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15 January 2016  
File No. 40616-300

Associated Electric Cooperative, Inc.  
2814 South Golden Avenue  
P.O. Box 754  
Springfield, MO 65801-0754

Attention: Mr. Russ Weatherly  
Supervisor, Land and Water Resources

Subject: Annual CCR Surface Impoundment PE Inspection  
Pond 004  
AECI New Madrid Power Plant  
New Madrid, Missouri

Mr. Weatherly:

Enclosed please find our Initial Annual Coal Combustion Residuals (CCR) Surface Impoundment Inspection Report for the Associated Electric Cooperative, Inc. (AECI) Pond 004 located at the New Madrid Power Plant near New Madrid, Missouri.

We completed our site visit for the inspection of the surface impoundment on 1 September 2015. This work was performed by Haley & Aldrich, Inc. (H&A) on behalf of Associated Electric Cooperative, Inc. in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257.

The scope of our work was to complete 1) a review of available information on the surface impoundment, 2) a visual inspection of the surface impoundment, 3) prepare the enclosed report.



Associated Electric Cooperative, Inc.  
15 January 2016  
Page 2

Thank you for inviting us to complete this inspection and please feel free to contact us if you wish to discuss the contents of the report.

Sincerely yours,  
HALEY & ALDRICH, INC.



Steven F. Putrich, P.E.  
Vice President

Enclosures

G:\40616\_AECI-CCR ELG Management Support\300-NM Ponds Stability Assessments\Deliverables\004 Annual Inspection-FINAL\2016-0115-HAI-AECI-004-CCR  
Impoundment Annual PE Inspection rpt-F.docx

**REPORT ON  
INITIAL ANNUAL CCR SURFACE IMPOUNDMENT  
PE INSPECTION  
POND 004  
NEW MADRID POWER PLANT  
NEW MADRID, MISSOURI**

by Haley & Aldrich, Inc.  
Cleveland, OH

for Associated Electric Cooperative, Inc.  
New Madrid, Missouri

File No. 40616-300  
January 2016



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# 1. Description of Project

## 1.1 GENERAL

### 1.1.1 Authority

Haley & Aldrich, Inc. (H&A) has been contracted by Associated Electric Cooperative, Inc. (AECI, Owner) to perform an Initial Annual CCR Surface Impoundment Inspection for Pond 004 located at the New Madrid Power Plant (NMPP) near New Madrid, Missouri. This work was completed in accordance with the US Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257, specifically 257.83(b).

### 1.1.2 Purpose of Work

The purpose of this inspection was to visually observe and evaluate the present condition of the surface impoundment to evaluate the design, construction, operation, and maintenance of Pond 004 for consistency with recognized and generally accepted good engineering standards. The visual inspection is intended to identify signs of distress or malfunction of the surface impoundment, should they exist. This report summarizes those findings and notes conditions observed that are disrupting or have the potential to disrupt the operation and safety of the surface impoundment.

The inspection is divided into three parts: 1) obtain and review readily available reports, investigations, and data pertaining to the surface impoundment; 2) perform a visual inspection of the site; 3) prepare this report presenting our observations and recommendations for any repairs or remedial actions.

## 1.2 DESCRIPTION OF PROJECT

### 1.2.1 Location

Pond 004 is located on the eastern side of the NMPP in New Madrid, Missouri. Pond 004 is approximately located at North latitude 36° 30.9' and West longitude 89° 33.6', as shown on the attached Project Locus. The surface impoundment is accessed from the plant site along a gravel access road. Access to the plant and surface impoundment is restricted by full time security and barriers/fences at the plant.

### 1.2.2 Owner/Operator

Pond 004 is owned, operated and maintained by Associated Electric Cooperative, Inc.

	Surface Impoundment Owner	Surface Impoundment Operator (at Time of Inspection)
Name	AECI	AECI
Mailing Address	New Madrid Power Plant P.O. Box 156	New Madrid Power Plant P.O. Box 156
Town	New Madrid, Missouri 63869	New Madrid, Missouri 63869

### **1.2.3 Purpose of Pond 004**

The NMPP is a two-unit coal-fired power plant, with a maximum generating capacity of approximately 1200 Megawatts. Unit 1 was constructed in 1972 and Unit 2 was constructed in 1977. As part of plant operations, two dikes were constructed for the purpose of storing Coal Combustion Residuals (CCRs) and plant wastewater. The impoundments are known as Pond 003 and Pond 004. This inspection report is for Pond 004 which was constructed in 1984. This impoundment has been used as a secondary pond for plant process water and CCRs with Pond 003 being the primary impoundment.

### **1.2.4 Description of the Surface Impoundment**

Pond 004 has an approximate design total capacity of 94 thousand cubic yards per the original surface impoundment design with an approximate footprint of 10 acres. Process water and CCR are discharged into Pond 004 via four pipelines located at the northern end of the impoundment. Discharges from the impoundment flow to a concrete drop outlet structure with concrete stoplogs. A discharge pipe directs water through the dike and discharges to the Mississippi River through permitted Outfall 004. The embankment is approximately 6 to 15 feet in height and according to records, the embankment is constructed of locally available silty clay. Based on information provided by the NMPP personnel, Pond 004 was designed by Burns and McDonnell of Kansas City, Missouri.

The surface impoundment is constructed on native soils. Based on the available information for the impoundment and observations from the site visit, Pond 004 does not receive drainage from the surrounding areas. Water enters the pond from direct precipitation and from the NMPP operations (i.e. discharge of process water). Excavated slag is processed and loaded onto barges for off-site beneficial reuse from the northeastern portion of the impoundment.

Based on recent generation and disposal data, the surface impoundment receives approximately 18,000 tons of CCR per year (assuming the impoundment receives flows for approximately 2 months of the year). The majority of that CCR is excavated from the impoundment annually.

## **1.3 REVIEW OF AVAILABLE INFORMATION**

### **1.3.1 Design and Construction Records**

Pond 004 was constructed in 1984 to impound boiler slag. The impoundment was stated as being designed by Burns & McDonnell but construction documents were not readily available.

We spoke with Mr. Dennis Cox, AECI NMPP Manager, and others concerning the operations and maintenance of the impoundment on 1 September 2015. Information provided by NMPP personnel has been incorporated into this report.

### **1.3.2 Operating Records**

Written operational records are not historically maintained for the surface impoundment. We understand that AECI has commenced its 7-day inspections.

### 1.3.3 Description of Changes since Previous Annual Inspection

This was the first annual impoundment inspection conducted as a requirement of §257.83, thus there are no geometrical changes to report. Subsequent annual impoundment inspections will note any changes in design of the impounding structure.



## 2. Inspection

### 2.1 VISUAL INSPECTION

On 1 September 2015, Haley & Aldrich completed a visual inspection of the surface impoundment. The following subsections describe the conditions observed during the inspection. In addition, refer to the photographs and checklist forms included in Appendices A, and B, respectively for additional comments.

#### 2.1.1 Description of Inspection

During the visual inspection, the impoundment perimeter was walked and the dike, downstream area, and outlet were examined for deficiencies (e.g. cracking, ruts, woody and overgrown grassy vegetation, etc.) and for the presence of local instrumentation (none present). Throughout the inspection, pictures were taken to document various physical conditions of the impoundment.

#### 2.1.2 General Findings

##### 2.1.2.1 *Impoundment Berms*

At the southern portion of the dike, the upstream slope was graded about 2-1/2H:1V to 3H:1V. The top half of the slope was covered with grass and the bottom half was covered with riprap. Overgrown vegetation was observed along the southern portion of the dike. Isolated pockets of erosion were observed at the western portion of the dike. Along the southern portion of the dike, the dike was graded into the Mississippi River Levee crest and upstream slope, which is about 6 to 8 ft. above the elevation. The water level at the time of the site visit was El. 296. The minimum crest was at approximately El. 300.

The Northern, eastern, and southern portions of Pond 004 impoundment crest consisted of a gravel access road. The western portion of the crest consisted of a paved levee access road, which is also the Mississippi River Levee. The crest alignment appeared generally level in most locations. Minor rutting of the gravel access road was observed on the southern and eastern portion of the dike. In addition, an access ramp has been installed along the eastern side of the dike which cuts through the crest and downstream slope. The access ramp consists of loose gravel without erosion protection. The southern portion of the crest is graded at a slope up to the crest elevation of the Mississippi River Levee to provide vehicle access along the road system.

The downstream slope of the Pond 004 dike included portions that were vegetated with grass that appeared to be regularly mowed and portions that consisted of rip rap. A series of pipes are present along the downstream slope of the western embankment which lead to Pond 003. Additionally, a road with an unlined drainage ditch is located along the downstream toe of the western embankment.

The northern portion of the impoundment is utilized for CCR recovery and processing operations and the materials are at, or above the dike crest at this location. The ash recovery operation and the ash stockpiles created a dike crest that was essentially 150 ft. wide or wider at some locations. This section of the impoundment was filled-in with CCR. The upstream slope of the dike was not exposed at the northern portion of the impoundment.

### 2.1.2.2 *Hydraulic Structures*

Four (4) 10 in. pipes discharge ash and water into Pond 004. There were no leaks or defects observed in the discharge pipes that required repair.

Water discharges from Pond 004 through a concrete drop outlet at the southeast corner of the pond. The water level in the pond is controlled by concrete stop logs. Water flows over the stoplogs and into an 18 in. diameter drain pipe and flow is discharged at a concrete headwall along the banks of the Mississippi River 175 ft. downstream. The concrete headwall is about 15 ft. in length, 4 ft. in height and 10 in. thick. An 18 in. diameter corrugated HDPE drain pipe with a metal backflow preventer extends about 4 ft. out beyond the headwall.

The concrete drop inlet spillway appeared to have minor, isolated, concrete chips and weathering. Minor, surficial rusting was observed on the stoplog removal winch and frame. Deficiencies in the discharge headwall and drainage pipe were not observed.

### 2.1.2.3 *Downstream Toe Area*

Downstream of the dike is a grassed area which varied in height from about 4 to 8 in. and appeared mowed. An overgrown area of brush and trees, less than 6 in. diameter, exists about 40 to 80 ft. downstream of the downstream toe. The overgrown area is generally the top banks of the Mississippi River.

## **2.2 OPERATIONS AND MAINTENANCE**

The impoundment is operated and maintained by New Madrid Power Plant personnel. Operation of the impoundment includes using the stop logs at the drop inlet structures to regulate the water levels and removal/recovery of settled ash from the ponds for reuse.

Maintenance of the impoundment includes regular mowing of the downstream upstream and downstream slopes and removing vegetation from the riprap on upstream slopes.

## **2.3 STRUCTURAL STABILITY**

The dike was visually observed to be stable with little or no ruts, sloughing, low areas except at specific locations noted.

AECI is performing an engineering Factor of Safety stability analysis as a separate study as required by the CCR Rule.

### 3. Impoundment Geometry, Instrumentation Readings, and Capacity

#### 3.1 CHANGES IN STRUCTURE GEOMETRY

This was the first annual impoundment inspection conducted as a requirement of §257.83, thus there are no geometrical changes to report. Subsequent annual impoundment inspections will note any changes in geometry of the impounding structure.

#### 3.2 INSTRUMENTATION READINGS

No piezometers or other instrumentation was located in the immediate vicinity of Pond 004.

#### 3.3 IMPOUNDED WATER AND CCR DEPTH AND ELEVATION

This was the first annual impoundment inspection, thus a maximum and minimum water and CCR reading since the previous annual inspection is not applicable. Below is a table with the maximum and minimum recorded water level readings as provided by AECl. It is understood that AECl has not adjusted the stop logs recently which were set at an approximate elevation of 294 ft.

**Table 3.2 Water Level Readings**

Description	Date	Pond Water Elevation	Depth <sup>1</sup>
Inspection Date	9/1/2015	294	
Maximum	9/1/2015	294	8 ft.
Minimum	9/1/2015	294	8 ft.

1. Depth as measured to the approximate lowest point in the existing impoundment (El. 286) based on pre-construction USGS topo. It is understood that depths vary throughout the impoundment footprint. CCR depths vary.

#### 3.4 STORAGE CAPACITY

The remaining storage capacity of the impoundment was approximated to be 25 Acre-ft. As described in Figure 4, the remaining storage capacity was approximated by determining the volume of the impoundment as of the survey conducted 4-8 October 2014 below El. 300 ft., which is the low crest elevation of the dike.

#### 3.5 VOLUMES

The impounded water volume was approximated to be 27 Acre-ft. As described on Figure 4, the volume of impounded water was approximated by determining the volume of the impoundment as of the survey conducted 4-8 October 2014 below El. 294 ft., the elevation of the pond on the inspection date. Because no bathymetric data was available, the bottom of the pond was approximated to be at El. 286.

The impounded CCR volume was approximated to be 33 Acre-ft. As described on Figure 4, the volume of impounded CCR was approximated by determining the volume between the survey conducted 4-8 October 2014 and the topography provided by USGS 1971, which is the most recent survey prior to impoundment construction.

## 4. Assessments and Recommendations

### 4.1 ASSESSMENTS

The following deficiencies were observed at Pond 004:

- Minor rutting and erosion in the upstream slope.
- Minor erosion and rutting of the gravel access road on the Northern embankment.
- Sparse vegetation exceeding 6 in. in height and brush on upstream slope within riprap.
- Sparse vegetation exceeding 6 in. height and brush on upstream slope.
- Vegetation exceeding 6 in. in height on the downstream slope.

### 4.2 RECOMMENDATIONS

We recommend the following remedial measures be undertaken:

- Cut/mow the embankments and routinely mow the embankment slopes (upstream and downstream) and downstream areas to maintain vegetation at a height of 6 in. or less.
- Repair minor ruts and erosion.
- 
- Conduct a video inspection of outlet pipes from the drop inlet structure.

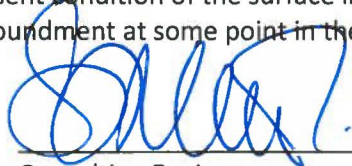
## 5. Certification

The assessment of the general condition of the surface impoundment is based upon available data and visual observation. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.

In reviewing this report, it should be realized that the described condition of the surface impoundment is based on observations of field conditions at the time of inspection, along with other data available to the inspection team.

It is important to note that the condition of a surface impoundment depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the surface impoundment will continue to represent the condition of the surface impoundment at some point in the future.

Signed:

  
\_\_\_\_\_  
Consulting Engineer

Print Name: Steven F. Putrich

Missouri License No.: 2014035813

Title: Vice President

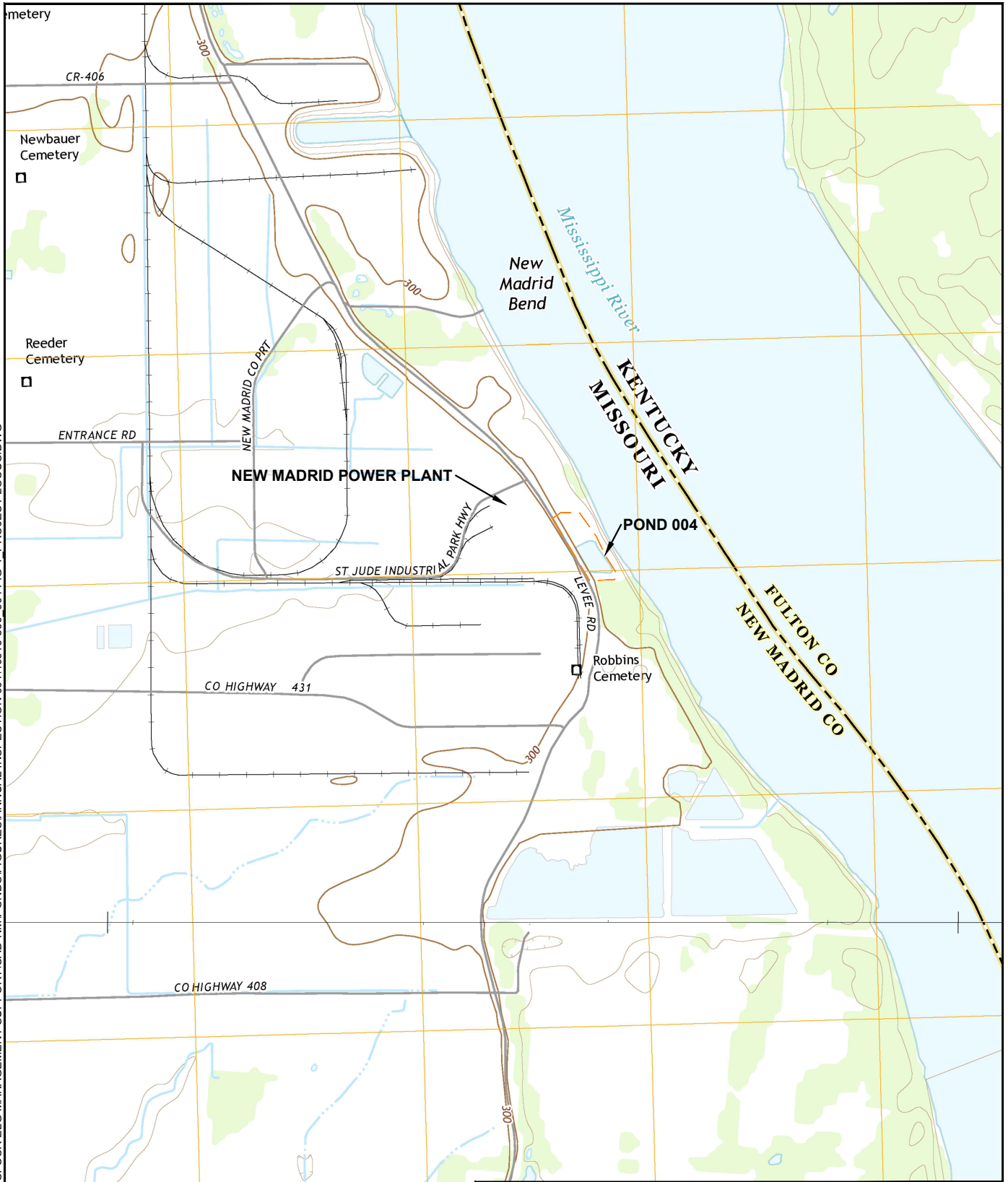
Company: Haley & Aldrich, Inc.

Professional Engineer's Seal and date:



01-15-16

LUCAS, ANDY Printed: 1/15/2016 3:11 PM Layout: PROJECT LOCUS  
\\GLEN\COMMON\PROJECTS\40616\_AECL-CCR ELG MANAGEMENT SUPPORT\CAD-NM\PONDS\FIGURES\ANNUAL INSPECTION 004\40616-300\_004 FIG-1\_PROJECT LOCUS.DWG



MAPSOURCE: USGS  
NEW MADRID, MO-KY  
POINT PLEASANT, MO-TN-KY  
2015



**HALEY  
ALDRICH**

ANNUAL CCR SURFACE IMPOUNDMENT PE INSPECTION  
POND 004  
NEW MADRID POWER PLANT  
NEW MADRID, MO

### PROJECT LOCUS

APPROXIMATE SCALE: 1" = 2000'  
JANUARY 2016

FIGURE 1



LUCAS, ANDY  
\\CLECOM\COMMON\PROJECTS\40616\_AECI-CCR\_ELG\_MANAGEMENT\_SUPPORT\CAD-NM\POND\FIGURES\ANNUAL INSPECTION 004\40616-300\_004 FIG-2 SITE PLAN.DWG  
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**LEGEND** □

--- APPROXIMATE LIMITS OF POND 004

**NOTES** □

1. AERIAL IMAGERY PROVIDED BY AECI AND WAS CONDUCTED BY PICTOMETRY INTERNATIONAL CORP BETWEEN 4-8 OCTOBER 2014.



0 120 240  
SCALE IN FEET



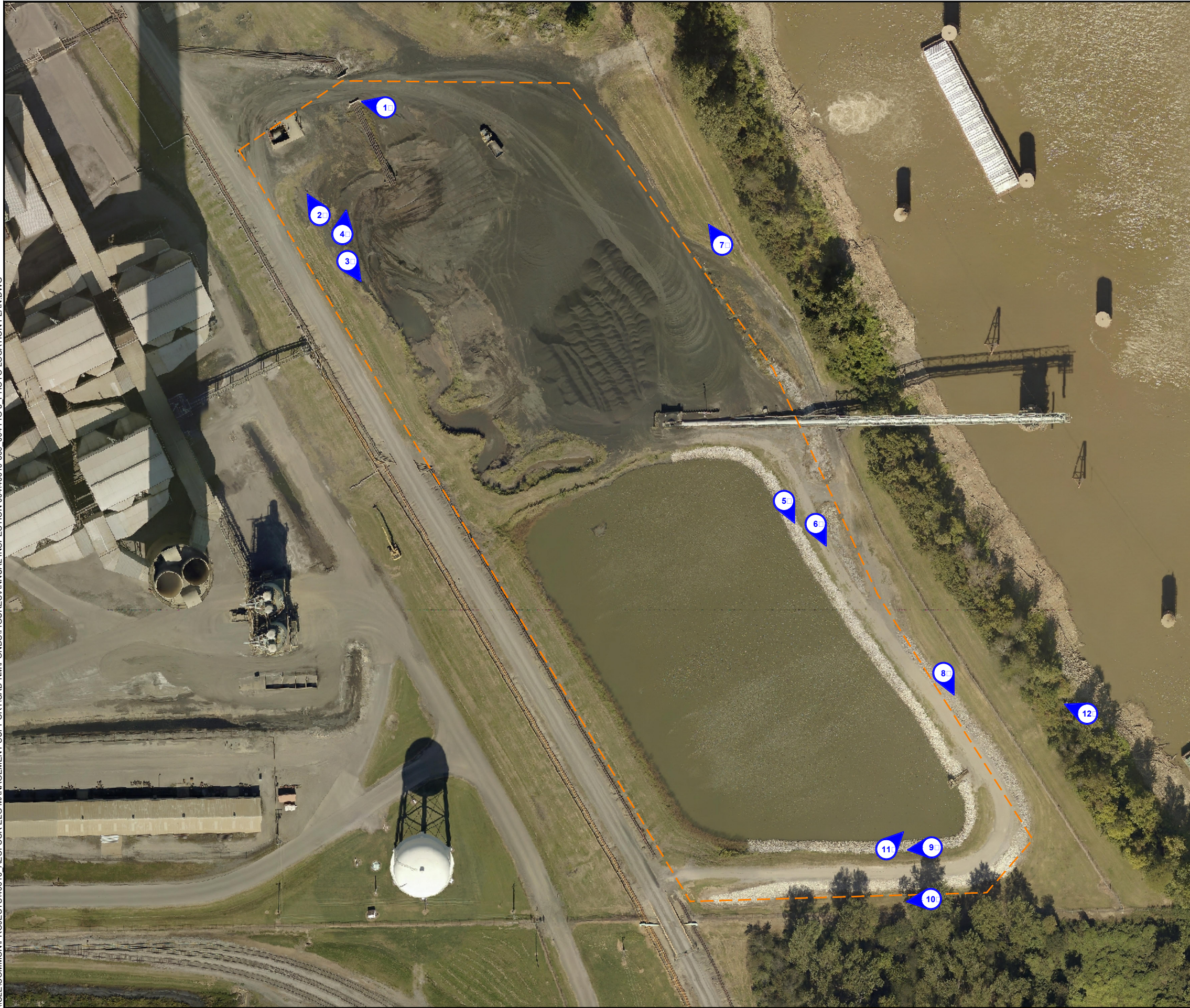
ANNUAL CCR SURFACE IMPOUNDMENT PE INSPECTION  
POND 004  
NEW MADRID POWER PLANT  
NEW MADRID, MO

**SITE PLAN**

SCALE: AS SHOWN  
JANUARY 2016

**FIGURE 2**

LUCAS, ANDY  
\\CLECOMMON\PROJECTS\40616\_AECI-CCR\_ELG\_MANAGEMENT\_SUPPORT\CAD\NM\FIGURES\ANNUAL INSPECTION 004\40616-300\_004 FIG-3 PHOTO LOCATION PLAN.DWG  
Printed: 1/15/2016 2:47 PM Layout: PHOTO LOCATIONS PLAN

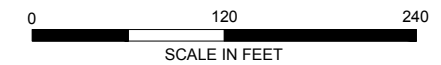


**LEGEND**

- APPROXIMATE LIMITS OF POND 004
- 1 PHOTO LOCATION/DIRECTION

**NOTES**

1. AERIAL IMAGERY PROVIDED BY AECI AND WAS CONDUCTED BY PICTOMETRY INTERNATIONAL CORP BETWEEN 4-8 OCTOBER 2014.



ANNUAL CCR SURFACE IMPOUNDMENT PE INSPECTION  
POND 004  
NEW MADRID POWER PLANT  
NEW MADRID, MO

**PHOTO LOCATION PLAN**

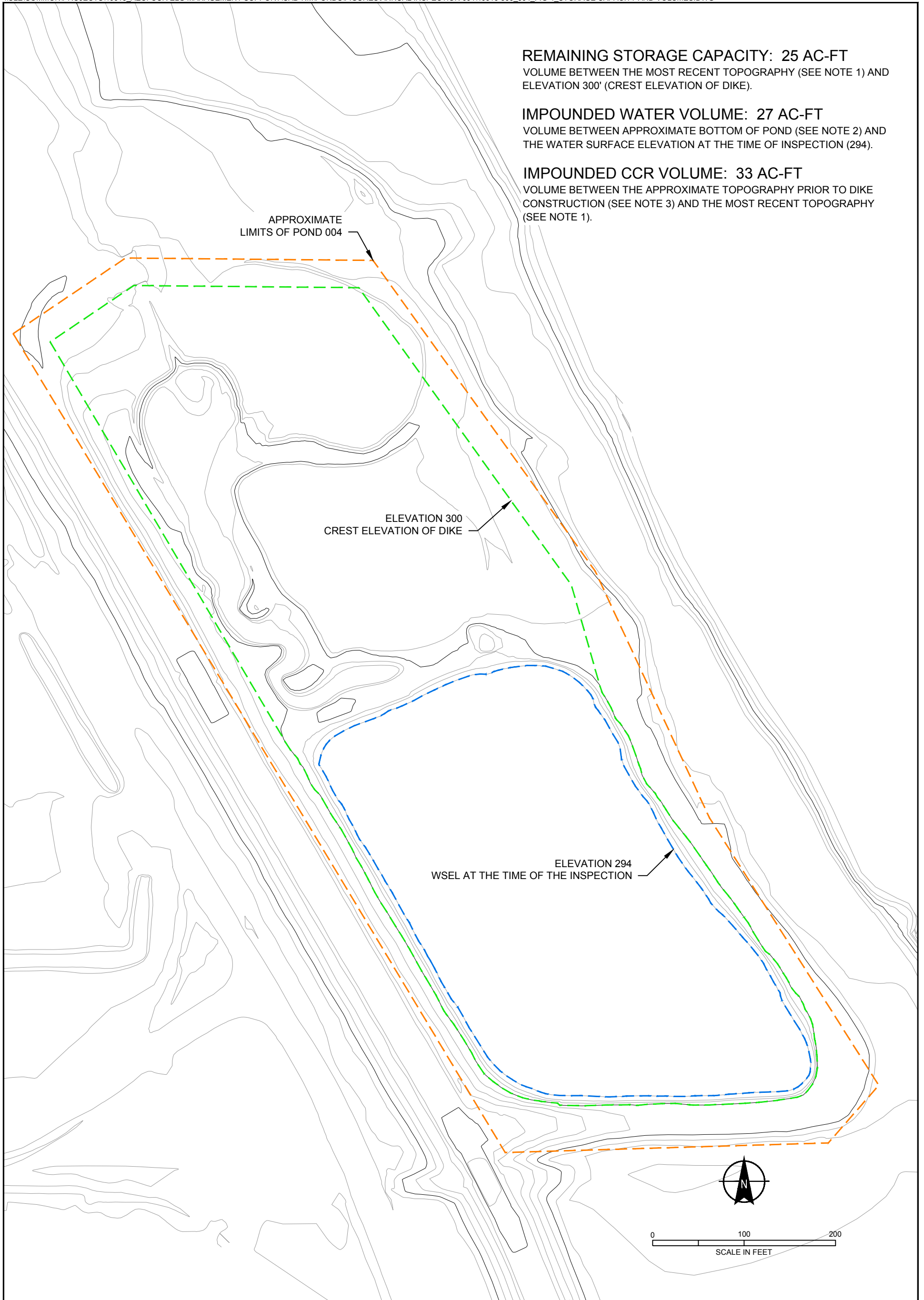
SCALE: AS SHOWN  
JANUARY 2016

**FIGURE 3**

**REMAINING STORAGE CAPACITY: 25 AC-FT**  
 VOLUME BETWEEN THE MOST RECENT TOPOGRAPHY (SEE NOTE 1) AND ELEVATION 300' (CREST ELEVATION OF DIKE).

**IMPOUNDED WATER VOLUME: 27 AC-FT**  
 VOLUME BETWEEN APPROXIMATE BOTTOM OF POND (SEE NOTE 2) AND THE WATER SURFACE ELEVATION AT THE TIME OF INSPECTION (294).

**IMPOUNDED CCR VOLUME: 33 AC-FT**  
 VOLUME BETWEEN THE APPROXIMATE TOPOGRAPHY PRIOR TO DIKE CONSTRUCTION (SEE NOTE 3) AND THE MOST RECENT TOPOGRAPHY (SEE NOTE 1).



- LEGEND**
- ELEVATION 294' WSEL DURING INSPECTION
  - ELEVATION 300' CREST ELEVATION OF DIKE
  - APPROXIMATE LIMITS OF POND 004

- NOTES**
1. EXISTING TOPOGRAPHY BASED ON LIDAR DATA RECEIVED FROM AECI CONDUCTED BY PICTOMETRY INTERNATIONAL CORP. AERIAL SURVEY CONDUCTED BETWEEN 4-8 OCTOBER 2014.
  2. CURRENT BATHYMETRIC DATA AND APPROXIMATE TOPOGRAPHY PRIOR TO TIME OF DIKE CONSTRUCTION WAS UNAVAILABLE. BOTTOM OF POND APPROXIMATED AS ELEVATION 286.
  3. APPROXIMATE TOPOGRAPHY PRIOR TO TIME OF DIKE CONSTRUCTION WAS USED FOR THE IMPOUNDED CCR VOLUME CALCULATION. THE TOPOGRAPHY WAS PROVIDED BY USGS 1971.

**HALEY ALDRICH** ANNUAL CCR SURFACE IMPOUNDMENT PE INSPECTION  
 POND 004  
 NEW MADRID POWER PLANT  
 NEW MADRID, MO

**STORAGE CAPACITY AND IMPOUNDED CCR AND WATER VOLUMES**

SCALE: AS SHOWN  
 JANUARY 2016

**FIGURE 4**

## **APPENDIX A**

### **Photographs**



Photograph No. 1  
Pond 004  
Four inlet pipes with headwall



Photograph No. 2  
Pond 004  
Minor rutting and erosion in upstream slope



Photograph No. 3  
Pond 004  
Upstream slope of western embankment



Photograph No. 4  
Pond 004  
Upstream slope of northern embankment



Photograph No. 5  
Pond 004

Upstream slope of eastern embankment with riprap and vegetation



Photograph No. 6  
Pond 004

Crest of eastern embankment



Photograph No. 7  
Pond 004

Downstream slope of eastern embankment with ruts and uneven surface



Photograph No. 8  
Pond 004

Downstream slope of eastern embankment with riprap





Photograph No. 9  
Pond 004  
Upstream slope with riprap and vegetation



Photograph No. 10  
Pond 004  
Downstream slope with Mississippi River Levee in Background



Photograph No. 11  
Pond 004  
Concrete drop inlet spillway with stoplogs  
Mississippi River in background



Photograph No. 12  
Pond 004  
Discharge pipe to Mississippi River with backflow preventer

## **APPENDIX B**

### **Inspection Forms**

### DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM: <u>Slag Dewatering Pond (004 Pond) Dam</u>	STATE ID #: <u>MO-0001171</u>
REGISTERED: (YES/NO) <u>No</u>	NID ID #: <u>N/A</u>
STATE SIZE CLASSIFICATION: <u>Small</u>	STATE HAZARD CLASSIFICATION: <u>TBD</u>
	CHANGE IN HAZARD CLASSIFICATION REQUESTED?: (YES/NO) _____
<b><u>DAM LOCATION INFORMATION</u></b>	
CITY/TOWN: <u>New Madrid</u>	COUNTY/STATE: <u>New Madrid/Missouri</u>
DAM LOCATION: <u>41 St. Jude Park, Marston, MO</u> (street address if known)	ALTERNATE DAM NAME: <u>N/A</u>
USGS QUAD.: <u>New Madrid, MO-KY</u>	LAT.: <u>36° 30.9' N</u> LONG.: <u>89° 33.6' W</u>
DRAINAGE BASIN: <u>N/A</u>	RIVER: <u>Mississippi River</u>
IMPOUNDMENT NAME(S): <u>Pond 004</u>	
<b><u>GENERAL DAM INFORMATION</u></b>	
TYPE OF DAM: <u>Earthen Incised and Bermed</u>	OVERALL LENGTH (FT): <u>3000</u>
PURPOSE OF DAM: <u>Sedimentation and Storage Basin</u>	NORMAL POOL STORAGE (ACRE-FT): _____
YEAR BUILT: <u>1984</u>	MAXIMUM POOL STORAGE (ACRE-FT): <u>14</u>
STRUCTURAL HEIGHT (FT): <u>20</u>	EL. NORMAL POOL (FT): <u>294.0</u>
HYDRAULIC HEIGHT (FT): <u>6</u>	EL. MAXIMUM POOL (FT): <u>300.0 (minimum crest elevation)</u>
RESERVOIR SURFACE AREA (ACRES): <u>10</u>	WINTER DRAWDOWN (FT BELOW NORMAL POOL) <u>0.0</u>
PUBLIC ROAD ON CREST: <u>No</u>	DRAWDOWN VOL. (AC-FT) <u>0.0</u>
PUBLIC BRIDGE OVER SPILLWAY: <u>No</u>	

NAME OF DAM: Pond 004 STATE ID #: MO-0001171

INSPECTION DATE: September 1, 2015 NID ID #: N/A

INSPECTION SUMMARY

DATE OF INSPECTION: September , 2015 DATE OF PREVIOUS INSPECTION: October 6, 2010

TEMPERATURE/WEATHER: Sunny, 88 ARMY CORPS PHASE I: No  
(YES/NO) If YES, date \_\_\_\_\_

CONSULTANT: Haley & Aldrich, Inc. PREVIOUS ALT. PHASE I: No  
(YES/NO) If YES, date \_\_\_\_\_

BENCHMARK/DATUM: NAVD88

OVERALL PHYSICAL CONDITION OF DAM: \_\_\_\_\_ DATE OF LAST REHABILITATION: N/A

SPILLWAY CAPACITY: \_\_\_\_\_

EL. POOL DURING INSP.: 296 EL. TAILWATER DURING INSP.: 296

PERSONS PRESENT AT INSPECTION

<u>NAME</u>	<u>TITLE/POSITION</u>	<u>REPRESENTING</u>
Denis Bell	Senior Engineer	Haley & Aldrich, Inc
Andy Lucas	Staff Engineer	Haley & Aldrich, Inc
Dennis Cox		AECI

NAME OF DAM: <u>Pond 004</u>		STATE ID #: <u>MO-0001171</u>	
INSPECTION DATE: <u>September 1, 2015</u>		NID ID #: <u>N/A</u>	
OWNER: ORGANIZATION	<u>Associated Electric Cooperative, ]</u>	CARETAKER: ORGANIZATION	<u>Associated Electric Cooperative, Inc.</u>
NAME/TITLE	<u>Mr. Dennis Cox</u>	NAME/TITLE	<u>Mr. Dennis Cox</u>
STREET	<u>P.O. Box 156</u>	STREET	<u>P.O. Box 156</u>
TOWN, STATE, ZIP	<u>New Madrid, MO 63869</u>	TOWN, STATE, ZIP	<u>New Madrid, MO 63869</u>
PHONE	<u></u>	PHONE	<u></u>
EMERGENCY PH. #	<u></u>	EMERGENCY PH. #	<u></u>
FAX	<u></u>	FAX	<u></u>
EMAIL	<u></u>	EMAIL	<u></u>
OWNER TYPE	<u>Private</u>		
PRIMARY SPILLWAY TYPE <u>Decant Structure</u>			
SPILLWAY LENGTH (FT)	<u>N/A</u>	SPILLWAY CAPACITY (CFS)	<u>N/A</u>
AUXILIARY SPILLWAY TYPE	<u>N/A</u>	AUX. SPILLWAY CAPACITY (CFS)	<u>N/A</u>
NUMBER OF OUTLETS	<u>One</u>	OUTLET(S) CAPACITY (CFS)	<u>Unknown</u>
TYPE OF OUTLETS	<u>One Decant</u>	TOTAL DISCHARGE CAPACITY (CFS)	<u>Unknown</u>
DRAINAGE AREA (SQ MI)	<u>0.02</u>	SPILLWAY DESIGN FLOOD (PERIOD/CFS)	<u>Unkown</u>
HAS DAM BEEN BREACHED OR OVERTOPPED? (YES/NO):	<u>No</u>	IF YES, PROVIDE DATE(S)	<u></u>
FISH LADDER (LIST TYPE IF PRESENT)	<u>Unkown</u>		
DOES CREST SUPPORT PUBLIC ROAD? (YES/NO)	<u>No</u>	IF YES, ROAD NAME:	<u></u>
PUBLIC BRIDGE WITHIN 50' OF DAM? (YES/NO):	<u>No</u>	IF YES, ROAD/BRIDGE NAME:	<u></u>
		MHD BRIDGE NO. (IF APPLICABLE)	<u></u>

NAME OF DAM: Pond 004

STATE ID #: MO-0001171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**EMBANKMENT (U/S SLOPE)**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S SLOPE	1. SLIDE, SLOUGH, SCARP	None observed	X		
	2. SLOPE PROTECTION TYPE AND COND.	None observed	X		
	3. SINKHOLE/ANIMAL BURROWS	None observed	X		
	4. EMB.-ABUTMENT CONTACT	None observed	X		
	5. EROSION	Erosion and rutting noted in the Northwestern portion of the impoundment			X
	6. UNUSUAL MOVEMENT	None observed	X		
	7. VEGETATION (PRESENCE/CONDITION)	None observed	X		

ADDITIONAL COMMENTS: Ash has been stockpiled to an elevation equal to the embankment in the Northern portion of the Slag Dewatering Pond. Therefore, the upstream slope was covered by ash and not visible for inspection.

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NAME OF DAM: Pond 004

STATE ID #: MO-0001171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**EMBANKMENT (CREST)**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	1. SURFACE TYPE	Gravel access road, western crest was paved levee road	X		
	2. SURFACE CRACKING	None observed	X		
	3. SINKHOLES, ANIMAL BURROWS	None observed	X		
	4. VERTICAL ALIGNMENT (DEPRESSIONS)	None observed	X		
	5. HORIZONTAL ALIGNMENT	None observed	X		
	6. RUTS AND/OR PUDDLES	None observed	X		
	7. VEGETATION (PRESENCE/CONDITION)	Regularly mowed grass	X		
	8. ABUTMENT CONTACT	N/A	X		

ADDITIONAL COMMENTS: \_\_\_\_\_  
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NAME OF DAM: Pond 004

STATE ID #: MO-0001171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**EMBANKMENT (D/S SLOPE)**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S SLOPE	1. WET AREAS (NO FLOW)	None observed	X		
	2. SEEPAGE	None observed	X		
	3. SLIDE, SLOUGH, SCARP	None observed	X		
	4. EMB.-ABUTMENT CONTACT	N/A	X		
	5. SINKHOLE/ANIMAL BURROWS	None observed	X		
	6. EROSION	None observed	X		
	7. UNUSUAL MOVEMENT	None observed	X		
	8. VEGETATION (PRESENCE/CONDITION)	Woody vegetation near toe of embankment			X

ADDITIONAL COMMENTS: Near the Northeast portion, woody vegetation was observed near the toe of the embankment of the downstream slope.

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NAME OF DAM: Pond 004

STATE ID #: MO-000171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**PRIMARY SPILLWAY**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Decant structure	X		
	WEIR TYPE	Concrete stoplogs in decant structure	X		
	SPILLWAY CONDITION	Fair	X		
	TRAINING WALLS	None present	X		
	SPILLWAY CONTROLS AND CONDITION	None present	X		
	UNUSUAL MOVEMENT	None present	X		
	APPROACH AREA	Fair	X		
	DISCHARGE AREA	Fair	X		
	DEBRIS	None present	X		
	WATER LEVEL AT TIME OF INSPECTION	294	X		

ADDITIONAL COMMENTS: \_\_\_\_\_  
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NAME OF DAM: Pond 004

STATE ID #: MO-000171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**OUTLET WORKS**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
OUTLET WORKS	TYPE	Outlet - 18 in. diameter corrugated HDPE. Discharge to Mississippi River			
	INTAKE STRUCTURE	Decant structure with stoplogs			
	TRASHRACK	N/A			
	PRIMARY CLOSURE	N/A			
	SECONDARY CLOSURE	N/A			
	CONDUIT	N/A			
	OUTLET STRUCTURE/HEADWALL	15 ft. length, 4 ft. height, 10 in. thick. Appears stable			
	EROSION ALONG TOE OF DAM	None			
	SEEPAGE/LEAKAGE	None			
	DEBRIS/BLOCKAGE	None			
	UNUSUAL MOVEMENT	None			
	DOWNSTREAM AREA	Heavily vegetated. Woody vegetation.			
MISCELLANEOUS					

ADDITIONAL COMMENTS: \_\_\_\_\_  
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NAME OF DAM: Pond 004

STATE ID #: MO-000171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**DOWNSTREAM AREA**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	1. ABUTMENT LEAKAGE	None Present	X		
	2. FOUNDATION SEEPAGE	None Present	X		
	3. SLIDE, SLOUGH, SCARP	None Present	X		
	4. WEIRS	None Present	X		
	5. DRAINAGE SYSTEM	None Present	X		
	6. INSTRUMENTATION	None Present	X		
	7. VEGETATION	Grass less than 6"	X		
	8. ACCESSIBILITY	Gravel access road along crest. Full time security and fence	X		
9. DOWNSTREAM HAZARD DESCRIPTION					
10. DATE OF LAST EAP UPDATE					

ADDITIONAL COMMENTS: \_\_\_\_\_  
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NAME OF DAM: Pond 004

STATE ID #: MO-0001171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**INSTRUMENTATION**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
INSTR.	1. PIEZOMETERS	None present	X		
	2. OBSERVATION WELLS	None present	X		
	3. STAFF GAGE AND RECORDER	None present	X		
	4. WEIRS	None present	X		
	5. INCLINOMETERS	None present	X		
	6. SURVEY MONUMENTS	None present	X		
	7. DRAINS	None present	X		
	8. FREQUENCY OF READINGS	No measurements are taken	X		
	9. LOCATION OF READINGS	N/A	X		

ADDITIONAL COMMENTS: \_\_\_\_\_  
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 \_\_\_\_\_

NAME OF DAM: Pond 004

STATE ID #: MO-000171

INSPECTION DATE: September 1, 2015

NID ID #: N/A

**UNDERLYING HYDRAULIC STRUCTURES/PIPES**

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
UNDERLYING HYDRAULIC STRUCTURES /PIPES	TYPE	18" corrugated HDPE outlet	X		
	INLET				
	CONDUIT				
	OUTLET STRUCTURE/HEADWALL	Fair	X		
	EROSION ALONG STRUCTURE	None present	X		
	SEEPAGE/LEAKAGE	None present	X		
	DEBRIS/BLOCKAGE	None present	X		
	UNUSUAL MOVEMENT				
	DOWNSTREAM AREA				
	MISCELLANEOUS				

ADDITIONAL COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
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Note: Use additional sheets for additional outlets.