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

January 15, 2016

File: 175534018

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: 2015 CCR Rule Inspection
Initial Annual Landfill Inspection
Clifty Creek Generating Station
Madison, Indiana

Dear Mr. Coriell,

Attached is the 2015 initial annual landfill inspection for the Clifty Creek Generating Station's Type I Restricted Waste Landfill. The site visit was performed on November 19, 2015. Approximately two inches of rainfall were received by the site prior to the visit and should be considered during the maintenance recommendations. As a summary:

- In general, the slopes of the active coal combustion residual (CCR) landfill were uniform and well vegetated. Inactive waste placement areas had temporary soil cover in place and were vegetated. The vegetation height was relatively uniform and maintained.

- Surface water channels were riprap lined with some maintenance needed to reduce vegetation obscuring visual inspection; however, flow was not impeded. Pipes and culverts were actively flowing during the inspection.

- The erosion and sediment control measures such as rock check dams were in place during this wet season. Continue maintenance as needed for the best management practices. Address erosion features as part of the maintenance activities.

- Signs of slope instability or excessive ponding within the active cells were not noted during the site visit.

Observations and recommendations are detailed in the associated initial annual landfill inspection report. A figure is included with GPS location points to assist in addressing the observations. A photographic log is also provided.

Reference: 2015 CCR Rule Inspection
Initial Annual Landfill Inspection
Clifty Creek Generating Station
Madison, Indiana

Please contact us with any questions or concerns. We appreciate the opportunity to continue to work with the Clifty Creek Generating Station and the Indiana-Kentucky 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

Stan A. Harris, P.E.
Senior Principal
Phone: (513) 842-8200 ext 8211
Fax: (513) 842-8250
Stan.Harris@stantec.com

Attachment: 2015 Initial Annual Landfill Inspection Report

c. Don Fuller, Kyle Blakley

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2015 CCR Rule Inspection
Clifty Creek Landfill

Clifty Creek Generating Station
Madison, Indiana
Jefferson County

Prepared for:
Indiana-Kentucky Electric Corporation
Piketon, Ohio

Prepared by:
Stantec Consulting Services Inc.
Cincinnati, Ohio

January 15, 2016

Sign-off Sheet

This document entitled 2015 CCR Rule Inspection Clifty Creek Landfill was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Indiana-Kentucky Electric Corporation (IKEC) (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)

Kyle R. Blakley, P.E.

Reviewed by _____
(signature)

Jacqueline S. Harmon, P.E.

Reviewed by _____
(Signature)

Stan A. Harris, P.E.

JACQUELINE S. HARMON
REGISTERED
No. 10911138
STATE OF
INDIANA
PROFESSIONAL ENGINEER

1/15/2016

Stantec

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LIST OF APPENDICES

1.0 OVERVIEW

Stantec Consulting Services Inc. (Stantec) performed the initial annual landfill inspection of the existing coal combustion residuals (CCR) landfill at the Clifty Creek Generating Station in Madison, Indiana.

This initial 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 Restricted Waste Site Type I, operating permit number 39-04, managed in accordance with the Indiana Department of Environmental Management's (IDEM's) regulations. Below is a summary of conditions for the day of the inspection:

Date performed:	November 19, 2015
Weather:	Clear, sunny, breezy, 58°F - 64°F
Rainfall over last 72 hours:	November 16, 2015 – 0.02 inches November 17, 2015 – 0.11 inches November 18, 2015 – 1.87 inches

Precipitation data was collected from the weather station at Bowman Field in Louisville, Kentucky (KLOU), which is located approximately 36.5 miles from the landfill.

Stantec's team that performed the fieldwork included:

- Jacqueline S. Harmon, P.E., Senior Associate/Geotechnical Engineer
  18 years of experience in geotechnical engineering, including dams, levees, and CCR storage facility closure.

- Kyle R. Blakley, P.E., Senior Project Engineer/Geotechnical Engineer
  6 years of geotechnical engineering experience for supervision of geotechnical field explorations, design of dams, landslide remediation, and CCR storage facility design, closure, and operation.

The estimated volume of CCRs contained in the landfill is 1,435,000 cubic yards.

IDEM regulations require monthly inspections of the landfill facility, which are performed by plant personnel. The 2015 monthly reports were provided for review prior to the site visit. Inspections of

the landfill facility have commenced in accordance with the CCR Rule as of October 17, 2015, and are being conducted at least once every seven days.

IDEM also routinely inspects the facility throughout the year. Annual submittals to IDEM include drawings showing existing conditions and a five-year estimate of site conditions.

Fieldwork was coordinated with Mr. Danny Hunt, Clifty Creek Station's Landfill Operator. Observations were briefly discussed with onsite personnel during and after completion of the field activities.

2.0 DESCRIPTION OF CLIFTY CREEK LANDFILL

The Clifty Creek Generating Station is a coal-combustion generating station located in Madison, Jefferson County, Indiana. It is owned and operated by Indiana-Kentucky Electric Corporation (IKEC), a wholly-owned subsidiary of Ohio Valley Electric Corporation (OVEC). The Clifty Creek Generating Station began operating in 1955 and currently consists of six generating units with a total generating capacity of 1,304 megawatts.

In the late 1980s, IKEC converted to dry fly ash collection facilities at the plant and transitioned to a dry ash landfill. IKEC submitted a restricted waste construction/operation permit application to begin landfilling boiler slag and fly ash produced by the Clifty Creek Station to IDEM in 1986. IDEM approved the fly ash landfill permit application as a Type III restricted waste landfill in 1988, and operations began in 1991.

In December 2006, IKEC applied for a major modification to its landfill permit to modify the existing Type III landfill to a Type I to enable the landfill to accept synthetic gypsum materials generated by the flue gas desulfurization (FGD) systems that were being constructed at that time. IKEC's major permit modification application proposed repurposing 109 acres of the originally permitted 200-acre Type III facility as a Type I facility to accept fly ash, boiler slag, synthetic gypsum, and other miscellaneous gypsum related materials. IDEM approved IKEC's major permit modification in April 2008.

The landfill has a capacity of 13.9 million cubic yards (FMSM, 2006) and includes:

- A composite liner system consisting of a Type 3 geosynthetics clay liner and a 30-mil flexible polyvinyl chloride (PVC) geomembrane in all phases;
- A leachate collection system, directing flow eastward from part of Phase 1 to the West Boiler Slag Pond and the remainder flowing westward to the Landfill Runoff Collection Pond;
- A contact and non-contact surface water management system, including sedimentation ponds, multiple sediment traps, drainage channels, and chimney drains;

- A groundwater monitoring system, and
- A final closure cap design.

Initial site development and construction activities for Phase 1 of the new Type I landfill began in May 2008. Subphases IA, 1B, and portions of 1C1 were constructed and certified for waste by late 2012. Other features associated with the landfill include:

- West Boiler Slag Pond – a permanent pond accepting sluiced boiler slag, which is periodically dredged and transported to the landfill for beneficial re-use. The pond also accepts most of the leachate from Subphases 1A and 1B, as well as surface water from the landfill.
- Landfill Runoff Collection Pond – a permanent pond at the southwestern end of the landfill that accepts the remainder of the leachate and surface water from Subphases 1A, 1B, 1C, and the area between Phase I and the pond.

At the time of this initial annual inspection, the landfill consisted of Subphases 1A and 1B, which are subdivided into Areas 1A1, 1A2, 1B1, and 1B2. Areas 1A1 and 1B1 were approved for waste placement in 2008. According to the quarterly plot from September 2015, the two areas are nearing the top of CCR grades and have been covered with temporary soil and seeded. Subphases 1A2 and 1B2 are currently active and receiving CCRs, which are being placed in one-foot lifts in accordance with the facility's Construction Quality Assurance/Quality Control Plan (FMSM, 2008). Portions of Subphase 1C have been constructed, but are currently inactive and being managed with temporary cover and vegetation. See Figure 1 in Appendix A for a plan view of the CCR facility.

3.0 OBSERVATIONS

The following observations were made during the site visit within the Type I active Subphase I (A through C) footprint and the applicable surface drainage features toward the West Boiler Slag Pond:

3.1 SURFACE CHANNELS TO WEST BOILER SLAG POND

Four riprap-lined surface water channels are constructed east of the Type I active landfill. The channels nearest the paved haul road and the southern ridge (Devil's Backbone) control flow from the surrounding watershed. The two channels in the middle are intended to manage stormwater flow once final cover is placed in Phase I. Flow from the four channels moves eastward to the West Boiler Slag Pond and its associated National Pollutant Discharge Elimination System (NPDES)-permitted outfall. This section includes the observations for the stormwater channels only.

- The northwest final grade surface/storm water channel Conspan outlet has a trapezoidal shape with riprap and gabions in place as designed (Point 1, Appendix A). The amount of vegetation and debris in the channel is low and does not impede proper function of the channel (Photo 1, Appendix B). This channel lies just south of the paved haul road east of the landfill. See reference Drawing No. 16-30870-05 in Appendix C, provided to clarify the four surface water channels observed east of the Type I landfill.

- The northwest final grade surface/storm water channel includes two headwalls passing under the access road past the temporary construction office trailers. A slight bow in the crown of the southern of the two pipes was observed; however, no depression was noticed in the road, and flow is not impeded. Minor grass was present at the pipe outlets. Riprap and gabions were in place. (Photo 2)

- Small amounts of CCRs are present in the northwest-southwest final grade channel. (Photo 3)

- An area approximately 18 inches long and the width of the channel was missing gabions containing riprap; however, riprap had been placed in the gap and appears stable and buttressed. (Photo 4; Point 2, Appendix A)

- Some grass and vegetation was present in the channel on the upstream side of Conspan closest to the West Boiler Slag Pond. The vegetation present did not impede proper function of the channel. The Conspan is a preformed concrete culvert and foundation represented on reference Drawing No. 16-30870-05 in Appendix C and a 72-lf 20'x5' culvert at 1.25% (Detail 2/23). (Photo 5)

- The West Boiler Slag Pond Conspan flow appears unrestricted with slight vegetation growing. (Photo 6)

3.2 FINAL GRADE SURFACE/STORM WATER CHANNELS – EAST OF PHASE I TYPE I LANDFILL

As discussed in Section 3.1, the final grade surface/storm water channels are the two interior channels flowing eastward from the landfill into the West Boiler Slag Pond and discharge through its monitored NPDES-permitted outfall.

- The inlet headwall for the northwest final grade channel has a crack from the top of the headwall to the pipe. Flow is not impeded; this is a maintenance observation and does not impede flow. (Photo 7; Point 3, Appendix A)

- Significant amounts of reeds and vegetation are present in the ditch at the northeast corner of the closed Type III landfill, which collects surface water and leachate from the Type I landfill. Flow was not impeded. (Photo 8)

- Significant amounts of CCRs and vegetation were observed in the channel around the southern perimeter of the closed Type III landfill. Interviews with plant personnel suggested that the CCRs accessed the final cover channel during a heavy rainfall event. Maintenance activities were in progress to address the CCR movement. (Photo 9; Points 4 and 6, Appendix A)

- Two bare spots were observed in close proximity to one another between the two southeast storm water channels approaching the tower. One was approximately six feet in diameter; the other was about two feet in diameter. (Photo 10; Point 5, Appendix A)

- Several trees one to three inches in diameter were observed near the base of the tower in the southeast storm water channel. (Photo 11; Point 7, Appendix A)

- Two significant erosion gullies were observed near the southeast corner of Subphases 1A1/1B1, but outside the limits of waste placement. They are near the surface water channel. One gully is approximately 3.5 feet wide by 2 feet deep, while the other is approximately 1.5 feet wide and 1.5 feet deep. (Photo 12; shown on Appendix A)

- CCR material was observed in the surface channel that runs adjacent to the haul road, next to the truck wash station, on the closed Type III landfill side. (Photo 13; Points 8 and 9, Appendix A)

3.3 PHASE I TYPE I LANDFILL

The Phase I Type I landfill is relatively new. No subphases within the waste footprint have been capped and closed. Areas nearing final grades have temporary cover and are vegetated. The slopes are relatively uniform and mowed.

- Subphases 1A1 and 1B1 were observed to be nearly built to final CCR grades. The subphases have been temporarily covered with six inches of soil, and vegetation has been established.

- Significant amounts of CCRs have collected in the northwest grass channel past the rock check dam and the east channel between the Type I and Type III landfills. Water has pooled in both channels, but more significantly in the east channel. (Photos 14 and 15)

- A bare spot was observed with erosion control netting exposed approximately 1/3 of the way up the northern slope of Subphases 1A1/1B1. (Photo 16)

- Two holes, approximately two to three feet deep, were observed on the northeast slope of Subphases 1A1/1B1. Erosion control netting was visible spanning across the holes. (Photo 17; Point 13, Appendix A)

- The temporary cover vegetation on Subphases 1A1/1B1 was generally less than six inches tall and appeared to be maintained. Few zones of taller weeds were observed.

- Two relatively small erosion rills were observed on the temporary cover of the eastern slope of Subphases 1A1/1B1. (Photo 18; Point 14, Appendix A)

- Small, woody vegetation was observed to be growing on the lower slope on the northern and eastern sides of Subphases 1A1/1B1. (Photo 19)

- An erosion rill runs from top to bottom of the eastern slope of Subphases 1A1/1B1 near the northeast corner. It is approximately 1.5 feet wide by 1 foot deep. (Photo 20; Point 16, Appendix A)

- Approximately 10 small rills have distressed the vegetation and exposed the erosion control netting within the temporary cover at the toe of the southeast corner of Subphases 1A1/1B1 on the east side. (Photo 21)

- The surface/storm water channel at the northeast corner of Subphase 1A1, downstream of the rock check dam, has eroded to expose holes/drops deeper than approximately four feet. These are undercutting slope and channel on the Devil's Backbone side and on top of the flatter Subphase 1B1. (Photo 22; Point 18, Appendix A)

- The temporary cover outslopes of Subphase 1A1/1B1 were measured to be between approximately 4H:1V and 4.7H:1V. The temporary top slope of the subphase was measured to be approximately 14H:1V. Permitted final cover grades for the outslopes are 4H:1V along the paved haul road and 10% on the top slope towards the south.

- A bare area was observed on the southeast corner of Subphase 1B1, approximately 25 feet wide by 15 feet long. (Photo 23, Point 23, Appendix A)

- An erosion rill was noted on the protective cover at the northeast corner of the active Subphase 1A2 on the Devil's Backbone slope. (Photo 24)

- Vegetation on the southern slope of Subphase 1C1 is approximately six inches tall. In Subphases 1A2/1B2, a minor percentage of vegetation is approximately two feet tall; whereas in Subphase 1C1, the minor percentage of vegetation is three to four feet tall. (Photo 25)

- The slope of the southern side of Subphase 1C1 was measured to be approximately 3H:1V. This is a temporary slope within a constructed, but inactive, cell in Subphase 1C. It is covered with temporary soil cover and vegetated.

- Water and CCRs were observed running through the surface ditch on Subphase 1C1 from the active subphase as designed. It is being contained by the rock check dams on both the north and south side ditches. This is a contact water channel controlling runoff from the active cell towards the Landfill Runoff Collection Pond. (Photo 26)

- An erosion gully was encountered on the slope near the west end of Subphase 1C toward the landfill runoff collection pond. The gully is approximately 1 foot wide by 1.5 feet deep. (Photo 27; Point 26, Appendix A)

- The surface/storm water channel running down Devil's Backbone on the south side of Subphase 1C is severely eroded from nearly the top of the slope down to the area of boiler slag beneficial reuse subgrade placement. (Photo 28)

- The leachate pipe outlet is obstructed by vegetation. (Photo 29)

4.0 RECOMMENDATIONS

The following recommendations are offered for the Clifty Creek Station. The recommendations are not listed in order of priority.

Stability Issues:

None noted.

Operational Issues:

- Conduct field surveys to measure current topography and compare to design geometry. Regrade surface as needed to conform to design. Areas near to final completion grade are recommended to be capped, closed, and vegetated (Subphases 1A1 and 1B1).

Maintenance Issues:

- Continue to conduct field inspections to limit CCR encroachment into noncontact areas. This includes in the vicinity of sediment traps and other areas where surficial flow of water occurs. Continue to maintain rock check dams to provide adequate drainage for stormwater and to alleviate excessive hydrostatic pressures at the toe of the slopes.

- Maintain the vegetation along the exterior slopes and within the surface drainage channels to facilitate inspections by removing taller weeds and woody vegetation or reestablishing vegetation as needed.

- Remove excess vegetation from drainage channels, pipe inlets, and outlets. Particularly, the northeast surface/storm water channel inlet pipes and the leachate collection system outlet pipes are overgrown and should be maintained to allow for visual inspection. Flow was observed by Stantec and plant personnel at both the inlet and outlet pipes.

- Continue to repair erosion features, reestablish vegetation, and continue to monitor in future inspections.

- Continue to monitor the surface water channel headwalls and culverts east of the landfill. Repair as needed.

5.0 REFERENCES

Fuller, Mossbarger, Scott & May Engineers, Inc. (FMSM), 2008. Clifty Creek Fly Coal Ash Landfill Construction. Construction Quality Assurance/Quality Control Plan. Coal Ash Landfill, Type I Restricted Waste Landfill. Attachment 21 (Revised). May 13.

Fuller, Mossbarger, Scott & May Engineers, Inc. (FMSM), 2006. Permit Drawings. Indiana-Kentucky Electric Corporation. Clifty Creek Coal Ash Landfill Modification. Jefferson County, Madison Township, Indiana. Prepared for American Electric Power, Columbus, Ohio. November. Cincinnati, Ohio.

Indiana Department of Environmental Management, 2008. "Approval of Major Modification and Renewal of Solid Waste Facility Permit FP 39-04." Letter to Indiana-Kentucky Electric Corporation, April 15, 2008.

Indiana-Kentucky Electric Corporation, 2006. "Type I Restricted Waste Landfill Permit Application, Coal Ash Landfill, Clifty Creek Power Plant, Madison, Jefferson County, Indiana, Attachment 22 – Design Report." Prepared by Fuller, Mossbarger, Scott, & May Engineers, Inc. November 2006.

Indiana-Kentucky Electric Corporation, 2006. "Type I Restricted Waste Landfill Permit Application, Coal Ash Landfill, Clifty Creek Power Plant, Madison, Jefferson County, Indiana, Attachment 23 – Report of Geotechnical Exploration." Prepared by Fuller, Mossbarger, Scott, & May Engineers, Inc. November 2006.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. January.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. February.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. March.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. April.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. May.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. June.

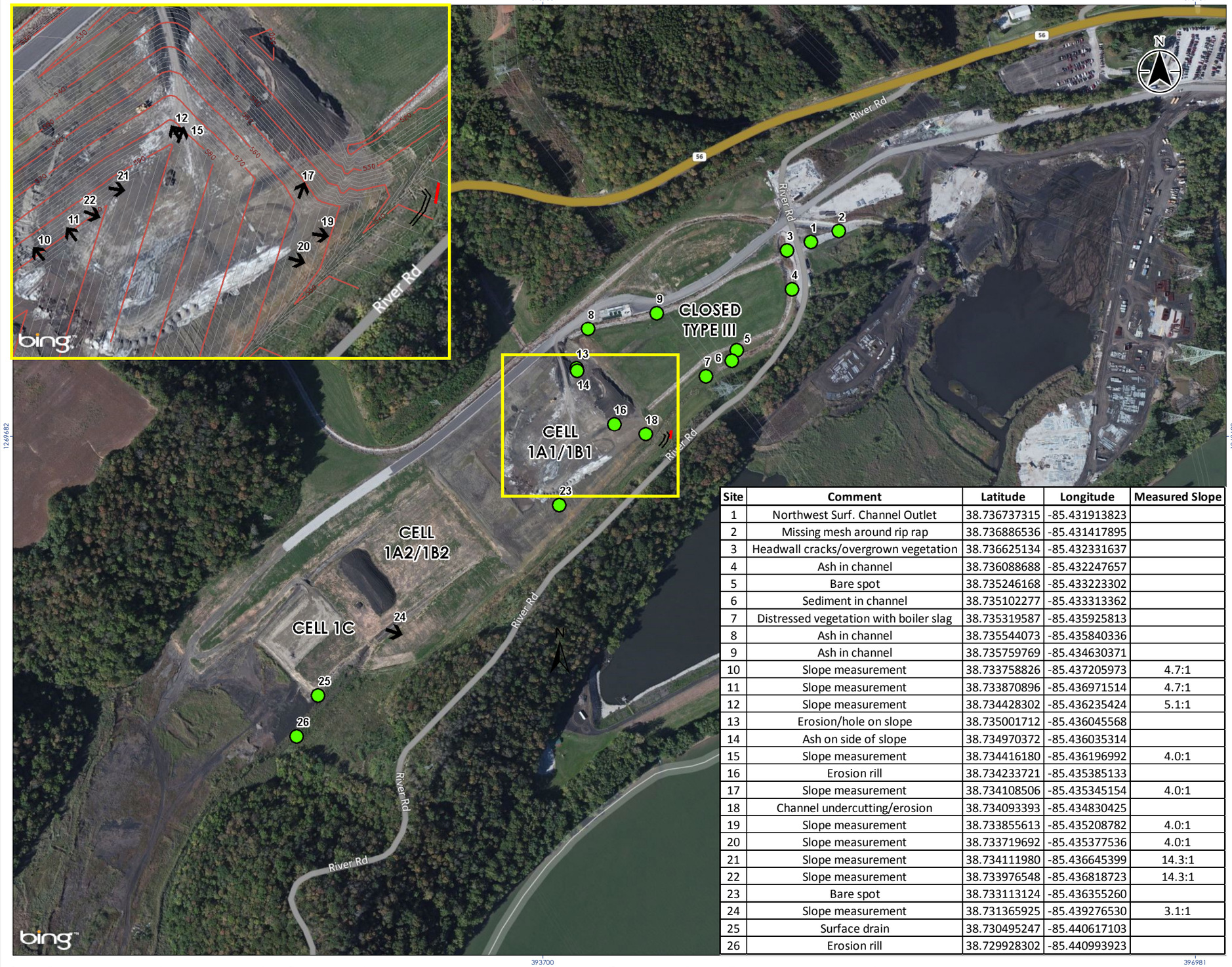
Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. July.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. August.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. September.

Indiana-Kentucky Electric Corporation, 2015. "Monthly Landfill Inspection." Clifty Creek Landfill. October.

APPENDIX A
FIGURE 1 – PLAN VIEW



Site	Comment	Latitude	Longitude	Measured Slope
1	Northwest Surf. Channel Outlet	38.736737315	-85.431913823	
2	Missing mesh around rip rap	38.736886536	-85.431417895	
3	Headwall cracks/overgrown vegetation	38.736625134	-85.432331637	
4	Ash in channel	38.736088688	-85.432247657	
5	Bare spot	38.735246168	-85.433223302	
6	Sediment in channel	38.735102277	-85.433313362	
7	Distressed vegetation with boiler slag	38.735319587	-85.435925813	
8	Ash in channel	38.735544073	-85.435840336	
9	Ash in channel	38.735759769	-85.434630371	
10	Slope measurement	38.733758826	-85.437205973	4.7:1
11	Slope measurement	38.733870896	-85.436971514	4.7:1
12	Slope measurement	38.734428302	-85.436235424	5.1:1
13	Erosion/hole on slope	38.735001712	-85.436045568	
14	Ash on side of slope	38.734970372	-85.436035314	
15	Slope measurement	38.734416180	-85.436196992	4.0:1
16	Erosion rill	38.734233721	-85.435385133	
17	Slope measurement	38.734108506	-85.435345154	4.0:1
18	Channel undercutting/erosion	38.734093393	-85.434830425	
19	Slope measurement	38.733855613	-85.435208782	4.0:1
20	Slope measurement	38.733719692	-85.435377536	4.0:1
21	Slope measurement	38.734111980	-85.436645399	14.3:1
22	Slope measurement	38.733976548	-85.436818723	14.3:1
23	Bare spot	38.733113124	-85.436355260	
24	Slope measurement	38.731365925	-85.439276530	3.1:1
25	Surface drain	38.730495247	-85.440617103	
26	Erosion rill	38.729928302	-85.440993923	

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

Stantec

- Slope Measurement
- Inspection Location
- 1.5' x 1.5' Erosion Rill
- 3.5' x 2' Erosion Rill

0 500 1,000 Feet
1:6,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 StatePlane Indiana East FIPS 1301 Feet
2. Base features - BING
3. Ortho-Imagery does not represent current conditions.
4. Inset Topo shows Permitted Top of Cover.

Project Location
Clifty Creek Plant
Jefferson County, IN

175534018
Prepared by ANP on 2016-1-13
Technical Review by KB on 2015-12-17
Independent Review by JH on 2016-1-13

Client/Project
Indiana - Kentucky Electric Corporation
Clifty Creek Plant

Figure No.
1

Title
2015 Initial CCR Inspection

Figure 1

APPENDIX B
PHOTOGRAPHIC LOG

Photo 1

Northwest final grade surface water channel.

Photo 2

Northwest final grade surface water channel pipe outlet. Slight bow in pipe and minor grass in channel.

Photo 3

Small amounts of boiler slag mixed in with riprap and gabion baskets.

Photo 4

Wire mesh missing around riprap in surface water channel.

Photo 5

Grass and vegetation in surface water channel approaching Conspan near the West Boiler Slag Pond.

Photo 6

Conspan inlet near West Boiler Slag Pond.

Photo 7

Cracks in headwall for inlet of pipe to the northwest final grade surface water channel.

Photo 8

Significant amount of reeds and vegetation in the ditch at the northeast corner of the Type III landfill.

Photo 9

Significant ash and vegetation in the channel around the southern perimeter of the Type III landfill.

Photo 10

Bare spots between the two southeast surface water channels near the tower on the Type III landfill.

Photo 11

Several 1- to 3-inch diameter trees near the base of the tower on Type III landfill.

Photo 12

One of two erosion gullies near the southeast corner of Subphases 1A1/1B1.

Photo 13

Ash in surface water channel adjacent to haul road.

Photo 14

Ash in northwest channel past the rock check dam.

Photo 15

Water pooled behind rock check dam on east channel between Type I and Type III landfill.

Photo 16

Bare spot with exposed erosion control netting, northern slope of Subphase 1A1.

Photo 17

Holes on northeast slope of Subphase 1A1.

Photo 18

Erosion rill in temporary cover on eastern slope of Subphase 1A1.

Photo 19

Small, woody vegetation on lower slope of northern and eastern sides of Subphase 1A1.

Photo 20

Erosion rill running top to bottom near northeast corner of Subphase 1A1.

Photo 21

Approximately 10 small erosion rills distressing the vegetation at the toe of the southeast corner of Subphase 1A1.

Photo 22

Significant erosion of surface water channel at northeast corner of Subphase 1A1.

Photo 23

Bare area on southeast corner of Subphases 1A1/1B1.

Photo 24

Erosion rill in protective cover at the northeast corner of the active Subphase 1A2 on Devil's Backbone slope.

Photo 25

Vegetation on southern slope of Subphase 1C is taller than that established in other subphases.

Photo 26

Water and ash in surface ditch on Subphase 1C1, contained by rock check dam.

Photo 27

Water and ash in surface ditch on Subphase 1C1, contained by rock check dam.

Photo 28

Severe erosion of surface water channel down Devil's Backbone on south side of Subphase 1C.

Photo 29

Leachate pipe outlet obstructed by vegetation.

APPENDIX C
REFERENCE DRAWINGS

Notes:

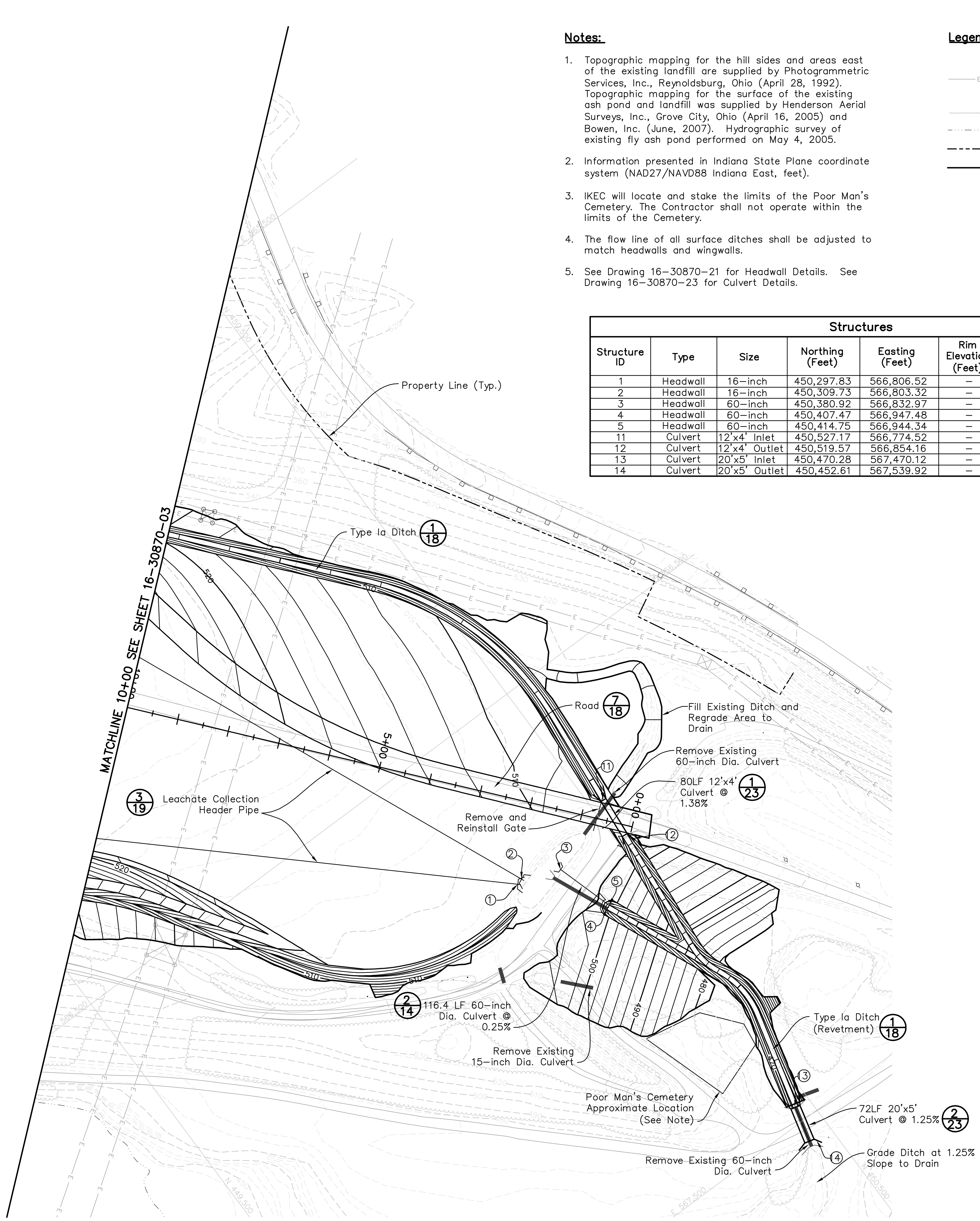
1. Topographic mapping for the hill sides and areas east of the existing landfill are supplied by Photogrammetric Services, Inc., Reynoldsburg, Ohio (April 28, 1992). Topographic mapping for the surface of the existing ash pond and landfill was supplied by Henderson Aerial Surveys, Inc., Grove City, Ohio (April 16, 2005) and Bowen, Inc. (June, 2007). Hydrographic survey of existing fly ash pond performed on May 4, 2005.
2. Information presented in Indiana State Plane coordinate system (NAD27/NAVD88 Indiana East, feet).
3. IKEC will locate and stake the limits of the Poor Man's Cemetery. The Contractor shall not operate within the limits of the Cemetery.
4. The flow line of all surface ditches shall be adjusted to match headwalls and wingwalls.
5. See Drawing 16-30870-21 for Headwall Details. See Drawing 16-30870-23 for Culvert Details.

Legend

- Utility Pole
- Transmission Line
- Transmission Tower
- Vegetation
- Edge of Water
- Property Line
- Grading Limits
- Headwall

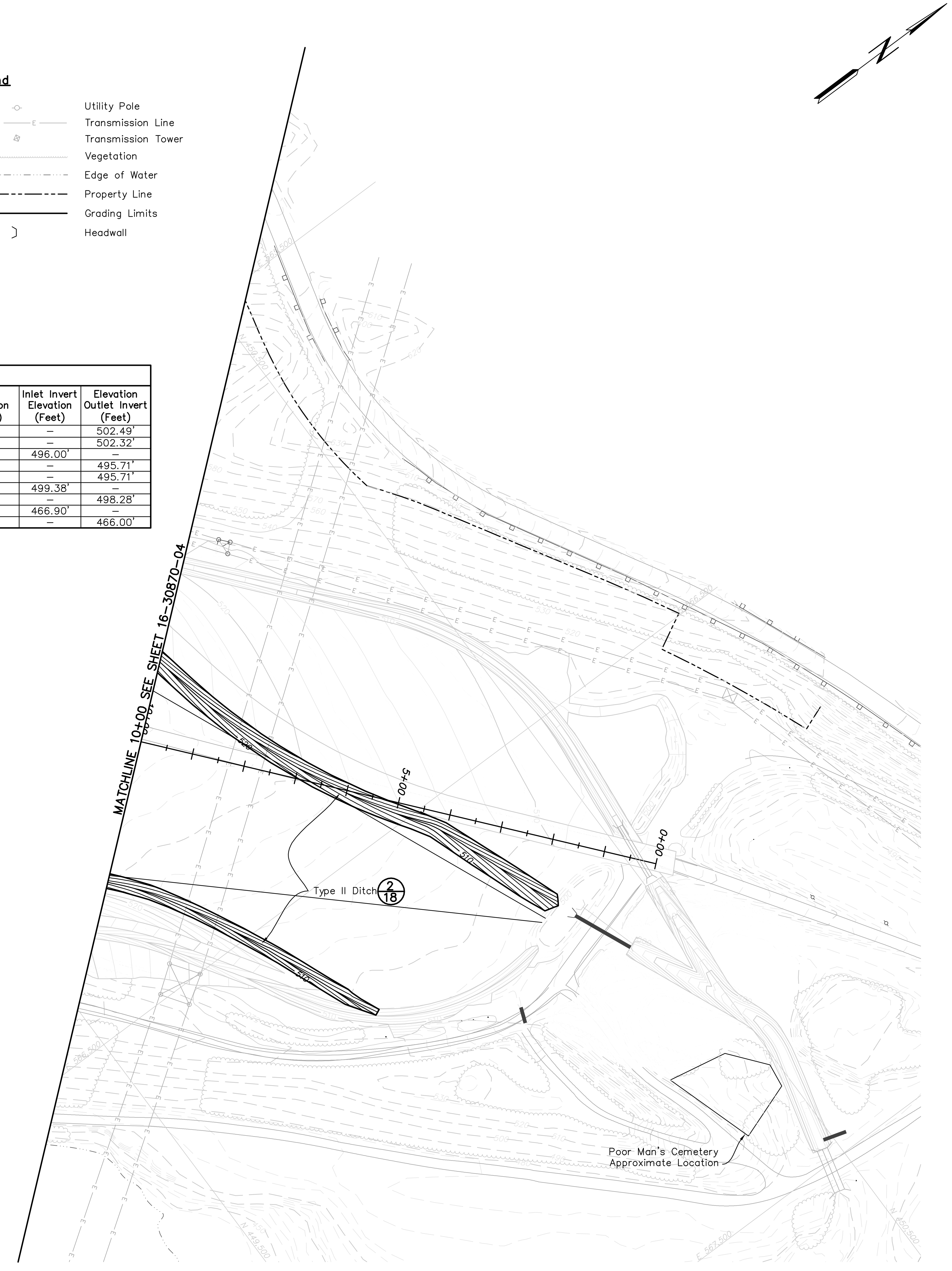
Structures

Structure ID	Type	Size	Northing (Feet)	Easting (Feet)	Rim Elevation (Feet)	Inlet Invert Elevation (Feet)	Elevation Outlet Invert (Feet)
1	Headwall	16-inch	450,297.83	566,806.52	–	–	502.49'
2	Headwall	16-inch	450,309.73	566,803.32	–	–	502.32'
3	Headwall	60-inch	450,380.92	566,832.97	–	496.00'	–
4	Headwall	60-inch	450,407.47	566,947.48	–	–	495.71'
5	Headwall	60-inch	450,414.75	566,944.34	–	–	495.71'
11	Culvert	12'x4' Inlet	450,527.17	566,774.52	–	499.38'	–
12	Culvert	12'x4' Outlet	450,519.57	566,854.16	–	–	498.28'
13	Culvert	20'x5' Inlet	450,470.28	567,470.12	–	466.90'	–
14	Culvert	20'x5' Outlet	450,452.61	567,539.92	–	–	466.00'



INITIAL CONSTRUCTION

50 0 100 200 FEET
GRAPHIC SCALE



FINAL GRADE

50 0 100 200 FEET
GRAPHIC SCALE

Section or Detail No.
Sheet Where Shown
REFERENCE KEY

NOTES

REFERENCE DRAWINGS

DATE	NO.	DESCRIPTION	APPD.
5/08	A	ISSUED FOR CONSTRUCTION	

REVISIONS

PLOT DATE: 01/11/2010 USER: WITHERS, CHEYENNE
U:\1744\174438101\CIVIL\CONSTRUCTION\DRAWING\CONSTRUCTION_1-10\38101C-105-1AICFG.DWG

INDIANA – KENTUCKY ELECTRIC CO.

CLIFTY CREEK PLANT

MADISON INDIANA

COAL ASH LANDFILL
SUBPHASE 1A
INITIAL CONSTRUCTION
AND FINAL GRADE

DWG. NO. 16-30870-05

SCALE: | CIVIL ENGINEERING DIVISION
DR:
CH:
ARCH:
ENGR:
DATE:
APPROVED BY

SCALE: AS SHOWN
DR: CW
CH: DMD
ENGR: DPG
DATE: JAN., 2010

Stantec

Stantec Consulting Services Inc.
11687 Lebanon Rd.
Cincinnati, Ohio
45241
513-842-8200
www.stantec.com

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215