



Submitted to
Southern Indiana
Gas & Electric Company
dba Vectren Power
Supply, Inc. (SIGECO)
One Vectren Square
Evansville, IN 47708

Submitted by
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525 Vine Street, Suite 1800
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November 2018

CCR Certification:
Written Closure Plan
§257.102 (b) & (c)

for the

Landfill Sedimentation Pond

at

A. B. Brown Generating Station

Revision 0

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Executive Summary

This Coal Combustion Residuals (CCR) Written Closure Plan (Closure Plan) for the Landfill Sedimentation Pond at the Southern Indiana Gas & Electric Company dba Vectren Power Supply, Inc., A. B. Brown Generating Station has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 Code of Federal Regulations (CFR) §257.102.

This Closure Plan for the Landfill Sedimentation Pond meets the regulatory requirements as summarized in **Table ES-1**.

| Table ES-1 – Certification Summary | | | | |
|------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Report Section | CCR Rule Reference | Requirement Summary | Requirement Met? | Comments |
| Closure Plan | | | | |
| 2.1 | §257.102 (b) | <i>A Written Closure Plan must be prepared that describes the steps necessary to close the unit</i> | Yes | This Closure Plan has been prepared based on a preliminary closure design. All steps necessary to close the unit and information as required concerning the unit are included in the Closure Plan. |
| 2.2 | §257.102 (c) | <i>Closure performance standards</i> | Yes | This Closure Plan has been prepared in accordance with the required performance standards. |

The Landfill Sedimentation Pond is currently an active surface impoundment defined under 40 CFR §257.53. Upon decision to close this surface impoundment, a Notification of Intent to Initiate Closure will be placed in the Operating Record, closure operations will commence, and the surface impoundment will be closed within the time frame as allowed in the CCR Rule.

1 Introduction

1.1 Purpose of this Report

The purpose of this Written Closure Plan (Closure Plan) is to document that the requirements specified in 40 Code of Federal Regulations (CFR) §257.102 have been met to support the certification required under each of the applicable regulatory provisions for the A. B. Brown Generating Station (Brown Station) Landfill Sedimentation Pond. The Landfill Sedimentation Pond is an existing coal combustion residuals (CCR) surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires closure plans for existing CCR surface impoundments be prepared and placed in the facility's Operating Record.

The following table summarizes the sections of this document that respond to specified CCR Rule requirements of this plan.

| Table 1-1 – CCR Rule Cross Reference Table | | |
|--------------------------------------------|--------------------------------------|--------------------|
| Report Section | Title | CCR Rule Reference |
| 2.1 | Content of the Plan | §257.102 (b)(1) |
| 2.2 | Achievement of Performance Standards | §257.102 (c) |

1.2 Brief Description of Impoundment

The Brown Station is located in Posey County, Indiana, approximately 10 miles east of Mt. Vernon, Indiana, and is owned and operated by Southern Indiana Gas and Electric Company, dba Vectren Corporation (SIGECO). The Brown Station is located just north of the Ohio River with the Sedimentation Pond situated just north of the generating station.

The Brown Station operates a Type III Restricted Waste Site CCR landfill, and stormwater from the landfill is managed via a perimeter ditch system. One of the reaches of the perimeter ditch system collects and conveys contact flow from the southern end of the landfill in a clockwise direction to the lined Sedimentation Pond. The 1.3-acre Sedimentation Pond was constructed in 2015 with a composite liner system. The Construction Quality Assurance report (Cardno ATC, October 26, 2015) describes the composite liner system as consisting of the following (listed from bottom to top): 3 feet of stone subdrain, 3 feet of compacted cohesive soil (clay) liner, 80-mil thick textured HDPE geomembrane, 16 ounce geotextile cushion layer, geogrid, 12 inches No. 9 crushed stone and 1.5 feet of rip rap. Conclusions in the report were that the installed liner met hydraulic conductivities less than 1×10^{-7} cm/sec and was of thickness equal to or greater than 3 feet in all measured locations. Supernatant from the Landfill Sedimentation Pond is conveyed to the Capital Pond via an overflow pipe.

A site Location Map showing the area surrounding the station is included as **Figure 1 of Appendix A**.

2 Written Closure Plan

Regulatory Citation: 40 CFR §257.102 (b); Written Closure Plan

(1) Content of the plan. The owner or operator of a CCR unit must prepare a Written Closure Plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The Written Closure Plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.

The Written Closure Plan for the Landfill Sedimentation Pond is described in this section. Information about operational and maintenance procedures was provided by Brown Station plant personnel. The Brown Station follows an established maintenance program that quickly identifies and resolves issues of concern. Closure of the Landfill Sedimentation Pond will be designed to eliminate the post-closure release of constituents into environmental pathways (i.e., air, surface water, and groundwater) through Closure-by Removal. As such, CCR materials and potentially affected underlying materials will be excavated as part of the plan for closure of the Landfill Sedimentation Pond.

2.1 Content of the Plan

2.1.1 Closure Plan Description

Regulatory Citation: 40 CFR §257.102 (b)(1);

(i) Narrative description of how the CCR unit will be closed in accordance with this section.

The Landfill Sedimentation Pond will be dewatered as necessary to facilitate closure through removal of CCR. Closure operations will utilize appropriate equipment and methods to excavate and relocate the CCR from the Landfill Sedimentation Pond to within the lined limits of the adjacent Type III Restricted Waste Site landfill (prior to landfill closure). Dewatering of the CCR materials in the Sedimentation Pond will include removal of bulk water/free liquids and interstitial/pore water (as needed) to allow for safe excavation and transport to the landfill.

Regulatory Citation: 40 CFR §257.102 (b)(1);

(ii) If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.

Closure of the site will be accomplished by CCR removal, Section 2.2 describes CCR removal and decontamination plans for closure.

Regulatory Citation: 40 CFR §257.102 (b)(1);

(iii) If closure of the CCR Unit will be accomplished by leaving CCR in place, a description of the final cover system and methods and procedures used to install the final cover.

Not applicable, CCR material will be removed from the Landfill Sedimentation Pond.

2.1.2 Inventory and Area Estimates

Regulatory Citation: 40 CFR §257.102 (b)(1);

(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

The volume of CCR material within the Landfill Sedimentation Pond is managed on a periodic basis through excavation and consolidation of the removed materials within the operating landfill cell. As such, the volume of CCR material within the Landfill Sedimentation Pond varies, but it is estimated that the maximum inventory of CCR within the Landfill Sedimentation Pond at any given time would be approximately 6,000 cubic yards.

Regulatory Citation: 40 CFR §257.102 (b)(1);

(v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.

No final cover system will be required in support of closure activities since CCR will be removed from the Landfill Sedimentation Pond.

2.1.3 Closure Schedule

Regulatory Citation: 40 CFR §257.102 (b)(1);

(vi) Schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed.

Prior to commencing closure construction, design documents will be prepared to support applications for required local, state, and federal permits. Closure construction design documents will include construction drawings, technical specifications, and quality assurance testing work plans. The permits required for closure construction activities will be evaluated at the time of closure and are anticipated to include Closure Plan approval from IDEM and associated NPDES permit modifications.

The closure of the Landfill Sedimentation Pond will commence when the landfill nears the end of its operating life. Prior to landfill closure, the CCR materials present within the Landfill Sedimentation Pond will be consolidated within the landfill and covered removing the potential for stormwater to be in contact with CCR materials. The Landfill Sedimentation Pond will then be closed in accordance with the schedule provided in 40 CFR 257.102 (e).

Activities which are anticipated as part of the closure process include the following:

- Mobilization of Contractor (within 6 month of last receipt of waste);
- Dewatering and removal of CCR material within the unit (0-1 month from start of construction);
- Modification of the pond to serve as a non-CCR Sedimentation Pond during landfill cover construction and until landfill cover vegetation is established (approximately 1 month).

2.2 Achievement of Performance Standards

Regulatory Citation: 40 CFR §257.102 (c);

An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to §257.95 (h) for constituents listed in appendix IV to this part.

CCR materials will be excavated until the underlying soil materials are encountered and the unit is free of CCR material.

Existing appurtenant structures, such as ditches, culverts, and miscellaneous piping will be decontaminated and reused or abandoned in place, removed and disposed in a permitted disposal facility, or removed and placed in a beneficial use facility identified at the time of closure. Decontamination procedures may consist of pressure washing, scrubbing, or other generally accepted decontamination procedures.

Closure will be complete when groundwater monitoring concentrations do not exceed the applicable groundwater protection standard established pursuant to 40 CFR §257.95 (h). Closure is estimated to be completed no later than five years after commencing closure activities.

This written closure plan will be amended as required by 40 CFR §257.102 (b)(3).

3 Certification

This Certification Statement documents that the Landfill Sedimentation Pond at A. B. Brown Generating Station meets the Written Closure Plan requirements specified in 40 CFR §257.102 (b). The Landfill Sedimentation Pond is an existing CCR surface impoundment as defined by 40 CFR §257.53.

CCR Unit: Southern Indiana Gas & Electric Company; A. B. Brown Generating Station; Landfill Sedimentation Pond

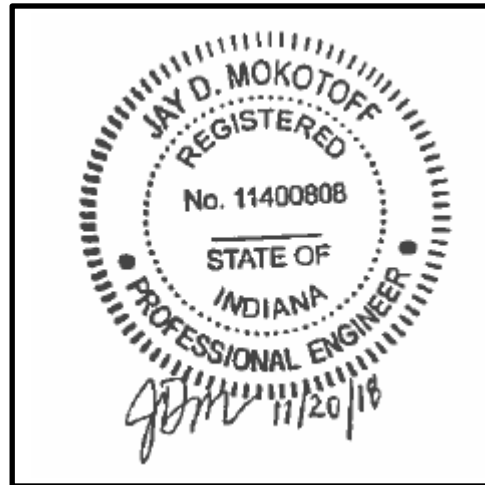
I, Jay D. Mokotoff, being a Registered Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the Written Closure Plan dated November 20, 2018 meets the requirements of 40 CFR §257.102.



Printed Name

11/20/18

Date



4 Limitations

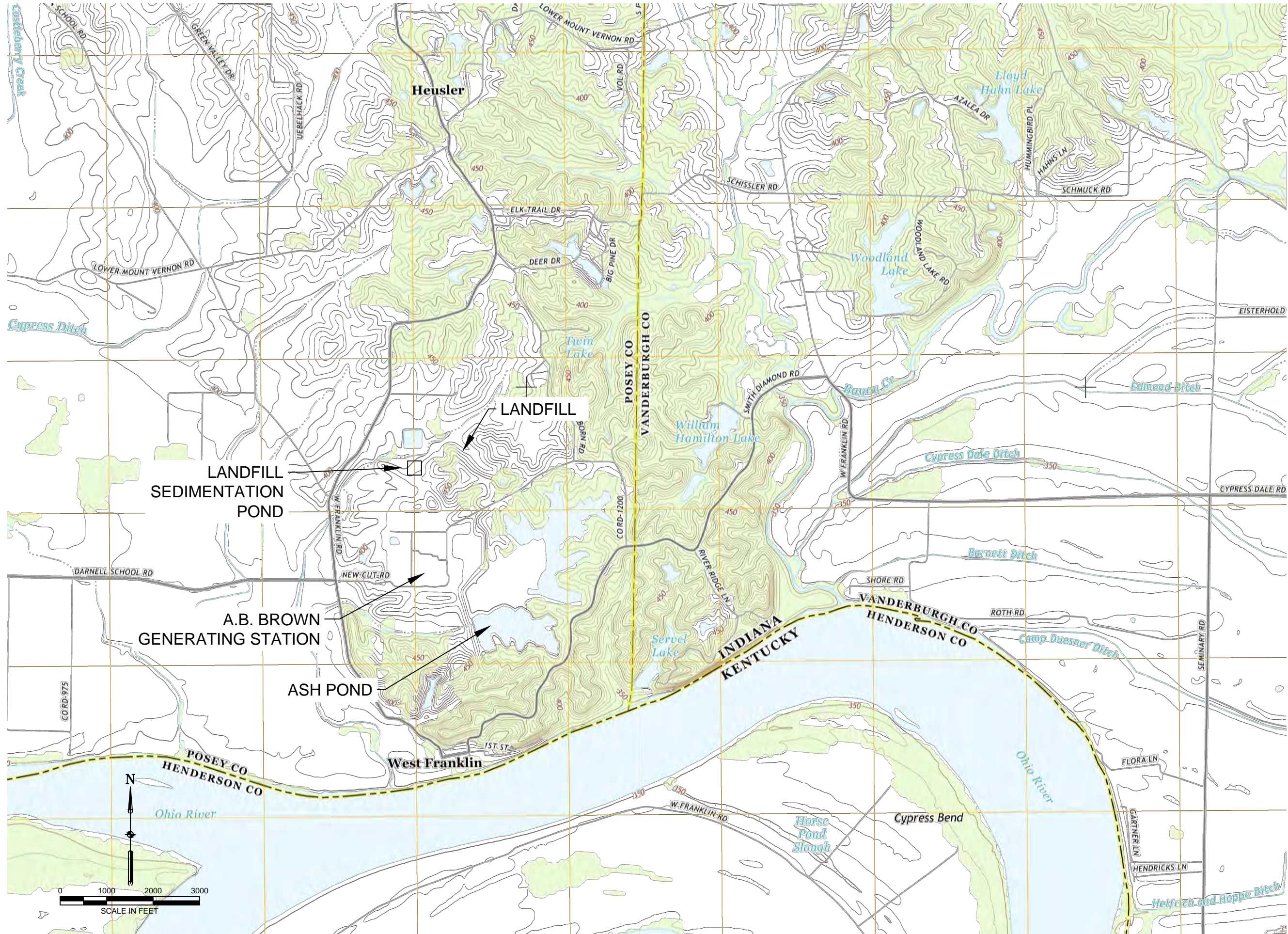
Background information, design basis, and other data which AECOM has used in preparing this report have been furnished to AECOM by SIGECO. AECOM has relied on this information as furnished, and is not responsible for the accuracy of this information. Our recommendations are based on available information from previous and current investigations. These recommendations may be updated as future investigations are performed.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The provisions and recommendations presented in this report should not be used for other projects or purposes. Conclusions or recommendations made from this data by others are their responsibility. The conclusions and recommendations are based on AECOM's understanding of current plant operations, maintenance, stormwater handling, and ash handling procedures at the station, as provided by SIGECO. Changes in any of these operations or procedures may invalidate the findings in this report until AECOM has had the opportunity to review the findings, and revise the report if necessary.

This development of the Closure Plan was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

Appendix A

Figure 1 – Location Map



9400 Amberglen Boulevard
Austin, TX 78729-1100
512-454-4797 (phone)
512-454-8807 (fax)

**SOUTHERN INDIANA
GAS AND ELECTRIC
COMPANY**
dba VECTREN POWER
SUPPLY, INC.

One Vectren Square
Evansville, IN 47708
1-800-227-1376 (phone)

**A.B. BROWN
GENERATING STATION
MT. VERNON, IN**

**CCR CERTIFICATION
LANDFILL
SEDIMENTATION POND**

**ISSUED FOR
CERTIFICATION**

ISSUED FOR BIDDING _____ DATE BY _____

ISSUED FOR CONSTRUCTION _____ DATE BY _____

REVISIONS

| NO. | DESCRIPTION | DATE |
|-----|-------------|------|
| △ | | |
| △ | | |
| △ | | |
| △ | | |
| △ | | |

AECOM PROJECT NO: 60442676

DRAWN BY: MJC

DESIGNED BY: MJC

CHECKED BY: TLE

DATE CREATED:

PLOT DATE: 4/22/2016

SCALE: AS SHOWN

ACAD VER: 2014

SHEET TITLE

LOCATION MAP

FIGURE 1

525 Vine Street, Suite 1800
Cincinnati, Ohio 45202
1-513-651-3440

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