

Summary of Liner Construction Hugo Power Plant



Western Farmers Electric Cooperative

Project No. 85009

Revision 0
October 14, 2016

Summary of Liner Construction Hugo Power Plant

Prepared for

Western Farmers Electric Cooperative

Sawyer, Oklahoma

Project No. 85009

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Prepared by

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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 personal charge. I am a "Qualified Professional Engineer" as defined by 40 C.F.R. § 257.53 by the fact that I have the technical knowledge and experience to make the specific technical certifications set forth herein. Subject to the limitations of available data and information discussed herein, this Summary meets the requirements of 40 C.F.R. § 257.71. This Summary is not intended or represented to be suitable for reuse by Western Farmers Electric Cooperative or others without specific verification or adaptation by the Engineer.

Robert Owens, P.E. (Oklahoma License No.21260)

Date: _____

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
ALM	Asset Life Management
BMcD	Burns & McDonnell
CCR	Coal Combustion Residual
C.F.R.	Code of Federal Regulations
CMMS	Computerized Maintenance Management System
EPA	Environmental Protection Agency
ESP	Electrostatic Precipitator
FGD	Flue Gas Desulfurization
NAVD 88	North American Vertical Datum of 1988
NGVD 29	National Geodetic Vertical Datum of 1929
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
RCRA	Resource Conservation and Recovery Act
USC	United States Code
USGS	United States Geological Survey
WFEC	Western Farmers Electric Cooperative

1.0 INTRODUCTION

Burns & McDonnell (BMcD) has compiled information and prepared this Summary of Liner Construction (Summary) for the existing CCR Surface Impoundment (Impoundment) at the Western Farmers Electric Cooperative (WFEC) Hugo Power Plant (Plant). The purpose of this Summary is to comply with the United States Environmental Protection Agency's (EPA) Coal Combustion Residual Rule (CCR Rule), and the counterpart rule of the Oklahoma Department of Environmental Quality (ODEQ).

On April 17, 2015, the EPA published the CCR Rule relating to the disposal of coal combustion residual (CCR) materials generated at electric utilities' coal-fired units. The CCR Rule was promulgated pursuant to the Resource Conservation and Recovery Act (RCRA, 42 U.S.C. §§ 6901 *et seq.*), using the Subtitle D approach and is found at 40 C.F.R. § 257.50 *et seq.* Additionally, ODEQ adopted counterpart regulations to the CCR Rule effective September 15, 2016, which are found at Oklahoma Administrative Code (OAC) 252:517.

The owner or operator of a CCR Impoundment subject to the CCR Rule must document whether or not the Impoundment was constructed in accordance with criteria set forth at 40 C.F.R. § 257.71(a)(1) and OAC 252:517-11-2(a)(1). An existing surface impoundment is classified as lined, based on the CCR Rule, if the liner was constructed with any of the following:

- A liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} centimeters per second;
- A composite liner that meets the requirements of 40 C.F.R. § 257.70(b); or
- An alternative composite liner that meets the requirements of 40 C.F.R. § 257.70(c).

Figure 2-1 shows a site plan of the Plant.

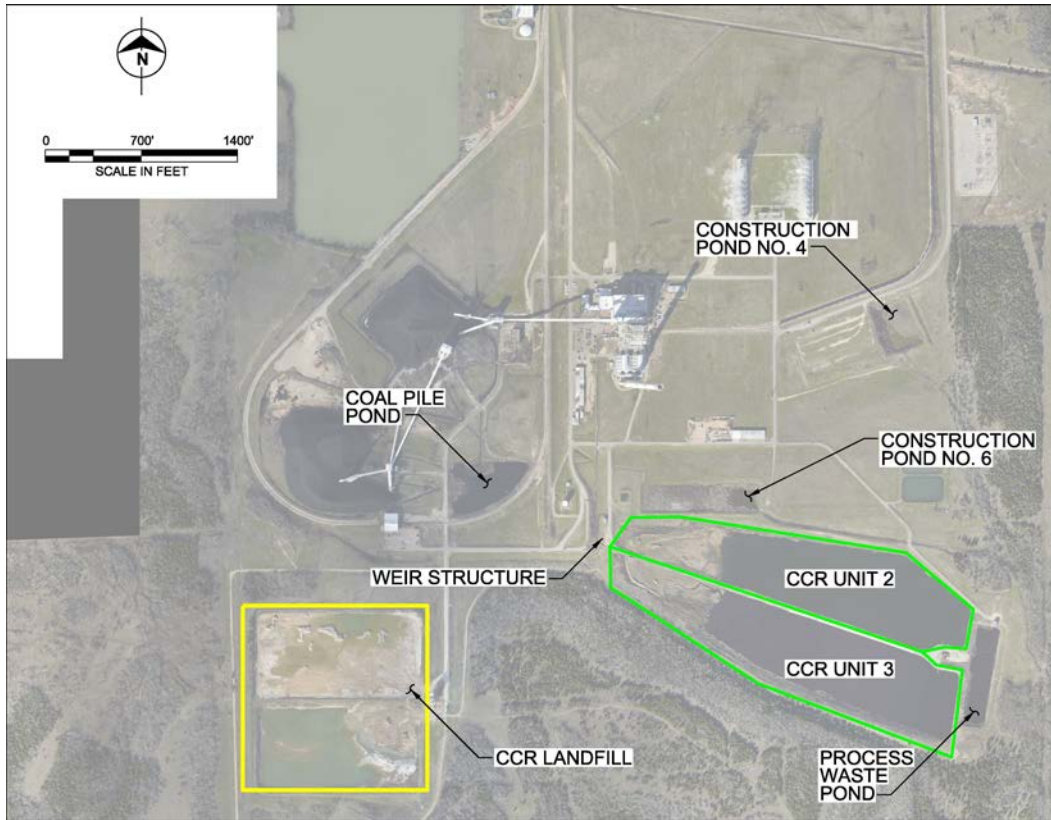


Figure 2-1 Hugo Site Plan

2.0 LINER CONSTRUCTION

Information discovered during the compilation of the History of Construction indicates that a compacted clay liner was considered during design, but may not have been installed in the bottom of the Impoundment, partially based on the results of field testing during construction, except in areas where gravel seams were encountered near the subgrade elevation.

The north, south, and west embankments and the bottom were constructed by excavation of the native soils. The center embankment dividing CCR Unit 2 and CCR Unit 3 was constructed by a combination of excavation and fill. The east embankment of CCR Unit 2 and CCR Unit 3 was constructed using fill. The limited information discovered during the compilation of the History of Construction also indicates the presence of a relatively low permeability native soil on the bottom of the Impoundment. Based on the limited available data and documentation, upon discovery of the low permeability soil, field percolation testing was performed on the soil in-situ. The results of the testing were sufficient enough for the State of Oklahoma to approve the Impoundment construction without an additional liner. However, to date, sufficient data and documentation has not been identified or located to demonstrate that this relatively low permeability native soil was constructed as a liner in a manner that meets the CCR Rule.

BMcD's opinion is based on the limited data and documentation available at the time of preparation of this Summary. Additional information or documentation regarding the Impoundment liner provided to BMcD upon its discovery may impact the results of this Summary.



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