

Notification of Intent to Initiate Closure of Inactive CCR Surface Impoundment

OG&E

Oklahoma Gas & Electric

Muskogee Power Plant

Revision 0
December 10, 2015

Notification of Intent to Initiate Closure of Inactive CCR Surface Impoundment

Prepared for

**Oklahoma Gas & Electric
Muskogee Power Plant
Fort Gibson, Oklahoma**

Project No. 86132

**Revision 0
December 10, 2015**

Prepared by

**Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri**

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INDEX AND CERTIFICATION

Oklahoma Gas & Electric Notification of Intent to Initiate Closure of Inactive CCR Surface Impoundment Project No. 86132

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Certification

I hereby certify, as a Professional Engineer in the State of Oklahoma, that the information in this document was assembled under my direct supervisory control. This report is not intended or represented to be suitable for reuse by the Oklahoma Gas & Electric or others without specific verification or adaptation by the Engineer.

I hereby certify, as a Professional Engineer in the State of Oklahoma that closure of Oklahoma Gas & Electric's Muskogee Power Plant coal combustion residual surface impoundment is technically feasible by April 17, 2018, and that the final cover system meets the requirements of the CCR Rule.

BMcD Engineer, P.E. (state & license)

Date: _____

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
CY	Cubic Yards
EPA	Environmental Protection Agency
ODEQ	Oklahoma Department of Environmental Quality
OG&E	Oklahoma Gas & Electric

1.0 INTRODUCTION

On April 17, 2015, the Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residual (CCR) Rule to regulate the disposal of CCR materials generated at coal-fired units. The rule will be administered as part of the Resource Conservation and Recovery Act [RCRA, 42 United States Code (U.S.C.) §6901 et seq.], using the Subtitle D approach.

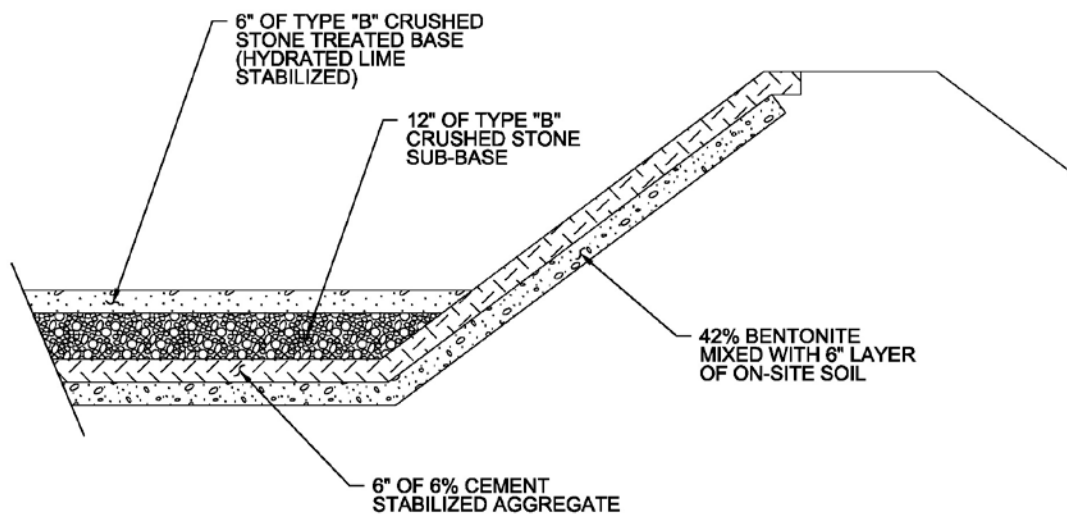
The purpose of this document is to indicate Oklahoma Gas & Electric's (OG&E's) intent to initiate closure of the CCR surface impoundment (the Emergency Ash Basin) at Muskogee Power Plant. It is also a declaration that the Emergency Ash Basin is both inactive (i.e. not receiving CCR) and closing pursuant to the CCR Rule, with closure completion scheduled on or before April 17, 2018. The intent to initiate closure of the inactive CCR surface impoundment must contain the following per §257.100(c)(1):

- Declaration that CCR surface impoundment is inactive
- Declaration that CCR surface impoundment is closing under §257.100(b)
- Narrative description indicating how the CCR surface impoundment will be closed
- Schedule for completing closure activities
- Certification from a qualified professional engineer stating that the design of the final cover system meets applicable requirements
- Certification from a qualified professional engineer that closure of the CCR surface impoundment is technically feasible by April 17, 2018

2.0 SITE CONDITIONS / EXISTING IMPOUNDMENT

Muskogee Power Plant (Muskogee) is located on the east bank of the Arkansas River in Fort Gibson, Oklahoma. The plant contains one 16.5-acre surface impoundment, the Emergency Ash Basin, which is estimated to contain approximately 82,000 cubic yards (CY) of CCR material. According to recent bathymetric survey information, CCR material is generally confined to the northwest portion of the pond. The existing impoundment contains a 6-inch soil and bentonite liner (42% bentonite mixed with on-site soil) overlain with 6 inches of cement stabilized aggregate on both the side slopes and pond bottom. In addition to this liner system, the pond bottom contains 12 inches of untreated crushed stone overlain with a 6-inch crushed stone treated base (hydrated lime stabilized). A typical cross section of the liner system is shown in Figure 2-1. The Emergency Ash Basin was originally designed as a backup to the bottom ash dewatering bin system onsite. The basin has not received CCR material since October 14, 2015, which is when the discharge piping to the pond was disconnected from the plant.

Figure 2-1: Existing Liner System – Typical Section



3.0 CLOSURE PLAN

The inactive surface impoundment at Muskogee will be closed with CCR material left in place; however, this material will be consolidated to the northwest portion of the pond area before being capped. Consequently, the pond will be closed using a combination of the criteria for clean closure and for "cap-in-place", as described herein. Key construction items anticipated for the cap-in-place method are listed as follows:

- Pond dewatering
- Piezometer installation
- Pre-closure sampling as required by the Oklahoma Department of Environmental Quality (ODEQ)
- CCR material dewatering
- Consolidation of all waste materials (i.e. CCR and liner material removed from area outside of cap) in the northwest portion of the pond
- Placement of 24-inch infiltration layer (clay cap)
- Placement of 12-inch erosion layer (protective soil cover)
- Grading of former impoundment area to drain to the south
- Final seed application

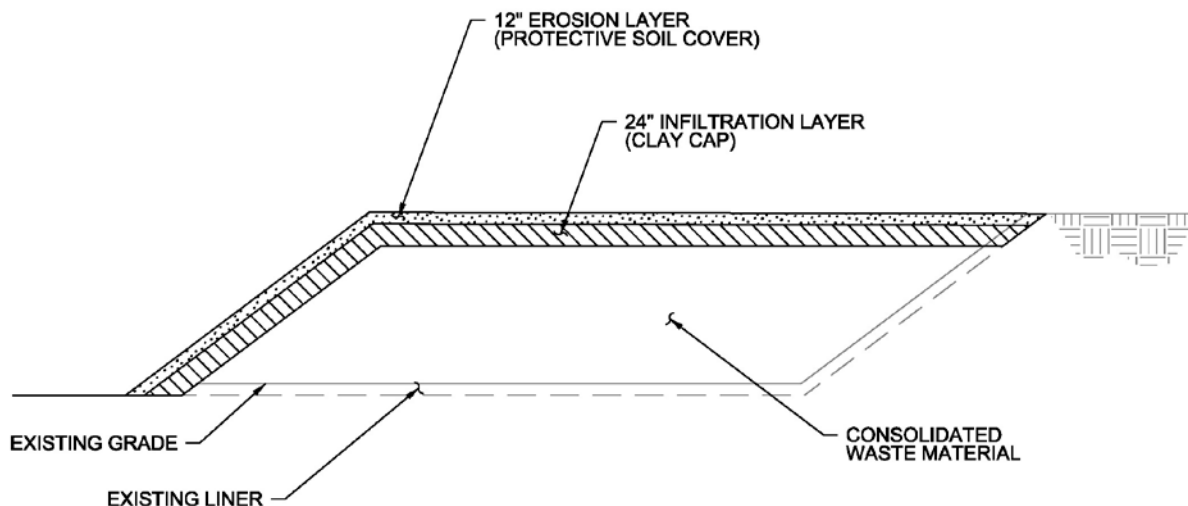
If ODEQ is satisfied with the pre-closure sampling results, OG&E will proceed with the cap-in-place closure operation. The cap-in-place closure will require drainage (removal of free water and dewatering or drying of materials to remove any excess entrained water) and stabilization of the existing CCR material prior to and during excavation and fill operations. Both CCR material and the existing liner system materials will be relocated to the northwest portion of the impoundment, placed in loose lifts, and compacted to a specified density. The cap-in-place portion of the impoundment will be graded to drain before receiving a final cover system as outlined in Section 3.1.

The remaining, clean closed portion of the impoundment will be graded to tie-in to the cap-in-place portion of the pond and drain future runoff to the south. Once the grade of the clean-closed area is established, it will receive topsoil and seed.

3.1 Cover System

The closure plan will require the installation of a final cover system over all CCR material left in place to minimize infiltration and erosion. A typical cross section of the cover system is shown in Figure 3-1.

Figure 3-1: Final Cover System – Typical Section



The final cover system will consist of a 24-inch infiltration layer and 12-inch erosion layer of which a minimum of six inches will be capable of sustaining plant growth. Per the requirements outlined in 252:616-13 of the Oklahoma Department of Environmental Quality (ODEQ) Rules and Regulations, the infiltration layer will be constructed of compacted clay with a maximum hydraulic conductivity of 1×10^{-7} centimeters/second. The infiltration layer will be constructed in maximum 9-inch thick loose lifts and compacted to a minimum of 6 inches per lift. During installation of the infiltration layer, proper quality control methods will be used to ensure the following:

- The selected infiltration layer material is suitable,
- The material meets the minimum federal and state thickness and permeability requirements,
- The material is properly placed and compacted,
- The infiltration layer is properly protected before, during, and after construction, and
- The erosion layer is seeded with native vegetation.

The capped CCR material will be graded to promote stability of the waste and the cover system, prevent the collection of standing water, to limit the velocity of storm water runoff, and to reduce the potential for soil erosion. The period of time for greatest soil erosion concern will be immediately after placement of the topsoil material, before vegetation is established. Manufactured erosion control products, as well as a seed mix containing quick-growth seed varieties, will aid in erosion prevention during this critical timeframe.

4.0 CLOSURE SCHEDULE

Burns & McDonnell developed a preliminary schedule (see Appendix B) outlining the critical scope and timeline necessary for the CCR surface impoundment closure at Muskogee. Per §257.100(b) of the CCR Rule, the deadline to complete closure of an inactive surface impoundment is April 17, 2018. The contractors that bid on this project will be required to meet OG&E's primary milestone requirements and the CCR Rule deadline.

Based on review of contractor schedules for similar projects and previous work experience by Burns & McDonnell, the completion of the impoundment closure prior to April 17, 2018, is determined to be technically feasible. If clean closure were required by ODEQ following the results of the pre-closure sampling efforts, this effort is also technically feasible within the specified timeframe.

5.0 CLOSURE NOTICES AND PROGRESS REPORTS

According to 40 CFR §257.100(c), there are several closure notices and progress reports that will be required throughout the Muskogee surface impoundment closure process. Closure documentation will include the following (CCR Rule compliance dates in parentheses):

- Notification of intent to close (December 17, 2015)
- Annual progress reports summarizing closure progress and projected closure activities:
 - First annual progress report 13 months after completing the notification of intent to close document (January 17, 2017)
 - Second annual progress report 12 months after completing the first annual progress report (January 17, 2018)
- Notification of completion of closure (60 days after closure completion)

The closure notices and progress reports will be placed in OG&E's CCR Operating Record no later than the dates specified above, and will be placed on OG&E's CCR public website within 30 days of those dates. Notification will be sent to the relevant State Director before close of business on the day the documents are posted on the website.

In addition to placing these closure notices and progress reports in OG&E's Operating Record, OG&E will also be required to submit the following documents to ODEQ per 252:616-13 (ODEQ Rules and Regulations submittal timeframe in parentheses):

- Notice of intent to close (90 days prior to closing the surface impoundment)
- Pre-closure sampling and analysis plan (at least 30 days prior to any pre-closure sampling)
- Closure plan (at least 90 days prior to commencing closure)
- Certification of Closure (following completion of activities outlined in the Closure Plan)
- Post-closure maintenance plan (if requested by ODEQ)

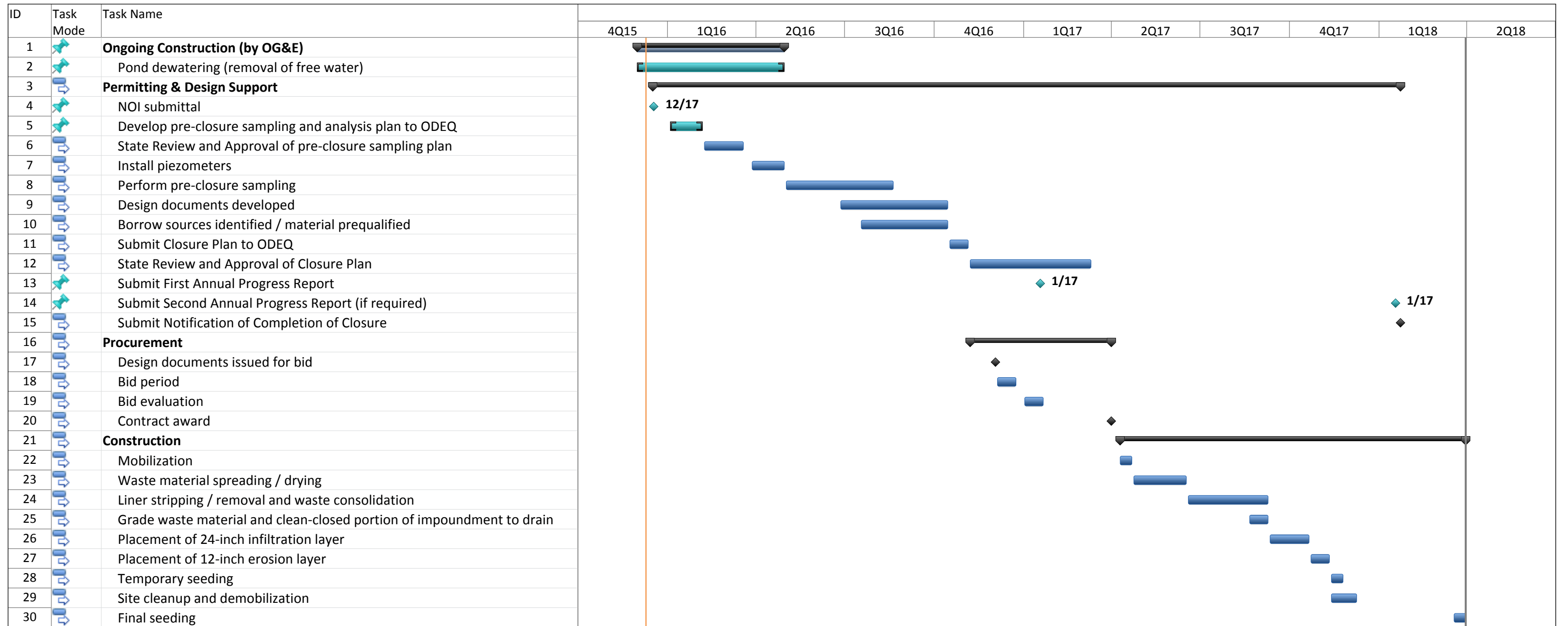
Appendix A – PLANT CONTACT INFORMATION

**Oklahoma Gas & Electric
Muskogee Power Plant
Fort Gibson, Oklahoma**

Plant Contact Information

Name	Address	Title
Charles Smithson	OG&E Muskogee 5501 Three Forks Road Ft. Gibson, OK 74434 Office: (918) 686-4388	<i>Supervisor Environmental Compliance / Operational Chemist</i>

Appendix B – PRELIMINARY WORK SCHEDULE



Project: Muskogee Pond Closure Date: Thu 12/10/15	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			



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