34.3
Fluoride, F	mg/L	0.06	0.1
pH	s.u.	6.68	6.85
Sulfate, SO4	mg/L	637	637
Total Dissolved Solids (TDS)	mg/L	1120	1110
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.1 U
Arsenic, As	ug/L	NA	2.48
Barium, Ba	ug/L	NA	35.3
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.02 J
Chromium, Cr	ug/L	NA	0.07 J
Cobalt, Co	ug/L	NA	3.8
Fluoride, F	mg/L	NA	0.1
Lithium, Li	mg/L	NA	0.01 J
Lead, Pb	ug/L	NA	0.1 U
Mercury, Hg	ug/L	NA	0.002 J
Molybdenum, Mo	ug/L	NA	1 J
Radium 226 & 228 (combined)	pCi/L	NA	0.5732
Selenium, Se	ug/L	NA	0.2 U
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-21
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	Sep-18
Appendix III Constituents			
Boron, B	mg/L	4.6	4.97
Calcium, Ca	mg/L	140	128
Chloride, Cl	mg/L	27	27.4
Fluoride, F	mg/L	0.1 J	0.13
pH	s.u.	5.59	6.78
Sulfate, SO4	mg/L	314	290
Total Dissolved Solids (TDS)	mg/L	718	644
Appendix IV Constituents			
Antimony, Sb	ug/L	NA	0.1 U
Arsenic, As	ug/L	NA	2.72
Barium, Ba	ug/L	NA	36.8
Beryllium, Be	ug/L	NA	0.1 U
Cadmium, Cd	ug/L	NA	0.01 J
Chromium, Cr	ug/L	NA	0.1 J
Cobalt, Co	ug/L	NA	12.8
Fluoride, F	mg/L	NA	0.13
Lithium, Li	mg/L	NA	0.01 J
Lead, Pb	ug/L	NA	0.07 J
Mercury, Hg	ug/L	NA	0.003 J
Molybdenum, Mo	ug/L	NA	1 J
Radium 226 & 228 (combined)	pCi/L	NA	0.2198
Selenium, Se	ug/L	NA	0.03 J
Thallium, Tl	ug/L	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter

KC-15-22
SUMMARY OF 2018 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-18	May-18	Sep-18
Appendix III Constituents				
Boron, B	mg/L	2.8	NA	0.433
Calcium, Ca	mg/L	845	116	117
Chloride, Cl	mg/L	13	NA	16.7
Fluoride, F	mg/L	0.11	NA	0.12
pH	s.u.	6.96	NA	7.35
Sulfate, SO4	mg/L	120	NA	121
Total Dissolved Solids (TDS)	mg/L	359	NA	472
Appendix IV Constituents				
Antimony, Sb	ug/L	NA	NA	0.1 U
Arsenic, As	ug/L	NA	NA	2.97
Barium, Ba	ug/L	NA	NA	85.4
Beryllium, Be	ug/L	NA	NA	0.1 U
Cadmium, Cd	ug/L	NA	NA	0.05 U
Chromium, Cr	ug/L	NA	NA	0.1 J
Cobalt, Co	ug/L	NA	NA	0.057
Fluoride, F	mg/L	NA	NA	0.12
Lithium, Li	mg/L	NA	NA	0.02 J
Lead, Pb	ug/L	NA	NA	0.07 J
Mercury, Hg	ug/L	NA	NA	0.003 J
Molybdenum, Mo	ug/L	NA	NA	2 U
Radium 226 & 228 (combined)	pCi/L	NA	NA	0.2705
Selenium, Se	ug/L	NA	NA	0.2 U
Thallium, Tl	ug/L	NA	NA	0.5 U

Notes:

NA = Sample not analyzed for the parameter