OHIO VALLEY ELECTRIC CORPORATION
3932 U. S. Route 23
P. O. Box 468
Piketon, Ohio 45661
740-289-7200

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

January 21, 2021

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
Kyger Creek Station's 2020 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 2020 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 publicly accessible internet site, which can be viewed at http://www.ovec.com/CCRCompliance.php.

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

Sincerely,

Tim Fulk
Engineer II

TLF:klr

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

January 15, 2021
File: 175530019.200.200

Ohio Valley Electric Corporation
Indiana-Kentucky Electric Corporation

Attention: Mr. Tim Fulk
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

Reference: 2020 CCR Rule Inspection
Annual Landfill Inspection
Kyger Creek Generating Station
Cheshire, Ohio

Dear Mr. Fulk,

Attached is the 2020 report from the annual landfill inspection for the Kyger Creek Generating Station's Class III Residual Solid Waste Landfill. The site visit was performed on October 27, 2020. Rainfall received by the site 72 hours prior to the visit was 0.27 inch. 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. A few erosion rills were observed.
- The access road to the West Sedimentation Pond is eroded and sliding. Repair the road or establish an alternative route for maintenance equipment. Mow the vegetation along the western edge of Phase 1 above the West Sedimentation Pond to understand potential stability concerns in this area (between the perimeter road and the pond access road). Characterize and remediate the sloughing as needed.
- 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 (ILCP) and address the erosion gullies along the southern and especially the western interior embankment. The scarps on the top and sides of the southern embankment are still present do not appear to have not enlarged from 2019. There is still substantial seepage at the toe of the embankment. This may indicate instability of this embankment with failure of the slope progressing into the impoundment. Attention to this area should be immediate.
- The continued development of the scarp on the northern perimeter road north of the ILCP has further compromised the guardrail and the roadside boulder barrier.

Reference: **2020 CCR Rule Inspection**
Annual Landfill Inspection
Kyger Creek Generating Station
Cheshire, Ohio

- Development of an Operations and Maintenance Manual is recommended, if not currently 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 with a GPS location table and photo log to assist in addressing the observations.

Please contact this office 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.

John G. Banton P.E.
Senior Project Engineer
Phone: (513) 842-8200 ext 8215
John.Banton@stantec.com

Jacqueline S. Harmon P.E.
Project Manager
Phone: (513) 842-8200 ext 8220
Jacqueline.Harmon@stantec.com

Attachment: 2020 CCR Rule Inspection Kyger Creek Landfill

c. Adam Sprague, P.E., Stantec

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2020 CCR Rule Inspection
Kyger Creek Landfill

Kyger Creek Generating Station
Cheshire, Ohio
Gallia County

January 15, 2021

Prepared for:

Ohio Valley Electric Corporation
Piketon, Ohio

Prepared by:

Stantec Consulting Services Inc.
Cincinnati, Ohio

Sign-off Sheet

This document entitled 2020 CCR Rule Inspection Kyger Creek Landfill was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of the 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 _____

(signature)

John G. Banton, P.E.

Reviewed by _____

(signature)

Adam Sprague, P.E.

Reviewed by _____

(signature)

Jacqueline S. Harmon, P.E.

Table of Contents

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 October 27, 2020.

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 (GCGHD) – RW3L and the Ohio Environmental Protection Agency (OEPA), Division of Materials and Waste Management (DMWM). Below is a summary of conditions for the day of the inspection:

Date performed:	October 27, 2020
Weather:	Mostly cloudy, breezy, 45ºF - 55ºF
Rainfall over last 72 hours:	October 24, 2020 – 0.20 inches October 25, 2020 – 0.04 inches October 26, 2020 – 0.00 inches October 27, 2020 – 0.03 inches

Precipitation data was collected by the National Centers for Environmental Information, NOAA, for Athens, Ohio, approximately 35 miles north of the landfill. Precipitation during the 72-hour period prior to the site visit was 0.27 inch.

Stantec's team that performed the fieldwork included:

- John Banton, P.E., Senior Project Engineer
  25 years of experience in geotechnical exploration and civil engineering design.
- Adam Sprague, P.E., Project Engineer
  8 years of civil 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 4,049,749 cubic yards. Inspections are being performed by plant personnel according to the CCR Rule at least once every seven days. Weekly reports performed between February 6 and August 27, 2020 and November 5 and 12, 2020 were provided for review. The GCGHD performs quarterly inspections in accordance with OEPA guidelines. A copy of the March 5, 2020 inspection by GCGHD and the OEPA was provided.

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.

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 the Ohio Valley Electric Corporation (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 2018 As-Built Map provided in Appendix C, Reference Drawings (OVEC, 2018). 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.

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 (2018 As-Built Map, Appendix C).

On October 27, 2020 there were no CCR filling operations observed. CCR is being placed within the landfill at a slope of approximately 3H:1V. Signs of instability such as sloughs or slides were not observed on the outer slopes.

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 around the active Phase 1 landfill footprint. Appendix A includes a plan of the active landfill with GPS-located points. The GPS points of the 2020 inspection (73 to 79) are numbered successively from the 2019 points. The photographic log is provided in Appendix B. Maintenance items noted during the 2019 landfill inspections that remain to be addressed are shown on the figure and log in Appendix A.

- The exterior temporary northern, western, and eastern slopes of Phase 1 are mowed sufficiently for a visual inspection, uniform, and vegetated. (Points 1, 46 to 56, Appendix A; Photos 1, 8, and 9, Appendix B)
- There are still several boulders and erosion features along with heavy vegetation in the ditches at the toe of the western exterior temporary slopes that may reduce the effectiveness of the ditches. (Points 2 and 51, Appendix A; Photos 2 and 10, Appendix B)
- Dense vegetation and small trees block the inlets of five pipe culverts that underlie the access road west of Phase 1. (Point 34, Appendix A; Photo 3, Appendix B)
- The severe erosion feature affecting the access road west of Phase 1 has enlarged. This feature is affecting the outlet area of the 5-pipe culvert. The storm water runoff through the feature likely contributed to slope slippage at the top of the west pond access road. (Points 36 and 37, Appendix A; Photos 4 and 5, Appendix B)

- The access road to the West Sedimentation Pond has been compromised by erosion and slope slippage and is overgrown with vegetation. (Points 38 and 73, Appendix A; Photo 6, Appendix B)

- Erosion, standing water, and vegetation were observed in the ditch from the Interim Leachate Collection Pond crossing the access road to the pond at the base of the east temporary slope of Phase 1. (Points 51, 58, and 77, Appendix A; Photos 10, 18, and 14, Appendix B)

- An erosion gully affects the access road to the Interim Leachate Collection Pond. (Point 75, Appendix A; Photo 15, Appendix B) The gully has enlarged since 2019.

- The scarp in the embankment above the access road to the Interim Leachate Collection Pond is unchanged in 2020. (Point 59, Appendix A; Photo 19, Appendix B)

- A scarp along the crest of the Interim Leachate Collection Pond is still visible but appears unchanged from 2019. No standing water was observed. (Points 61 to 62, Appendix A; Photo 20, Appendix B)

- The riprap of the exit channel of the Interim Leachate Collection Pond is sparse and covered in vegetation. (Point 63, Appendix A; Photos 16 and 17, Appendix A)

- Erosion gullies on the western and southern interior slopes of the Interim Leachate Collection Pond were observed. (Points 65, 59, and 76, Appendix A; Photos 18 and 21, Appendix B)

- Erosion was observed at the crest and slope of the embankment of the temporary sediment pond located at the base of the east external temporary slope of the active phase. The erosion appears to have been the result of the pond water overtopping of the embankment. About 1 to 2 feet of freeboard to the standing pool was observed along the crest of the embankment. (Point 77, Appendix A; Photo 14, Appendix B)

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. The condition of the area appears unchanged from 2019 in 2020. Slopes appear vegetated and stable.

- Vegetation growth to a height of 12 to 48 inches was observed on the western exterior slope of the pond, somewhat obscuring visual observation. (Points 42 to 43, Appendix A; Photo 7, Appendix B)

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. These gullies do not appear to have changed and do not appear to affect the operation of the pond.

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.

- Small areas void of vegetation were observed on the interior of the embankment (east side) at the Leachate Collection Pond. (Points 67 and 68, Appendix A; Photo 22, Appendix B)

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:

- Erosion and washout were observed in a ditch adjacent to the perimeter road to the stacker. (Near Point 72, Appendix A; Photos 23 and 24, Appendix B)

- The slip observed in 2019 forming along the perimeter road to the stacker has not developed further. (Point 72, Appendix A; Photo 24, Appendix B)

- A scarp that undermines the guardrail and boulder barrier on the downhill side of the north perimeter road and observed in 2019 has increased in size and effect on the guardrail and slope. (Points 57 and 75, Appendix A; Photo 15, Appendix B)

- A vegetation-filled inlet of a pipe culvert beneath the northern access road was still observed during the 2020 inspection. The larger vegetation appears dead but has not been removed. (Point 57, Appendix A)

4.0 RECOMMENDATIONS

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

Stability Issues:

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

- Repair erosion on crest and slope of the temporary sediment pond embankment at the base of the east temporary slope of Phase 1. Check inlet structure for blockage and consider adding overflow spillway.

- Maintain the vegetation along the interior and exterior slopes of the Interim Leachate Collection Pond. Redress the interior gullies as needed and characterize the slough on the southern side. The scarp on the south side of the embankment of the Interim Leachate Collection Pond appears unchanged from 2019 to 2020. However, the formation of a scarp on the crest may mean the embankment is unstable. A program of exploration and stability analyses leading to stability improvement is recommended.

- A wet area exists on the road below the scarp. The erosion feature on the road has increased in size. The eroded area should be repaired to maintain safe access to the pond. The source of water should be diverted.

Operational Issues:

- The access road to the West Sedimentation Pond is compromised and can no longer be traversed by maintenance vehicles. Repair road or establish alternative route to provide access for maintenance equipment.

- Several wet or standing water zones were identified during this field visit. 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 and vegetation 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.

- Small landslides beside the perimeter road should be monitored and regraded as necessary to maintain the integrity of the road.

5.0 REFERENCES

American Electric Power Service Corporation (AEPSC) (2019). “2019 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. October. GERS-19-028.

References
January 15, 2021

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Hull & Associates, Inc. (2009). "Ohio Valley Electric Corporation. Kyger Creek Plant Landfill, Phase 1 Construction Plans. Class III Residual Waste Facility. Cheshire, Ohio." Prepared for American Electric Power, Columbus, Ohio. March 19. Toledo, Ohio.

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Ohio Valley Electric Corporation (2020). "7-Day Inspection Checklist. Kyger Creek Plant. Landfill." Weekly reports for February 6 through August 27, 2020 and November 5 and 12, 2020..

Ohio Valley Electric Corporation (2018). "Kyger Creek Landfill 2018 As-Built Map." Drawing No. KYG-270834-1-R7, Revision date December 31, 2018. NAD83/NAVD88 Ohio South. Kclandfill2018gridphawse1-Model.pdf.

Professional Service Industries, Inc. (PSI) (2010). "Construction Certification Report. Area 1 Part 1, Kyger Creek Plant Landfill, 212 Shaver Road, Cheshire, Ohio 45620." PSI Report 114-80062-1531. November 30. Columbus, Ohio.

APPENDIX A – PLAN VIEW AND TABLE OF INSPECTION LOCATIONS

OVEC/IKEC
Ohio Valley Electric Corporation / Indiana-Kentucky Electric Corporation

Stantec

Legend

- 2020 Inspection Locations
- 2019 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 Sedmination Pond

0 400 800 Feet

1:4,800 (At original document size of 11x17)

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

175530019
Prepared by ANP on 2020-12-1
Technical Review by JB on 2020-12-11
Independent Review by JSH on 2021-1-8

Client/Project
Ohio Valley Electric Corporation
Kyger Creek Landfill

Figure No.
1

Title
2020 Annual CCR Landfill Inspection

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Survey Points - Kyger Creek Landfill Inspection			
ID No.	**Comment**	**Latitude**	**Longitude**
30	slope measurements (20 deg)	38.923919909	-82.168932575
31	boulder in ditch (typical)	38.924123396	-82.169345151
32	animal burrow (8 in.)	38.924275814	-82.169391218
33	erosion cut in perimeter ditch	38.924240176	-82.169444106
34	3-inch tree growth at pipe inlet	38.924974003	-82.169385703
35	vegetation growth at inlets	38.924994871	-82.169440538
36	erosion at pipes	38.925022358	-82.169532373
37	erosion road to West Sedimentation Pond	38.925346561	-82.169610858
38	lower scarp	38.925767468	-82.169668451
39	ash on West Sedimentation Pond road	38.926009914	-82.169767441
40	lower slope measurement (West Sedimentation Pond)	38.926236792	-82.170616308
41	mid-slope measurements (West Sedimentation Pond)	38.926260832	-82.170496713
42	begin scarp	38.926341654	-82.170285098
43	end scarp crest	38.926174482	-82.170424669
44	slope measurements map (15 deg)	38.925646369	-82.169321201
45	erosion in access road map	38.925699151	-82.169462432
46	ash on exterior slope	38.925870473	-82.169278514
47	animal burrow	38.926291615	-82.169036513
48	slope measurements int. (6 deg)	38.926722266	-82.168426184
49	possible seep location	38.925351540	-82.164117075
50	possible seep location	38.925293697	-82.164296570
51	erosion rills new slope	38.925428182	-82.164413603
52	erosion rills new slope	38.925787991	-82.165655159
53	standing water with sheen	38.926450351	-82.166636051
54	standing water	38.926600233	-82.167129665
55	erosion gulley in ditch	38.926689231	-82.167762568
56	slope measurements ash (19 deg)	38.926515311	-82.167646453
57	erosion of access road	38.925929920	-82.162381212
58	standing water with erosion	38.925188571	-82.161871702
59	erosion gulley affecting access	38.924989682	-82.162017920
60	wet area with ash on crest	38.924627293	-82.162920434
61	begin scarp	38.924687414	-82.162650640
62	end of scarp	38.925053068	-82.162194445
63	sparse riprap in channel	38.925305106	-82.162292859
64	tire rutting in crest	38.925427169	-82.162454798
65	erosion gulley through road wet	38.925387630	-82.163018668
66	slope erosion	38.924453601	-82.163532317
67	bare spots (Leachate Collection Pond)	38.925787663	-82.157540190
68	bare spots (Leachate Collection Pond)	38.925896412	-82.157851819
69	erosion interior slope (East Sedimentation Pond)	38.925822540	-82.158767054
70	standing water	38.925426390	-82.158420799
71	standing water	38.925108659	-82.158118999
72	slip in road	38.920328423	-82.154519721
73	west pond road erosion gulley	38.925234652	-82.169557274
74	Phase 1 exposed ash crest div berm	38.925414257	-82.164764017
75	access road landslide	38.925914161	-82.162443057
76	corner slide	38.925422884	-82.162939473
77	Phase 1 pond overtop erosion scour hole	38.924284042	-82.163217061

APPENDIX B – PHOTOGRAPHIC LOG

Photo 1

Temporary slope of west side of active phase showing uniform and vegetated 2.75H:1V slope, top. (Point 30, Appendix A)

Photo 2

Boulders in ditch on west side of active phase. (Point 31, Appendix A)

Photo 3

Inlets of five HDPE pipes on the west side of the active phase, with dense vegetation, showing larger trees removed since 2019 (Point 34, Appendix A)

Photo 4

Erosion feature in road above outlet of five HDPE pipes on west side of active phase, bottom. (Point 36, Appendix A)

Photo 5

Erosion along access road to West Sedimentation Pond. Erosion, slippage, and dense ground cover have compromised the road. (Point 37, Appendix A)

Photo 6

Scarp above access road to West Sedimentation Pond, top. Access road to pond and hillside above showing slippage, 3-foot deep erosion gullies, and dense ground cover, bottom. (Point 38, Appendix A)

Photo 7

Denser vegetation along west side of the West Sedimentation Pond embankment, bottom, (Points 42 to 43, Appendix A)

Photo 8

Temporary slope on west end of active phase showing vegetated slope and ditch, bottom. (Points 46 to 47 Appendix A)

Photo 9

Overview of north side of active area showing vegetated slopes. (Points 49 to 56, Appendix A)

Photo 10

Vegetated erosion feature on north side temporary slope of active area. (Point 51, Appendix A)

Photo 11

Edge of active area at top of north side temporary slope. (Point 74, Appendix A)

Photo 12

North face of active phase. (Point 74, Appendix A

Photo 13

Slope above temporary sediment pond at base of east external temporary slope of active phase. (Point 77, Appendix A)

Photo 14

Erosion of slope of embankment of temporary sediment pond at base of east external temporary slope of active phase likely caused by pond water level overtopping embankment (Point 77, Appendix A)

Photo 15

Erosion/scarp along south side of northern access road, bottom. (Point 75, Appendix A)

Photo 16

Vegetation-filled inlet of road culvert on north side of northern access road across from Point 57, (Appendix A), bottom.

Photo 17

Erosion and standing water at access road to Interim Leachate Collection Pond. (Point 58, Appendix A)

Photo 18

Erosion gully affecting access road to Interim Leachate Collection Pond. Road was wet in this area. (Point 59, Appendix A)

Photo 19

Scarp on Interim Leachate Collection Pond external slope of embankment (near Point 59, Appendix A)

Photo 20

Scarp along south side of Interim Leachate Collection Pond embankment. (Points 61 to 62, Appendix A)

Photo 21

West side of Interim Leachate Collection Pond Embankment in area of erosion features and ground apparently saturated from seepage from cut slope to west not in photo. (Point 76, Appendix A)

Photo 22

Leachate Collection Pond showing little change in 2020, bottom. Slopes appeared well-vegetated and stable. (Points 67 to 68, Appendix A)

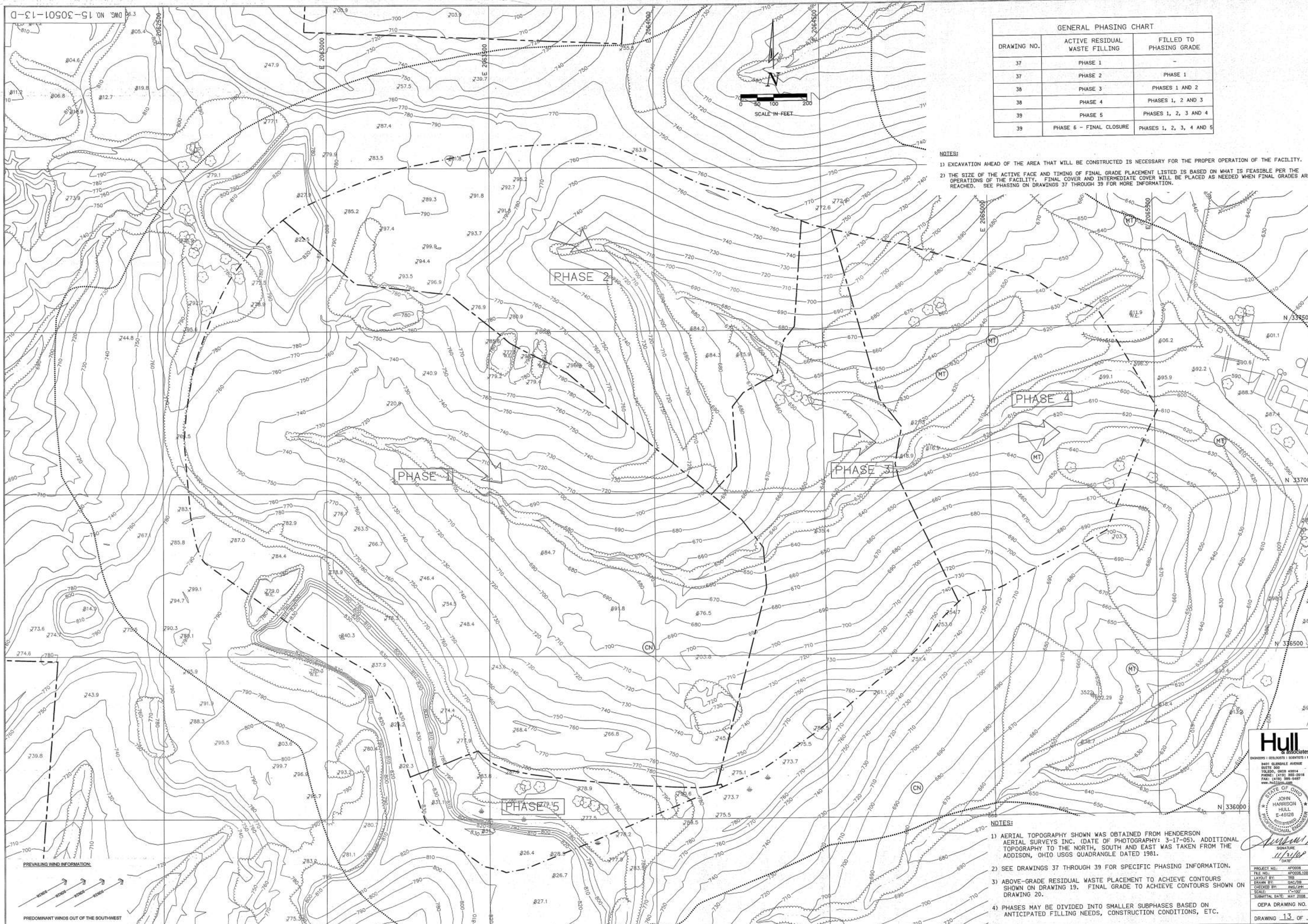
Photo 23

Erosion/washout on uphill side of perimeter access road to stacker. (near Point 72, Appendix A)

Photo 24

Slip forming on downhill side of perimeter access road to stacker. (Point 72, Appendix A)

APPENDIX C – REFERENCE DRAWINGS



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
- 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

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.

DATE	NO.	DESCRIPTION	APPD.
11/20/08	D	NOD 3 RESPONSE	
5/28/08	C	NOD 2 RESPONSE	JHH
9/25/07	B	NOD 1 RESPONSE	JHH
2/28/07	A	ISSUED FOR PERMIT	JHH

REVISIONS

s:/mt/15/geo_hydro_site/vendor/hull/15-30501-09

Hull & associates, inc.
ENGINEERS | GEOLOGISTS | SCIENTISTS | PLANNERS
3401 GLENDALE AVENUE
SUITE 300
TOLEDO, OHIO 43614
PHONE: (419) 385-2018
FAX: (419) 385-5487
www.hullinc.com

STATE OF OHIO
JOHN HARRISON HULL
E-45126
REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

11/21/08
DATE

PROJECT NO.:	APO008
FILE NO.:	APO006.100.0116
LAYOUT BY:	TRB
DRAWN BY:	GAC/DB
CHECKED BY:	AMG/JHH
SCALE:	1"=100'
SUBMITTAL DATE:	MAY 2008

OEPA DRAWING NO. 3G

DRAWING 13 OF 56

OHIO VALLEY ELECTRIC CORP.

KYGER CREEK PLANT

CHESHIRE OHIO

KYGER CREEK PLANT LANDFILL

GENERAL PHASING PLAN

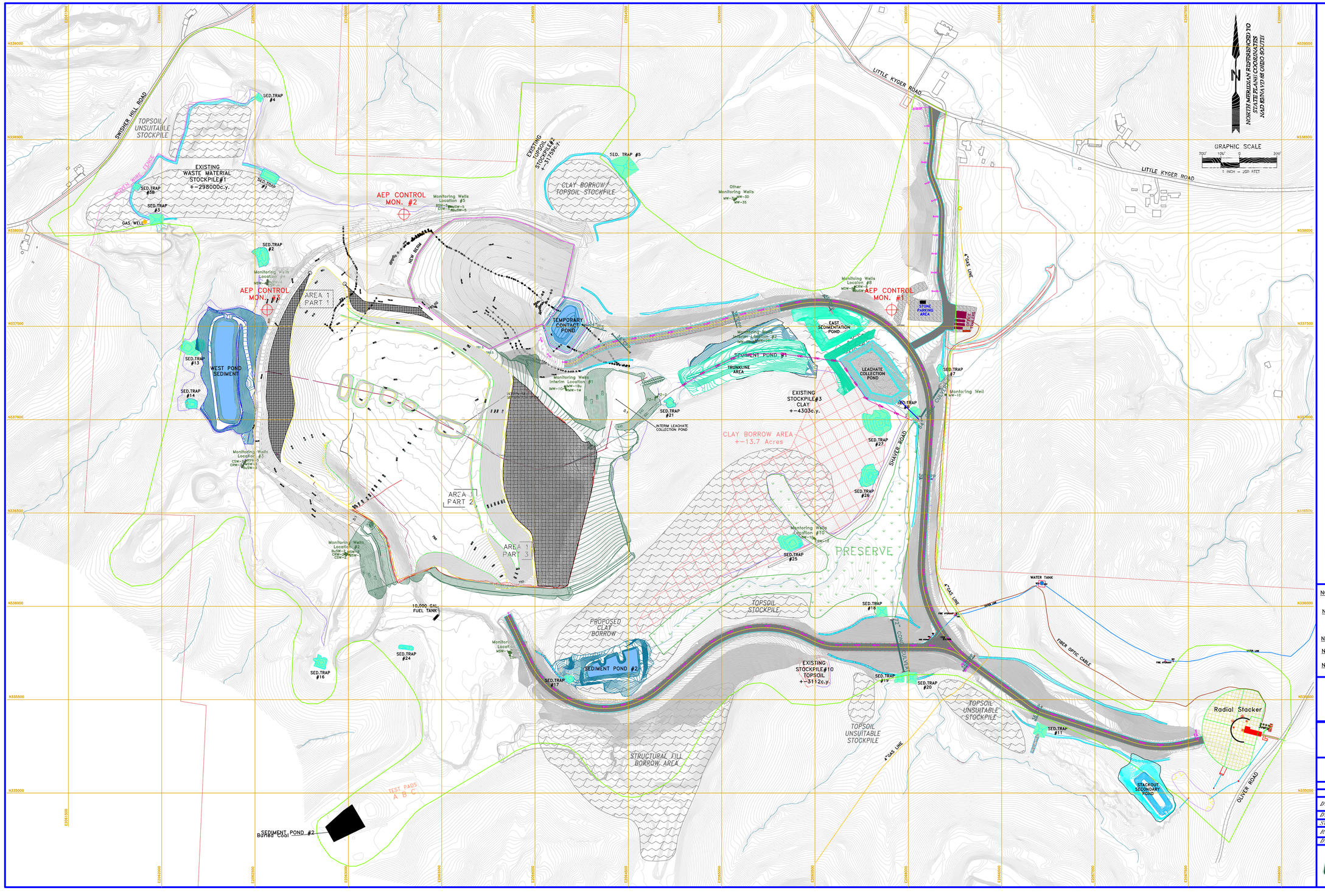
DWG. NO. 15-30501-13-D

SCALE: 1"=100'

CIVIL ENGINEERING DIVISION

DR:
CH:
ENGR:
PROJ. ENGR.
DATE: 11/7/08
APPROVED BY

AMERICAN ELECTRIC POWER
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215



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" Schedule7
- 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 Temporaty Cover
- Denotes Waste
- Denotes Protective Cover
- 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

OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK LANDFILL

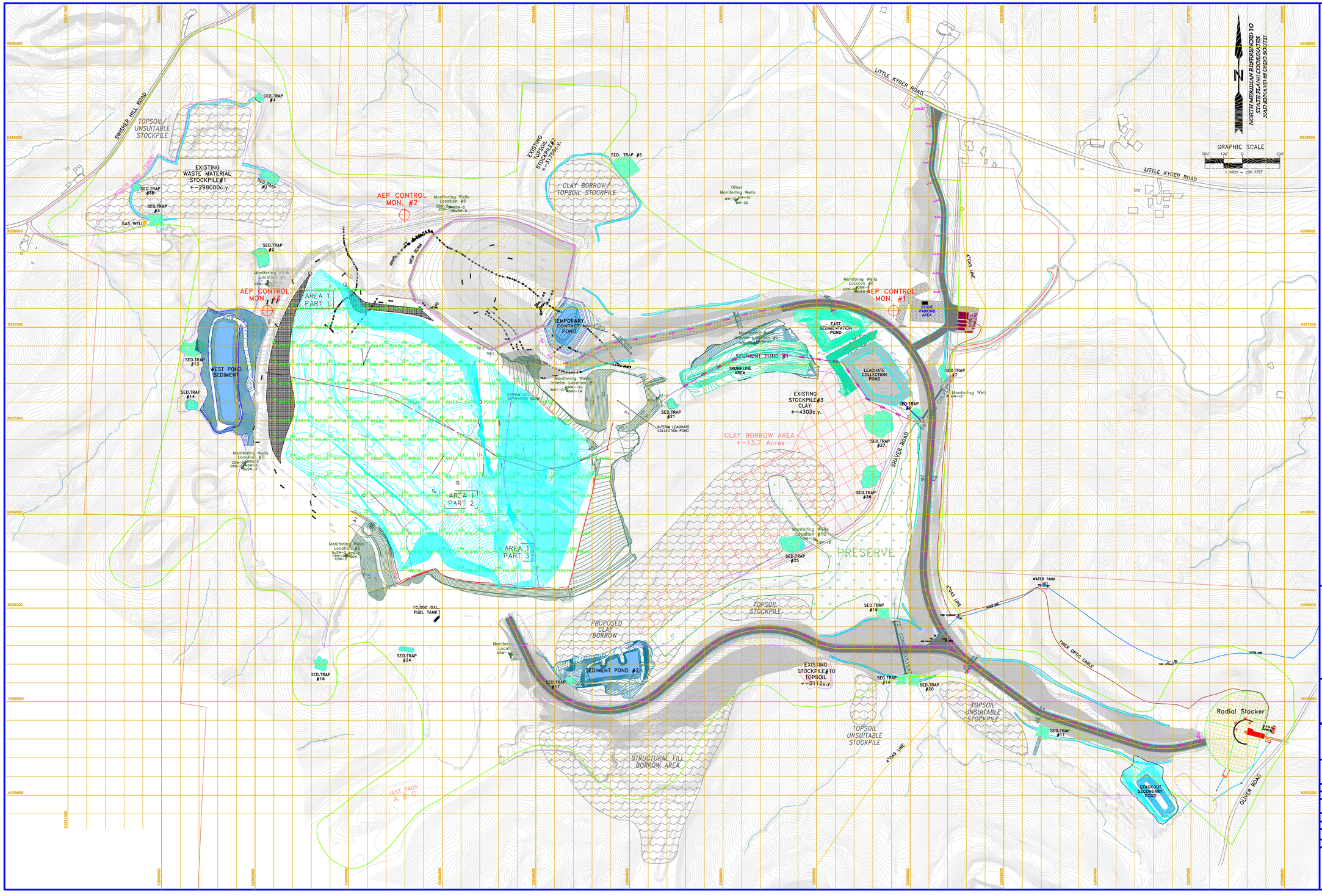
CHESHIRE OHIO

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-27834-1-R7
SCALE: 1" = 200'
Revision Date: 31 DECEMBER 2017
Drawn By: R. A. Shouldis and Paul R. Hutchins

OVEC IKEC



LEGEND

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- Denotes Waste
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- Dumpster Areas

NORTH AMERICAN REFERENCE DATUM OF 1983 (NAD83) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) STATE PLANE COORDINATES ARE ELEVATIONS

GRAPHIC SCALE
200' 100' 0 200'
1 INCH = 200 FEET

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

OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK LANDFILL

CUSHURR OHIO

KYGER CREEK LANDFILL
2018 ASBUILT GRID MAP

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

Drawing Name: KYGER CREEK LANDFILL ASBUILT MAP
Drawing Number: KYG - 270834 -2 -R8
SCALE: 1" = 200'
Revision Date: 31 DECEMBER 2018
Drawn By: R. A. Shouldis and Paul R. Hutchins

OVEC/IKEC