



OHIO VALLEY ELECTRIC CORPORATION

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WRITER'S DIRECT DIAL NO:
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January 17, 2019

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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
Kyger Creek Station's 2018 Annual Landfill Inspection**

As Required by 40 CFR 257.106(g)(7), the Ohio Valley Electric Corporation (OVEC) is providing notification to the State Director of the Ohio Environmental Protection Agency that a qualified professional engineer has completed the 2018 CCR annual landfill inspection for OVEC's Kyger Creek Station. The inspection report has been placed in the facility's operating record as well as on the company's publically accessible internet site, which can be viewed at <https://www.ovec.com/CCRCompliance.php>

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

Sincerely,

A handwritten signature in black ink that reads "Tim Fulk". The signature is written in a cursive, slightly slanted style.

Tim Fulk

Engineer II

TLF:klr



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

January 16, 2019

File: 175534017, 200.209

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 CCR Rule Inspection
Annual Landfill Inspection
Kyger Creek Generating Station
Cheshire, Ohio**

Dear Mr. Coriell,

Attached is the 2018 annual landfill inspection for the Kyger Creek Generating Station's Class III Residual Solid Waste Landfill. The site visit was performed on December 6, 2018. No rainfall was received by the site in the 72 hours prior to the visit. As a summary:

- In general, the exterior slopes of the active coal combustion residual (CCR) landfill were uniform and well vegetated. Active waste slopes were uniform without signs of visual slope instability on the day of the site visit.
- The Phase 1/Phase 2 separation/transition berm should be relocated with the toe of the active waste limit placed as shown in the construction drawings. This allows contact stormwater management within the CCR cell. CCRs were not noted downhill of the berm during this inspection.
- Mow the vegetation along the western edge of Phase 1 above the West Sedimentation Pond to understand potential stability concerns in this area. Characterize and remediate the sloughs as needed. A progressive scarp was observed on the northwestern exterior slope of the West Sedimentation Pond.
- Monitor the termination of the Phase 1 underdrain system during site inspections. Characterize and address the seepage as part of operations. This area is contained within the waste footprint with surface water controls in place downstream.
- Maintain the vegetation near the Interim Leachate Collection Pond and address the erosion gullies along the western and southern interior embankment.



January 16, 2019
Mr. Gabriel Coriell
Page 2 of 2

**Reference: 2018 CCR Rule Inspection
Annual Landfill Inspection
Kyger Creek Generating Station
Cheshire, Ohio**

- Development of an Operations and Maintenance Manual is recommended if not in place to maintain consistency of landfill operations during its life cycle.

Observations and recommendations are detailed in the associated annual landfill inspection report. A figure is included accompanied with a GPS location table to assist in addressing the observations and a photographic log.

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.


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Attachment: 2018 CCR Rule Inspection Kyger Creek Landfill

c. Stan Harris, Stantec

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**2018 CCR Rule Inspection
Kyger Creek Landfill**



Kyger Creek Generating Station
Cheshire, Ohio
Gallia County

January 16, 2019

Prepared for:

Ohio Valley Electric Corporation
Piketon, Ohio

Prepared by:

Stantec Consulting Services Inc.
Cincinnati, Ohio

Sign-off Sheet

This document entitled 2018 CCR Rule Inspection Kyger Creek Landfill was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Ohio Valley Electric Corporation (OVEC) (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule, and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use that a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by *Jacqueline S. Harmon*
(signature)

Jacqueline S. Harmon, P.E.



Reviewed by *James R. Swindler Jr. (SE)*
(signature)

James R. Swindler Jr., P.E.

Reviewed by *Stan A. Harris*
(signature)

Stan A. Harris, P.E.

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2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Overview

January 16, 2019

1.0 OVERVIEW

Stantec Consulting Services Inc. (Stantec) performed the annual landfill inspection of the existing coal combustion residual (CCR) landfill at the Kyger Creek Generating Station in Cheshire, Ohio on December 6, 2018.

This annual landfill inspection is intended to fulfill the requirements of 40 CFR 257.84(b) for the *Disposal of Coal Combustion Residuals from Electric Utilities* rule (CCR Rule) signed by the U.S. Environmental Protection Agency (EPA) Administrator on December 19, 2014 and published in the Federal Register on April 17, 2015.

The landfill is a residual solid waste facility (270834, RSWL018814) under the regulations of the Gallia County General Health District – RW3L and the Ohio Environmental Protection Agency (OEPA), Division of Materials and Waste Management. Below is a summary of conditions for the day of the inspection:

| | |
|------------------------------|--|
| Date performed: | December 6, 2018 |
| Weather: | Overcast, windy, 28°F - 39°F |
| Rainfall over last 72 hours: | December 3, 2018 – 0.00 inches December 4, 2018 – 0.00 inches December 5, 2018 – 0.00 inches December 6, 2018 – 0.00 inches |

Precipitation data was collected from the weather station at the Ohio University Station southwest of Albany, Ohio (K312), approximately 20.3 miles northwest from the landfill.

Stantec's team that performed the fieldwork included:

- Jacqueline S. Harmon, P.E., Senior Associate/Geotechnical Engineer
21 years of experience in geotechnical engineering, including dams, levees, and CCR storage facility closure.
- James R. Swindler, Jr., P.E., Senior Project Engineer/Geotechnical Engineer
12 years of geotechnical engineering experience for a variety of infrastructure projects including dams, levees, and coal combustion byproduct storage facilities.

The estimated volume of CCRs contained in the landfill is 3,616,000 cubic yards. Inspections are being performed by plant personnel according to the CCR Rule at least once every seven days. Weekly reports performed between January 4, 2018 and December 27, 2018 were provided for review. The Gallia County General Health District performs quarterly inspections in accordance with OEPA guidelines.

Fieldwork was coordinated with Mr. Paul Hutchins, Kyger Creek Station's Landfill Engineer. Observations were briefly discussed with onsite personnel during and after completion of the field activities.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Description of Kyger Creek Landfill
January 16, 2019

2.0 DESCRIPTION OF KYGER CREEK LANDFILL

The Kyger Creek Generating Station, located in Cheshire, Gallia County, Ohio, is a coal combustion power plant owned and operated by OVEC. The Kyger Creek Station's five units were commissioned in 1954 and 1955 and have a total generating capacity of 1,086 megawatts (OVEC, 2016).

The CCRs produced by the Kyger Creek Generating Station are placed in the Kyger Creek restricted waste landfill. OVEC received its restricted waste permit and approval from the OEPA to begin construction on the landfill in April 2009. The landfill is a 98-acre Class III residual solid waste landfill, divided into five phases, with a capacity of 20.4 million cubic yards (Applied Geology and Environmental Science, 2015) that includes:

- A composite liner system consisting of an 18-inch recompacted soil liner, 30-mil polyvinyl chloride (PVC) geomembrane in Phases 1, 3, 4, and 5 with a 40-mil linear low-density polyethylene (LLDPE) geomembrane in Phase 2;
- Leachate collection system, including two lined leachate collection ponds;
- Contact and non-contact surface water management systems, including four sedimentation ponds, multiple sediment traps, drainage channels, and chimney drains;
- Groundwater monitoring system; and
- A final closure cap design.

Operation of the landfill began in 2010 with placement of Class III residual waste, including flue-gas-desulfurization (FGD) sludge, chloride purge steam filter cake, fly ash, and boiler slag. The landfill's anticipated lifespan is 20 years.

The CCRs are transported by conveyor to a stacking pad southeast of the landfill and/or trucked to the Kyger Creek Landfill. Based on conversations with site personnel, the ash is placed in the landfill at approximately 30-percent moisture. The ash is placed in roughly one-foot lifts and then compacted. At times, the fly ash is mixed with other material, such as gypsum, with no segregation of the material during placement.

The landfill is divided into five phases with Phase 1 currently receiving CCRs. As previously noted, there are multiple ponds, both temporary and permanent, associated with the landfill. See the 2017 As-Built Map provided in Appendix C, Reference Drawings (OVEC, 2017). The ponds include:

- East Sedimentation Pond – a permanent pond located east of the landfill.
- West Sedimentation Pond – a permanent pond located at the toe of the west slope of Phase 1.
- Leachate Collection Pond – a permanent pond located east of the landfill and adjacent to the East Sedimentation Pond.
- Interim Leachate Collection Pond – temporary pond located within Phase 3 at the east end of Phases 1 and 2.
- Sediment Pond #1 – a temporary pond located to the east of Phase 1. This pond has been capped.
- Sediment Pond #2 – a temporary pond located within the Proposed Clay Borrow area to the south of Phase 1.
- Temporary Contact Pond – a temporary pond located on the southeast end of Phase 2.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Observations
January 16, 2019

The stormwater sedimentation traps were also observed during the site visit.

An Operations and Maintenance Manual discussing the landfill or the ponds was not available for review.

2.1 KYGER CREEK LANDFILL – PHASE 1

The active waste cell is Phase 1, located in the southwestern portion of the landfill footprint. A series of chimney drains lie in the center portion of the phase and outlet on the east end into the Interim Leachate Collection Pond. Temporary soil cover has been placed and vegetated on the exterior slopes of Phase 1 where it is nearing final CCR grades (2017 As-Built Map, Appendix C).

2.2 KYGER CREEK LANDFILL – PHASES 2 THROUGH 5

Phases 2, 3, 4, and 5 have yet to be constructed. Phase 2 has been used as a borrow area and is vegetated and inactive. The general phasing plan is included in Appendix C.

3.0 OBSERVATIONS

3.1 KYGER CREEK LANDFILL – ACTIVE PHASE

The following observations were made while walking within and around the active Phase 1 landfill footprint. Appendix A includes an aerial of the active landfill with GPS-located points. The photographic log is provided in Appendix B.

- The exterior temporary northern, western, and eastern slopes of Phase 1 are mowed sufficiently for a visual inspection, uniform, and vegetated (Photos 1 through 3, Appendix B).
- The vegetation between Phases 1 and 2 is thin with bare earthen areas near the phase boundary. (Photo 4, Appendix B). The plant appears to be revegetating the area with zones of new vegetation noted (Photo 5, Appendix A; Point 1, Appendix B).
- The Phase 1/Phase 2 separation/transition berm is visible in only a few areas. As waste placement comes up in Phase 1, it is tying into the separation/transition berm in several locations. The CCRs were not noted downhill of the berm in the Phase 2 area adjacent to the active cell (Photo 6, Appendix A; Point 2, Appendix B).
- Chimney drains were visible at regular intervals in the active cell. Most will need to be raised this spring as part of operations. (Photos 7 and 8, Appendix B).
- Temporary CCR within the landfill are being placed at a slope of approximately 2.7H:1V (horizontal to vertical) on the interior slopes at the southwestern edge of Phase 1 (Point 3, Appendix A), flattening to 7.1H:1V at the northwestern edge of Phase 1 (near Point 2, Appendix A; Photo 9, Appendix B). Signs of instability such as sloughs or slides were not noted.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Observations

January 16, 2019

- Small diameter trees and taller vegetation (12 to 48 inches) remain on the western slope of Phase 1 above the West Sedimentation Pond. Heavy vegetation obscures clearer measurement of the conditions. This region is identified in red on the figure (red region, Appendix A; Photo 10, Appendix B). In 2017, field observations suggest multiple sloughs in this area, including a progressive slough with a 3-foot head scarp and a width of 38 feet located approximately 10 feet from the road elevation and a second smaller scarp located north of it.
- Five 24-inch high-density polyethylene (HDPE) pipes underlie the access road west of Phase 1. The pipes outlet into a riprap-lined channel that flows to the West Sedimentation Pond. The pipe inlets are partially blocked due to soil erosion of the road and Phase 1 temporary cover. The roadway above the pipe outlets is heavily eroded (Points 4 and 5, Appendix A; Photos 11 and 12, Appendix B).
- On the western slope of Phase 1, a three-inch inner-diameter plastic pipe have been crushed (Point 6, Appendix A).
- The eastern temporary slope of Phase 1 shows erosion rills near the toe. The zone is vegetated and mowed. Sediment has built up in the pond at the toe of slope with the overflow structure unrestricted but near capacity. The slope is approximately 2.9H:1V (Point 7, Appendix A; Photos 13 and 14, Appendix B).
- The change of slope noted in the 2017 report on the northern section of the eastern Phase 1 face was not observed. The erosion control socks have been removed, and the vegetation looks uniform and maintained. No additional indicators of slope instability were observed (Photos 8 and 13, Appendix B).
- At the northern edge of the eastern Phase 1 face, an erosion hole and gully have formed near the transition from Phase 1 to Phase 2. The erosion hole is approximately four feet by two feet. Two points are noted for the top and toe of the gully (Points 8 and 9, Appendix A; Photos 15 and 16, Appendix B).
- The area beyond the eastern edge of the active Phase 1 cell remains spongy with clear seepage flowing eastward (Points 10 and 11, Appendix A; Photos 17, 18, and 19, Appendix B).
- The leachate pipe outlet from Phase 1 was observed within the Interim Leachate Collection Pond and appeared to be freely flowing (Photo 20, Appendix B).
- The overflow outlet within the Interim Leachate Collection Pond towards the Leachate Collection Pond could be heard flowing, but was not visible due to dense vegetation (Photo 21, Appendix B).
- The slough previously observed on the south side of the Interim Leachate Collection Pond appears unchanged. Visual observation continues to be obscured by vegetation (Photo 22, Appendix B).
- Deep erosion gullies were noted on the western and southern interior slopes of the Interim Leachate Collection Pond. Gullies measured one to three feet wide with depths up to 2.5 feet (Points 12 through 15 (area denoted by the navy line), Appendix A; Photos 23 and 24, Appendix B). Taller vegetation obscures visual observation along the crest of the dike.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Observations

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- A wet earth zone lies at the toe of proposed Phase 2 slope along the western side of the Interim Leachate Collection Pond crest (Photo 25, Appendix B).
- The access road to the Interim Leachate Collection Pond has a deepening gully (Point 16, Appendix A).

3.2 WEST SEDIMENTATION POND

The following observations were made during the site visit at the West Sedimentation Pond. Appendix A includes an aerial of the active landfill with GPS-located points. The photographic log is provided in Appendix B.

- An erosion gully approximately 3.5-feet wide by 18-inches deep is present on the north side of the access road to the West Sedimentation Pond (Point 17, Appendix A; Photo 26, Appendix B).
- Sediment is infilling the stormwater channel at the toe of the access road to the West Sedimentation Pond (Point 18, Appendix A; Photo 27, Appendix B).
- A low spot is present in the pond's overflow structure. Standing water is present on the northeastern portion of the structure (Point 19, Appendix A; Photo 28, Appendix B).
- A progressive scarp has formed on the northwestern exterior slope of the West Sedimentation Pond. The head of the scarp measures 18 inches to two feet in height with 30-percent of the pond's crest width affected (Point 20, Appendix A; Photos 29 and 30, Appendix B). The crest feels spongy. The zone measures approximately 30 feet wide parallel to the crest of the pond and extends to 20 feet from the downhill channel.
- Small scarps (6 to 24 inches in depth) were noted uphill of Sediment Trap No. 13 (Point 21, Appendix A).
- Two light sediment piles, approximately 14 feet in diameter, were observed. One was at the south end of the pond. The other was at the northern end (Points 22 and 23, Appendix A; Photo 31, Appendix B).
- The crest of the West Sedimentation Pond was mowed with vegetation less than one foot high. Vegetation growth to a height of 12 to 48 inches was observed on the western exterior slope of the pond, obscuring visual observation.

3.3 EAST SEDIMENTATION POND

The following observations were made during the site visit at the East Sedimentation Pond. Appendix A includes an aerial of the active landfill with GPS-located points. The photographic log is provided in Appendix B.

- As observed in previous reports, several erosion gullies are located along the northwest slope of the pond connecting the East Sedimentation Pond to the paved haul road.
- The inlets of the two 36-inch corrugated plastic pipes (CPPs) west and north of the East Sedimentation Pond are unobstructed.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Recommendations
January 16, 2019

- The crest of the southeastern dike for the East Sedimentation Pond has standing water and rutting (Points 24 and 25, Appendix A; Photo 32, Appendix B). Vegetation is approximately 12 to 18 inches high.

3.4 LEACHATE COLLECTION POND

The following observations were made during the site visit at the Leachate Collection Pond. Appendix A includes an aerial of the active landfill with GPS-located points. The photographic log is provided in Appendix B.

- A slough approximately 4-feet high and 20-feet wide was noted on the northwest interior slope above the concrete slope. This is the shared dike with the East Sedimentation Pond. This appears unchanged from the 2017 inspection report (Point 26, Appendix A; Photos 32 and 33, Appendix B).
- Wet zone at northeast corner on the pond's concrete liner (Photo 34, Appendix B).
- A seepage zone was observed along the southwestern edge of the Leachate Collection Pond. Flow through concrete joints within the pond was noted, and a wet region of the earthen embankment was noted (Points 27 and 28, Appendix A; Photos 34 and 35, Appendix B).
- A discolored sheen was visible on the northwestern side of Sediment. Trap No. 6 southwest of the Leachate Collection Pond (Point 29, Appendix A; Photo 36, Appendix B).
- The outlet of a 12-inch outside diameter CPP was observed on the southeast side of the pond. The pipe empties into a riprap-lined channel that passes beneath the perimeter road via an 84-inch diameter concrete culvert. The pipes were unobstructed and flowing.

3.5 PERIMETER OF KYGER CREEK LANDFILL

The perimeter of the landfill was visited to observe surface water controls for the facility. The following observations were made:

- The sedimentation traps along the perimeter haul road were observed during the December site visit. When accessible, pipe inlets and outlets were observed. The sedimentation traps appeared to be working as intended with minimal sedimentation buildup and freely flowing pipes.

4.0 RECOMMENDATIONS

The following recommendations are offered for the Kyger Creek Landfill. The recommendations are not listed in order of priority.

Stability Issues:

- Mow the vegetation along the western edge of Phase 1 above the West Sedimentation Pond to understand potential stability concerns in this area. Characterize and remediate the sloughs as needed.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

Recommendations

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- Maintain the vegetation along the interior and exterior slopes of the Interim Leachate Collection Pond. Redress the interior gullies as need, and characterize the slough on the southern side.
- Characterize and address the seepage occurring near the underdrain pipe at the east side of Phase 1. Take measures to control the flow, minimize sediment transport, and review the design to verify that it is performing as designed. Continue to monitor the toe of the active waste slope.

Operational Issues:

- Relocate the Phase 1/Phase 2 separation/transition berm. Maintain the toe of the active waste limit as shown in the construction drawings to allow contact stormwater management within the facility. CCRs outside of the berm were not observed during this field visit.
- Several wet or standing water zones were identified during this field visit following a dry period for the site. Seepage conditions appeared to be a known issue for the design, but should be monitored during operations for future planning purposes.
- An Operations and Maintenance Manual should be developed that includes provisions for the placement of materials within the landfill, the maintenance of the landfill, and the procedures to follow if issues arise during the operation of the landfill.
- Continue to conduct field surveys to measure current topography and compare to design geometry. Regrade surface to conform to design if needed. Areas near final completion grade are recommended to be capped, closed, and vegetated. Further engineering evaluation of slope stability may be warranted, if deformations, steepened slopes, or sloughing indicate potential for significant instabilities.

Maintenance Issues:

- Remove the sediment restricting flow through the five HDPE pipes flowing from the Phase 1 western slope to the West Sedimentation Pond. Repair and maintain the stormwater best management practices (BMPs) for the channels flowing to the pipes. Remediate the eroded area at the pipe outlets to protect the access road for Phase 1.
- Maintain the vegetation along the exterior slopes and within the surface drainage channels to facilitate inspections by removing taller weeds and trees as needed.
- Continue to repair erosion gullies, reestablish grass vegetation, and monitor in future inspections.
- A cover grate is recommended for the overflow pipe at the Interim Leachate Collection Pond to minimize debris carried into the pipe.

2018 CCR RULE INSPECTION KYGER CREEK LANDFILL

References

January 16, 2019

5.0 REFERENCES

American Electric Power Service Corporation (AEPSC) (2018). "2018 Dam and Dike Inspection Report, Bottom Ash Pond Complex, South Fly Ash Pond. Kyger Creek Plant, Ohio Valley Electric Corporation (OVEC), Gallipolis, Ohio." Prepared by Geotechnical Engineering, Columbus, Ohio. September 26. GERS-18-045.

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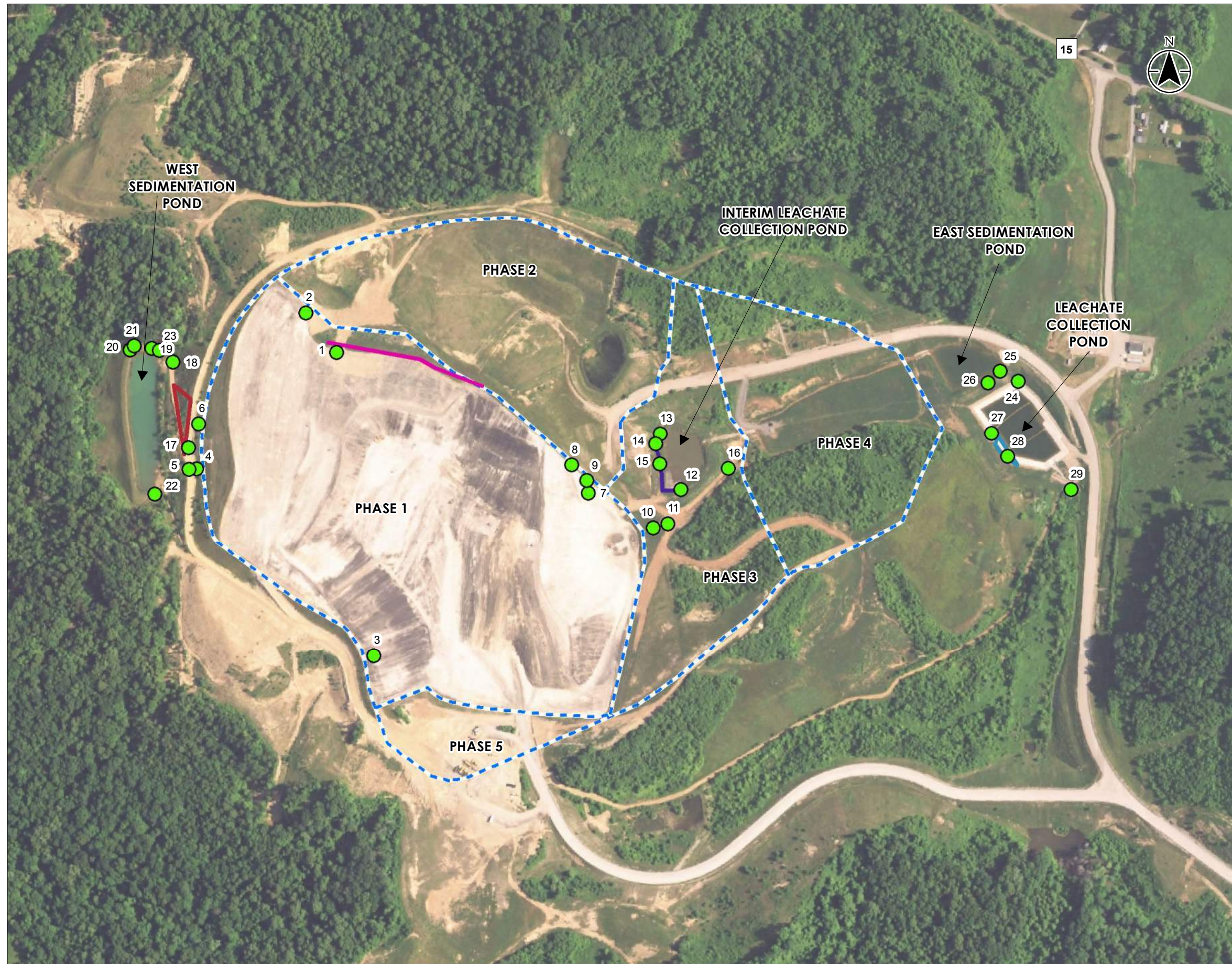
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APPENDIX A
FIGURE 1 – PLAN VIEW

**Kyger Creek Ash Landfill
2018 Annual Inspection**

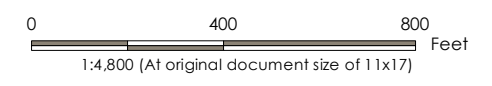
| Point ID | Comment | Latitude | Longitude |
|-----------------|--|-----------------|------------------|
| 1 | Revegetated area on the north side of Phase 1 | 38.926278 | -82.167471 |
| 2 | Start of Phase 1/Phase 2 transition berm | 38.926717 | -82.167897 |
| 3 | Slope measurement on southwestern interior slope of Phase 1 | 38.922973 | -82.166962 |
| 4 | Five HDPE pipe inlets to West Sedimentation Pond | 38.925017 | -82.169429 |
| 5 | Erosion above stormwater pipe outlets above West Sedimentation Pond | 38.925010 | -82.169536 |
| 6 | Crushed three-inch inner-diameter plastic pipe | 38.925510 | -82.169398 |
| 7 | Slope measurement of eastern temporary slope of Phase 1 | 38.924737 | -82.163959 |
| 8 | Top of erosion gulley at northern limits of Phase 1 | 38.925043 | -82.164193 |
| 9 | Toe of erosion gulley at northern limits of Phase 1 | 38.924873 | -82.163978 |
| 10 | Potential seepage at Phase 1 eastern toe | 38.924357 | -82.163058 |
| 11 | Potential seepage at Phase 1 eastern toe | 38.924402 | -82.162854 |
| 12 | Erosion gulley with standing water on interior slope of Interim Leachate Collection Pond | 38.924775 | -82.162670 |
| 13 | Erosion gulley with standing water on interior slope of Interim Leachate Collection Pond | 38.925381 | -82.162950 |
| 14 | Erosion gulley with standing water on interior slope of Interim Leachate Collection Pond | 38.925272 | -82.163014 |
| 15 | Erosion gulley with standing water on interior slope of Interim Leachate Collection Pond | 38.925051 | -82.162959 |
| 16 | Erosion gulley at northern end of access road to the Interim Leachate Collection Pond | 38.924999 | -82.162003 |
| 17 | Erosion gulley at top of access road to West Sedimentation Pond | 38.925248 | -82.169543 |
| 18 | Sediment in stormwater channel at toe of access road to West Sedimentation Pond | 38.926184 | -82.169756 |
| 19 | Low spot in West Sedimentation Pond outfall | 38.926334 | -82.170049 |
| 20 | Progressive scarp on West Sedimentation Pond slope | 38.926316 | -82.170356 |
| 21 | Small scarps uphill of Sediment Trap No. 13 | 38.926359 | -82.170298 |
| 22 | Light-colored sediment | 38.924744 | -82.170019 |
| 23 | Light-colored sediment | 38.926309 | -82.169943 |
| 24 | Standing water on southeastern crest of the East Sedimentation Pond | 38.925940 | -82.157949 |
| 25 | Rutting zone on southeastern crest of the East Sedimentation Pond | 38.926052 | -82.158204 |
| 26 | Head of slough on northwestern dike of the Leachate Collection Pond | 38.925926 | -82.158375 |
| 27 | Standing water and seepage zone on western slope of the Leachate Collection Pond | 38.925372 | -82.158327 |
| 28 | Standing water and seepage zone on western slope of the Leachate Collection Pond | 38.925123 | -82.158103 |
| 29 | Sheen iron on water | 38.924758 | -82.157215 |

\\17255\active\175534017\08\mxd\Report_Features.mxd - Revised: 2019-01-14 By: AFooter



Legend

- Inspection Locations
- Phases
- Erosion gullies on interior crest
- Phases 1/2 separation transition berm
- Seepage zone above concrete apron and through joints
- Phase 1 western slope above West Sedimentation Pond



- Notes**
1. Coordinate System: NAD 1983 StatePlane Ohio South FIPS 3402 Feet
 2. Base features - 2015 NAIP
 3. Ortho-imagery does not represent current conditions.



Project Location: Kyger Fossil Plant, Gallia County, OH
 Prepared by ANP on 2019-1-11
 Technical Review by JSH on 2019-1-11
 Independent Review by KRB on 2019-1-11

Client/Project: Ohio Valley Electric Corporation, Kyger Creek Landfill

Figure No. **1**
 Title: **2018 Annual CCR Landfill Inspection**

APPENDIX B
PHOTOGRAPHIC LOG



Photo 1

Exterior temporary western slope of Phase 1, looking south. The entrance road to the West Sedimentation Pond is on the right.



Photo 2

Exterior temporary northern slope of Phase 1, looking east. Phase 1/Phase 2 separation/transition berm is in the background.



Photo 3

Phase 1 eastern temporary slope, looking southwest.

**Photo 4**

The phase boundary between Phases 1 and 2, looking east. Note the thin vegetation and bare spots.

**Photo 5**

New vegetation between Phases 1 and 2, looking east. See Point 11 in Appendix A.

**Photo 6**

The Phase 1/Phase 2 separation/transition berm, looking southeast. See Point 2 in Appendix A.



Photo 7

A chimney drain in the Phase 1 footprint, looking south.



Photo 8

Chimney drains in the Phase 1 footprint, looking south.



Photo 9

The temporary CCR slopes along the western edge of Phase 1, looking southwest.

**Photo 10**

Slough on the western edge of Phase 1 above the West Sedimentation Pond, looking east. Observation is obscured by heavy vegetation.

**Photo 11**

The five stormwater pipes on the western edge of Phase 1 are partially blocked with sediment and obscured by vegetation. Photo is looking southwest.

**Photo 12**

Erosion of the access road above the stormwater discharge on the western edge of Phase 1, looking west.

**Photo 13**

Erosion rills near the toe of the eastern temporary slope of Phase 1, looking south. Note the chimney drain in the center of the photo.

**Photo 14**

The sedimentation pond at the toe of the temporary eastern slope for Phase 1. The overflow structure is unrestricted but near capacity, looking southeast.

**Photo 15**

Erosion hole in the temporary cover of the eastern edge of Phase 1 near the Phase 1/Phase 2 boundary, looking west.

**Photo 16**

The erosion gully along the Phase 1/Phase 2 boundary of the eastern temporary cover, looking southeast.

**Photo 17**

The seepage zone downstream of the toe of the temporary eastern slope of Phase 1, looking south.

**Photo 18**

Active clear water seep east of the Phase 1 toe of slope, looking northwest.

**Photo 19**

Active clear water seep east of the Phase 1 toe of slope, looking west.

**Photo 20**

The leachate pipe outlet into Interim Leachate Pond from the eastern edge of Phase 1, looking north.

**Photo 21**

The area containing the overflow outlet for the Interim Collection Pond, looking northwest. The pipe could not be visually located.

**Photo 22**

Slough on the southeastern exterior slope of the Interim Leachate Collection Pond, looking north.

**Photo 23**

Erosion gullies were observed on the western interior slope of the Interim Leachate Collection Pond. Photo is looking northwest.

**Photo 24**

Erosion gullies were observed on the western interior slope of the Interim Leachate Collection Pond. Photo is looking east.

**Photo 25**

The wet zone along the western crest of the Interim Leachate Collection Pond, looking north.

**Photo 26**

The erosion gully at the top of the access road to the West Sedimentation Pond. Photo is looking northwest.

**Photo 27**

Sediment in the stormwater channel at the toe of the access road to the West Sedimentation Pond. Photo is looking north.

**Photo 28**

The western exterior slope of the West Sedimentation Pond is obscured by vegetation. Photo is looking west.

**Photo 29**

A progressive scarp has formed on the northwestern exterior slope of the West Sedimentation Pond. Arrows point to the heads of two scarps. Photo looking southwest.

**Photo 30**

A progressive scarp has formed on the northwestern exterior slope of the West Sedimentation Pond. Arrow points to the heads of two scarps. Photo looking north.

**Photo 31**

A light sediment pile, approximately 14 feet in diameter at the north end of the West Sedimentation Pond, looking north.

**Photo 32**

The southeastern crest of the East Sedimentation Pond. The arrow marks the estimated location of the slough above the Leachate Collection Pond. Photo is looking northeast.

**Photo 33**

The slough observed on the shared dike between the East Sedimentation Pond and the Leachate Collection Pond. Photo is looking southeast.

**Photo 34**

Standing water along the northeastern side of the Leachate Collection Pond. Photo is looking southeast.

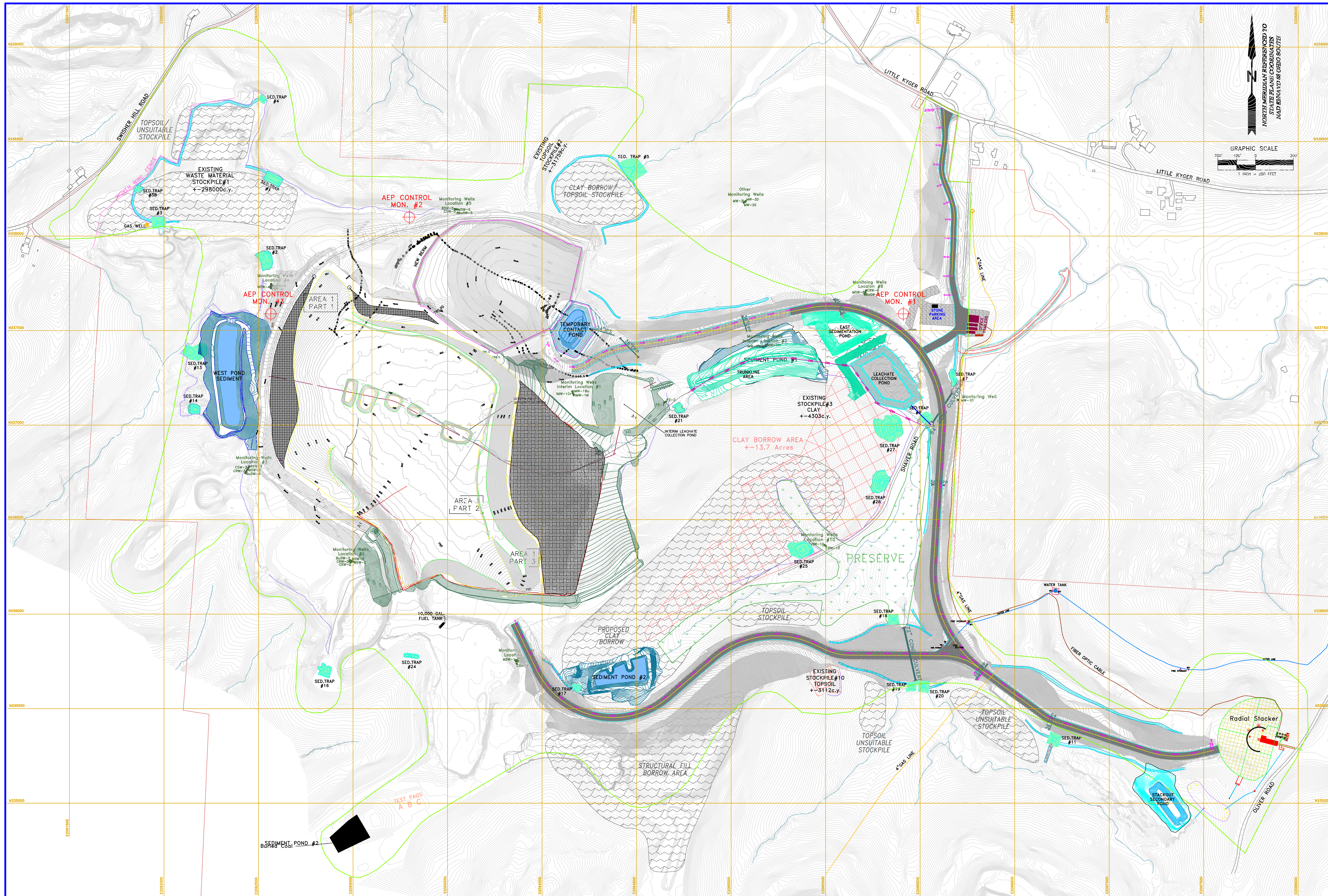
**Photo 35**

The seepage zone along the southwestern side of the Leachate Collection Pond, looking southwest.

**Photo 36**

A discolored sheen was observed at the northwestern side of Sediment Trap No. 6, looking south.

APPENDIX C
REFERENCE DRAWINGS



LEGEND

- Denotes O.V.E.C. Boundary Line
- Denotes Permit Limits
- Denotes Super Silt Fence
- Denotes Diversion Ditch
- Denotes Gas Line
- Denotes Water Line
- Denotes Fiberoptic Line
- Denotes G.W.I. w/ 4" HDPE SDR7
- Denotes G.W.I. w/ No Pipe
- Denotes Toe Drain w/ 4" Schedule 7
- Denotes Collection Trunk Piping 12" HDPE SDR7
- Denotes Culverts
- Denotes Creeks/Drains
- Denotes Woven Wire Fence
- Denotes Guardrail 2008
- Denotes Guardrail 2009
- Denotes Waste Limits
- Denotes Sediment Traps
- Denotes Sediment Pond
- Denotes Preserve Area
- Denotes Actual Clay Borrow Area
- Denotes Rip Rap
- Denotes Pavement
- Denotes Gravel
- Denotes Completed Earth Work
- Denotes 2011 Work
- Denotes Temporary Cover
- Denotes Waste
- Denotes Protective Cover
- Denotes Dumpster Areas

NOTE: One area has final or transitional cover.
 NOTE: Projected fill for 2013 will be above 2012 fill, and in phase one areas two and three.
 NOTE: +- 3936' @ +- 4' depth of
 NOTE: +- 9486' of installed guardrail
 NOTE: Gas Line is at +- 2.5' depth

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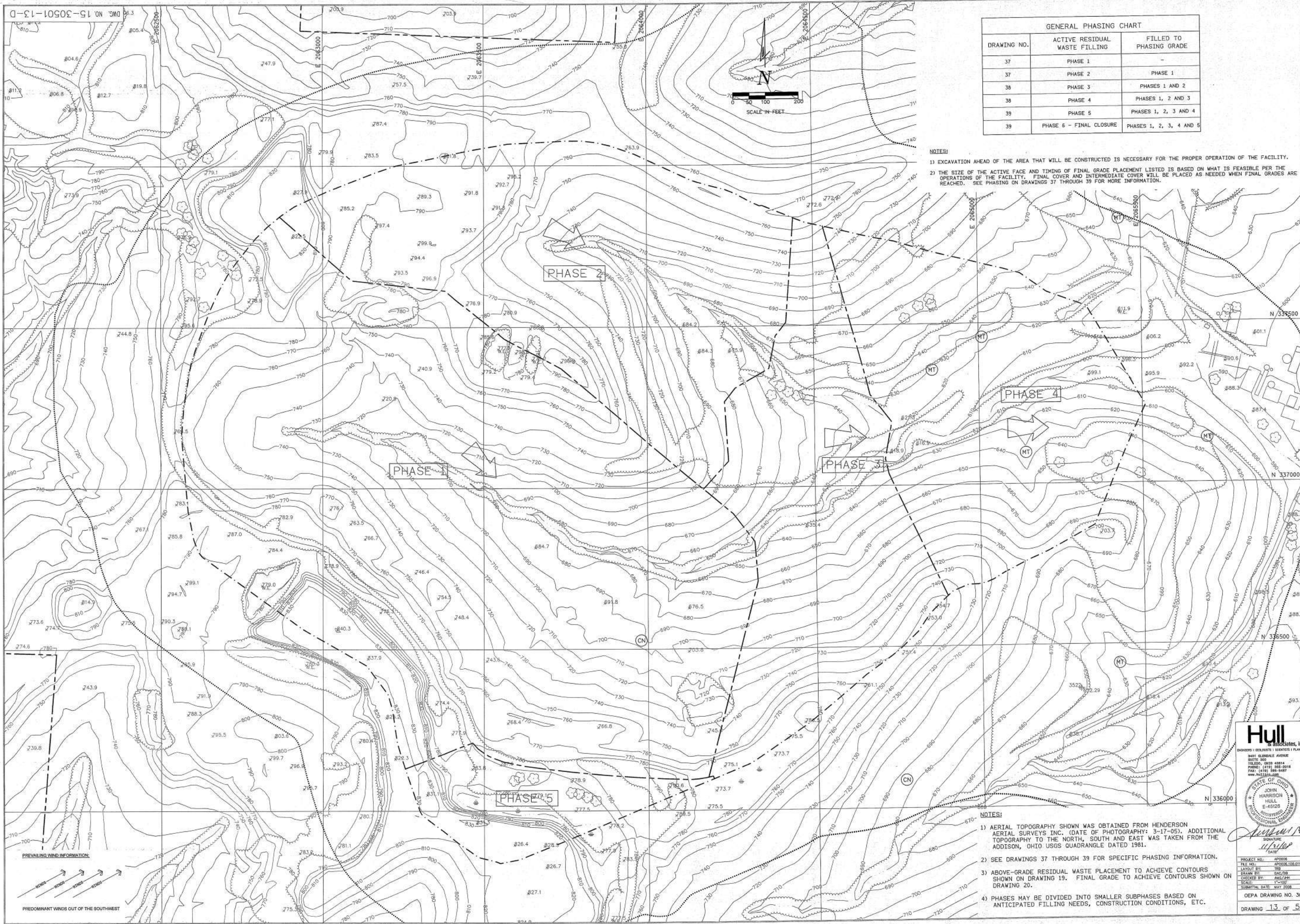
OHIO VALLEY ELECTRIC COMPANY
KYGER CREEK LANDFILL
 CINCINNATI OHIO

KYGER CREEK LANDFILL
 2017 ASBUILT MAP

NAD 83/NAVD 88 OHIO SOUTH
CONTOUR INTERVAL = 1' FOOT

Drawing Name: **KYGER CREEK LANDFILL ASBUILT MAP**
 Drawing Number: **KYG-270834-1-R7**
 SCALE: 1" = 20'
 Revision Date: 31 DECEMBER 2017
 Drawn By: R. A. Shoultis and Paul R. Hutchins

OVEC IKEC



| GENERAL PHASING CHART | | |
|-----------------------|-------------------------------|-------------------------|
| DRAWING NO. | ACTIVE RESIDUAL WASTE FILLING | FILLED TO PHASING GRADE |
| 37 | PHASE 1 | - |
| 37 | PHASE 2 | PHASE 1 |
| 38 | PHASE 3 | PHASES 1 AND 2 |
| 38 | PHASE 4 | PHASES 1, 2 AND 3 |
| 39 | PHASE 5 | PHASES 1, 2, 3 AND 4 |
| 39 | PHASE 6 - FINAL CLOSURE | PHASES 1, 2, 3, 4 AND 5 |

NOTES:
 1) EXCAVATION AHEAD OF THE AREA THAT WILL BE CONSTRUCTED IS NECESSARY FOR THE PROPER OPERATION OF THE FACILITY.
 2) THE SIZE OF THE ACTIVE FACE AND TIMING OF FINAL GRADE PLACEMENT LISTED IS BASED ON WHAT IS FEASIBLE PER THE OPERATIONS OF THE FACILITY. FINAL COVER AND INTERMEDIATE COVER WILL BE PLACED AS NEEDED WHEN FINAL GRADES ARE REACHED. SEE PHASING ON DRAWINGS 37 THROUGH 39 FOR MORE INFORMATION.

LEGEND - EXISTING

| | |
|-------|--------------------------------|
| --- | PROPERTY LINE |
| --- | 10-FOOT CONTOUR INTERVAL |
| 245.6 | SPOT ELEVATION |
| --- | TREE LINE |
| □ | BUILDING |
| ○ | MORGANTOWN SANDSTONE SPRING |
| ○ | CONNELLSVILLE SANDSTONE SPRING |

LEGEND - PROPOSED

| | |
|-----|---|
| --- | WASTE LIMIT |
| → | FILL PROGRESSION |
| → | PREVAILING WIND DIRECTION |
| --- | PHASE DIVISION LINE |
| --- | FACILITY BOUNDARY / AREA OF DISTURBANCE |

REFERENCE DRAWINGS

| DATE | NO. | DESCRIPTION | APP'D. |
|----------|-----|-------------------|--------|
| 11/28/08 | D | NOD 3 RESPONSE | JHH |
| 11/28/08 | C | NOD 2 RESPONSE | JHH |
| 11/28/08 | B | NOD 1 RESPONSE | JHH |
| 11/28/08 | A | ISSUED FOR PERMIT | JHH |

REVISIONS

| DATE | NO. | DESCRIPTION | APP'D. |
|----------|-----|--|--------|
| 11/15/08 | 1 | geo_hydro_site/vendor/hull/15-30501-09 | |

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PROJECT NO. 490008
 FILE NO. 490008.001014
 DATE: 11/28/08
 OCEPA DRAWING NO. 3G
 DRAWING 13 OF 56

OHIO VALLEY ELECTRIC CORP.
 KYGER CREEK PLANT
 CHESHIRE OHIO
 KYGER CREEK PLANT LANDFILL
 GENERAL PHASING PLAN

DWG. NO. 15-30501-13-D
 SCALE: 1"=100'
 CIVIL ENGINEERING DIVISION

APPROVED BY: [Signature]
 DATE: 11/27/08
 AMERICAN ELECTRIC POWER
 1 RIVERSIDE PLAZA
 COLUMBUS, OH 43215

- NOTES:
- 1) AERIAL TOPOGRAPHY SHOWN WAS OBTAINED FROM HENDERSON AERIAL SURVEYS INC. (DATE OF PHOTOGRAPHY: 3-17-05). ADDITIONAL TOPOGRAPHY TO THE NORTH, SOUTH AND EAST WAS TAKEN FROM THE ADDISON, OHIO USGS QUADRANGLE DATED 1981.
 - 2) SEE DRAWINGS 37 THROUGH 39 FOR SPECIFIC PHASING INFORMATION.
 - 3) ABOVE-GRADE RESIDUAL WASTE PLACEMENT TO ACHIEVE CONTOURS SHOWN ON DRAWING 19. FINAL GRADE TO ACHIEVE CONTOURS SHOWN ON DRAWING 20.
 - 4) PHASES MAY BE DIVIDED INTO SMALLER SUBPHASES BASED ON ANTICIPATED FILLING NEEDS, CONSTRUCTION CONDITIONS, ETC.

