

**CLECO POWER LLC
BRAME ENERGY CENTER
LENA, RAPIDES PARISH, LOUISIANA**



**CCR COMPLIANT
COMPOSITE LINER SYSTEM
DESIGN CERTIFICATION REPORT
ASH MANAGEMENT LANDFILL
CELL 4**

AGENCY INTEREST NO. 2922

D-079-0390/P-0379-R1-M3

DECEMBER 2023

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Providence Project No: 002-322



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1.0 INTRODUCTION

On April 17, 2015, the United States Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule (40 CFR 257 Subpart D) (CCR Rule) to regulate the disposal of CCR materials generated at coal-fired units. 40 CFR 257.70 requires the owner or operator of a new CCR landfill to document that the landfill was designed with a liner system meeting criteria outlined in Section 257.70(b) or (c). According to Section 257.70(f), the documentation must be certified accurate prior to construction of the landfill by a qualified professional engineer licensed in the State of Louisiana.

Cleco Power LLC (Cleco) operates an existing coal combustion residuals (CCR) landfill referred to as the Ash Management Landfill at the Brame Energy Center (BEC) located near Boyce, Rapides Parish, Louisiana (**Figure 1**). The landfill is considered a Type I Industrial Facility by the Louisiana Department of Environmental Quality and was issued a solid waste permit P-0379-R1-M2. Cells 1-3 of the Ash Management Landfill were active prior to the effective date of the CCR Rule. Cleco contracted and completed the design and construction of a lateral expansion for Cell 4 (**Figure 2**) of the Ash Management Landfill. This construction criteria report certifies that Cell 4 of the Ash Management Landfill was designed with a liner system that meets criteria outlined in 40 CFR 257.70(c).

40 CFR 257.70(f) requires that upon completion of construction of the CCR landfill or any lateral expansion of a CCR landfill, the owner or operator must obtain a certification from a qualified professional engineer that the composite liner (or, if applicable, alternative composite liner) and the leachate collection and removal system has been constructed in accordance with the requirements of this section.

Cell 4 has been constructed with a composite liner system designed to meet the requirements of 40 CFR 257.70(c) as discussed below. Certification from a qualified professional engineer is included in **Appendix A**.

2.0 DESCRIPTION OF LINER SYSTEM

Cell 4 was designed with an alternative liner system to meet the criteria outlined in 40 CFR 257.70(c). The composite bottom impermeable liner system for Cell 4 consists of the following components consistent with 40 CFR 257.70(c) (from the bottom up):

- One foot of 1×10^{-7} centimeters per second (cm/sec) maximum permeability recompacted clay;
- Welded 40-mil High Density Polyethylene (HDPE) liner;
- Geosynthetic clay liner (GCL)
- Welded 60-mil HDPE liner;
- Geocomposite drainage layer;
- 12-inch protective sand cover

The composite liner system is placed upon a base that provides adequate support for the liner system, and protective cover installed upon it that provides resistance to settlement that prevents damage to the liner; provides resistance to hydrostatic heave on the sides or bottom of the excavation

and provides resistance to desiccation. A more detailed description of the composite liner system can be found in **Attachment 29** and **Attachment 34** of the solid waste permit application.

The synthetic components of the composite liner system are secured at the top of the perimeter levee with the use of an anchor trench. The synthetic components come up to the top of the levee and into the anchor trench. The synthetic components cover the excavation sideslopes and the entire bottom of the anchor trench at a minimum. The anchor trench is filled with the same clay material used for the clay liner and was compacted after all synthetic components were installed and in place. **Figure 3** is a cross section of Cell 4 that shows the design details of the liner system.

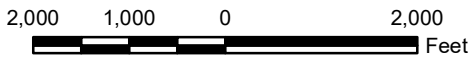
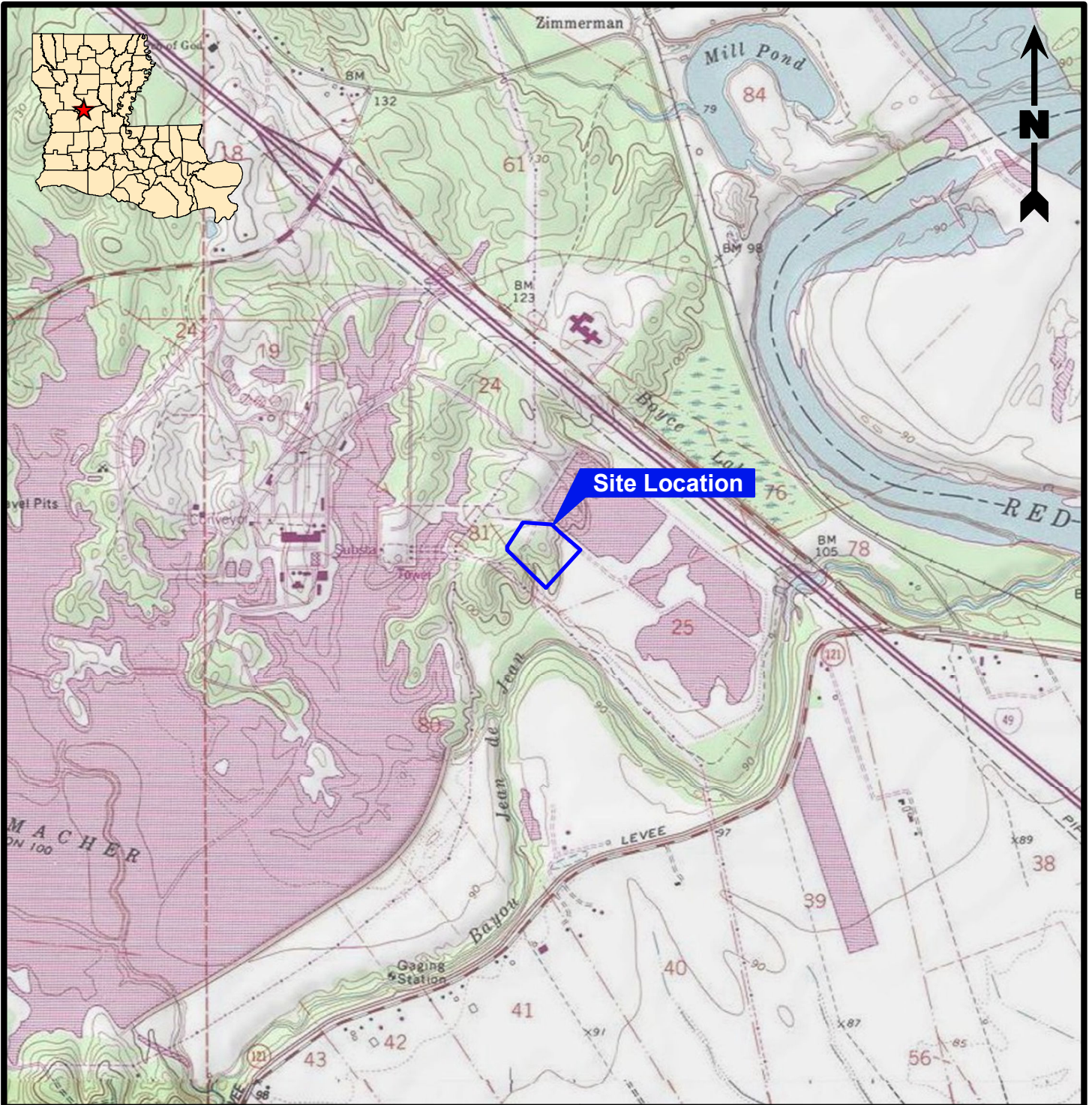
3.0 LIQUID FLOW RATE

40 CFR 257.70(c)(2) states that the liquid flow rate through the lower component of the alternative composite liner is no greater than the liquid flow rate through two feet of compacted soil with a hydraulic conductivity of 1×10^{-7} cm/sec. Review of the Quality Assurance Plan for the Installation of the Clay Liner (Attachment 28 of the solid waste permit application) and the Construction Certification Report for Cell 4, the composite liner has a permeability of no more than 1×10^{-7} cm/sec.

4.0 CONCLUSION

Based on the review of the liner system design, Cleco has determined that Cell 4 was designed with an alternative liner system that meets the criteria outlined in 40 CFR 257.70(c). This report will be placed in the facility's operating record in accordance with 40 CFR 257.107(f) and will be made available on the facility's publicly accessible internet site in accordance with 40 CFR 257.107(f).

FIGURE 1
SITE LOCATION MAP



Legend

 Cell 4 Boundary

Reference

Base map comprised of United States Geological Survey 7.5-minute topographic maps, "Boyce, LA" and "Gardner, LA".

Site Location Map

Cell 4 Composite Liner System Design Certification Report
Boyce, Rapides Parish, Louisiana

Cleco Power LLC
Brame Energy Center



PROVIDENCE

Drawn By	LMM	11/14/23
Checked By	LMH	11/14/23
Approved By	ARC	11/14/23

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Drawing Number	
002-322-A001	

FIGURE 2
SITE PLAN

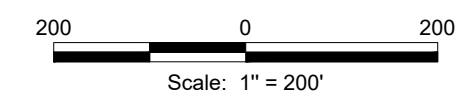


Legend

Cell 4 Boundary

Reference

Base map comprised of Bing Maps aerial imagery from (c) 2023 Microsoft Corporation and its data suppliers, exported 11/14/23.



Site Plan

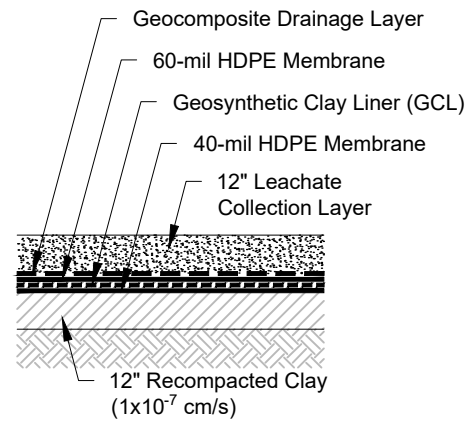
Cell 4 Composite Liner System Design Certification Report
 Boyce, Rapides Parish, Louisiana

Cleco Power LLC
 Brame Energy Center

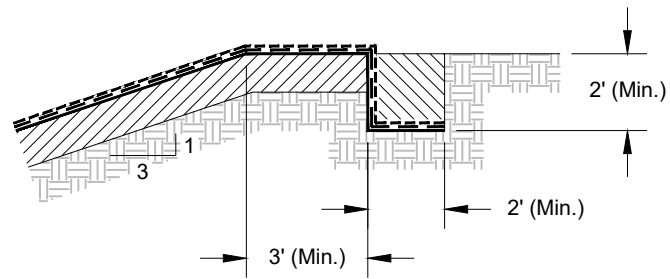


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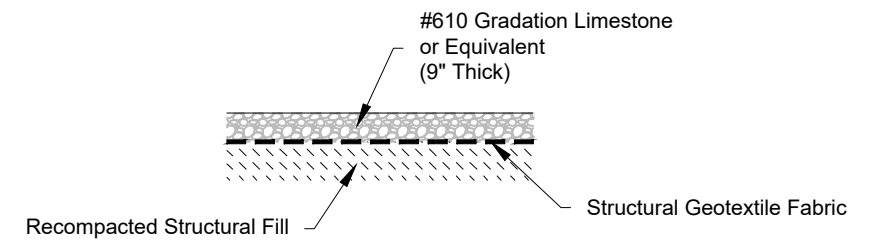
FIGURE 3
CELL 4 LINER SYSTEM DESIGN DETAIL



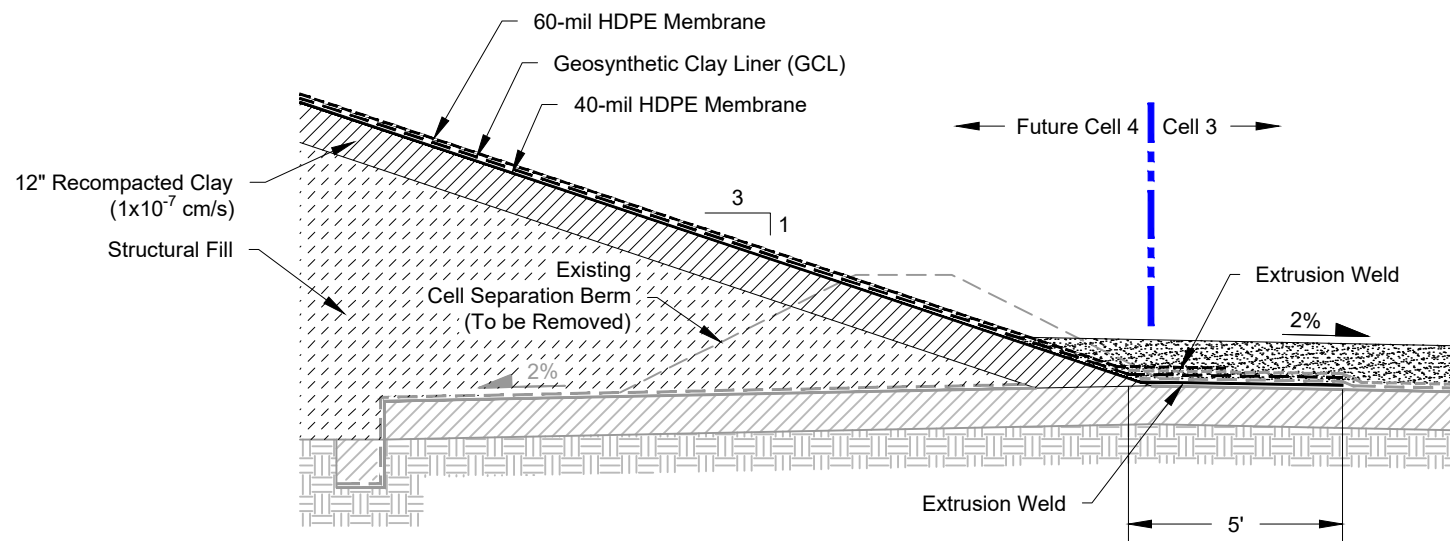
Composite Liner Detail
Not To Scale



Anchor Trench Detail
Not To Scale



Road Aggregate Detail
Not To Scale



Cell 3 and Cell 4 Separation Detail
Not To Scale

Cell 4 Liner System Design Details		
Cell 4 Composite Liner System Design Certification Report Boyce, Rapides Parish, Louisiana		
Cleco Power LLC Brame Energy Center		
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	Checked By	LMH 11/14/23
	Approved By	ARC 11/14/23
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	3	Figure

APPENDIX A
CERTIFICATION

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CERTIFICATION

Professional Engineer Certification Statement [40 CFR 257.70(c)]

I certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the Code of Federal Regulations Section 257.70 (40 CFR Part 257.70), I attest that this Liner System Design Certification Report is accurate and has been prepared in accordance with recognized and generally accepted good engineering practices, including the consideration of applicable industry standards, and with the requirements of 40 CFR Part 257.70.

Gary J. Leonards, P.E.

Name

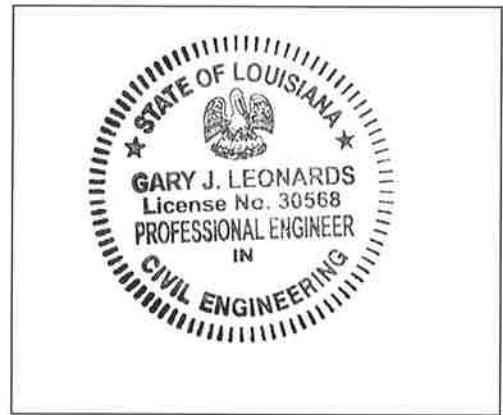
30568 Registration No.

Louisiana State

Signature

[Handwritten Signature]

12/29/23 Date



(Seal)