

SEPTEMBER 2018

CLECO POWER LLC BRAME ENERGY CENTER



SEISMIC IMPACT ZONES ASSESSMENT

BOTTOM ASH POND

Prepared By:

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Project Number 002-213



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1.0 INTRODUCTION

Providence was contracted by Cleco Power LLC (Cleco) to conduct a seismic impact zones assessment of the Bottom Ash Pond at Cleco's Brame Energy Center. Recent Coal Combustion Residual (CCR) regulations at 40 CFR 257.63 established requirements for owners and operators to conduct a seismic impact zones assessment by a qualified professional engineer.

40 CFR 257.63 (a) states:

New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in seismic impact zones unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that all structural components including liners, leachate collection and removal systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site."

The Cleco Brame Energy Center is located near Lena in Rapides Parish, Louisiana. A site location map showing the Brame Energy Center is included as **Figure 1**.

This seismic impact zones assessment pertains to the Bottom Ash surface impoundment (Pond) utilized for the Unit 2 coal-fired generation unit. A site map for the Bottom Ash Pond is included as **Figure 2**. For an existing CCR surface impoundment, the seismic impact zones assessment must be completed no later than October 17, 2018.

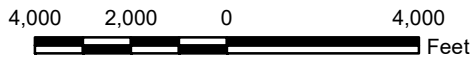
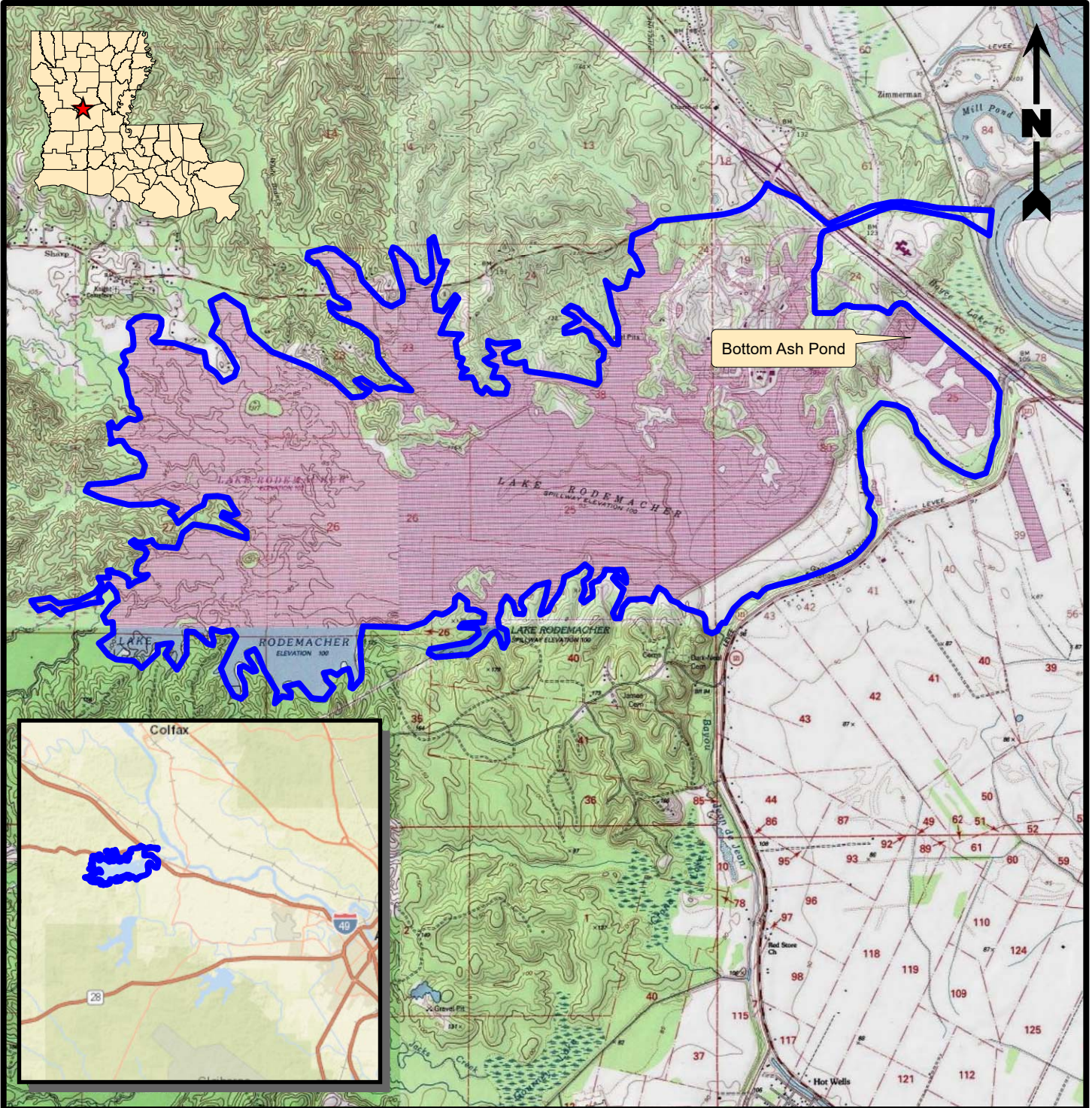
2.0 SEISMIC IMPACT ZONES ASSESSMENT

40 CFR 257.53 states that a seismic impact zone is defined as an area having 2% or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10 g in 50 years. The 2% probability seismic map created on the USGS website, Earthquake Hazards Program, Information By Region - Louisiana, (<https://earthquake.usgs.gov/earthquakes/byregion/louisiana-haz.php>) indicates between 4% g (0.04 g) and 8% g (0.08 g) for the facility, which is below the specified 0.10 g noted in the regulation.

3.0 CONCLUSION

Based on the results from the seismic impact zones assessment for the Bottom Ash Pond, Providence concludes that the surface impoundment is not located in a seismic impact zone that will exceed 0.10 g in 50 years. The Bottom Ash Pond meets the requirements at 257.63 of the CCR regulations. **Appendix A** contains a P.E. Certification that attests to this assessment.

FIGURE 1
SITE LOCATION MAP



Legend

 Property Boundary

Reference

Base map comprised of U.S.G.S. 7.5 minute topographic maps, "Lena, LA", "Boyce, LA", "Jericho, LA", and "Gardner, LA".

Site Location Map

Seismic Impact Zones Assessment - Bottom Ash Pond
Boyce, Rapides Parish, Louisiana

Cleco Power LLC
Brame Energy Center



PROVIDENCE

Drawn By	LMM	06/21/17
Checked By	LMH	06/21/17
Approved By	CVH	06/21/17

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Drawing Number	002-213-A005	

FIGURE 2
SITE MAP

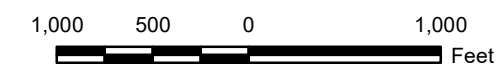


Legend

- Property Boundary
- Bottom Ash Pond

Reference

Base map comprised of Google Earth aerial imagery from 10/03/14.



Site Map

Seismic Impact Zones Assessment - Bottom Ash Pond
 Boyce, Rapides Parish, Louisiana

Cleco Power LLC
 Brame Energy Center



Drawn By	LMM	06/21/17
Checked By	LMH	06/21/17
Approved By	CVH	06/21/17
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Drawing Number	002-213-B006	
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APPENDIX A
P.E. CERTIFICATION

**CLECO BRAME ENERGY CENTER
BOTTOM ASH POND
CCR SEISMIC IMPACT ZONES ASSESSMENT**

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I have performed a seismic impact zones assessment for Cleco's Brame Energy Center Bottom Ash Pond in accordance with the 40 CFR 257.63 CCR requirements. Based on the results from the seismic impact zones assessment for the Bottom Ash Pond, Providence concludes that the surface impoundment is not located in a seismic impact zone that will exceed 0.10 g in 50 years. The Bottom Ash Pond meets the requirements at 257.63 of the CCR regulations.

James C. Van Hoof

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LA

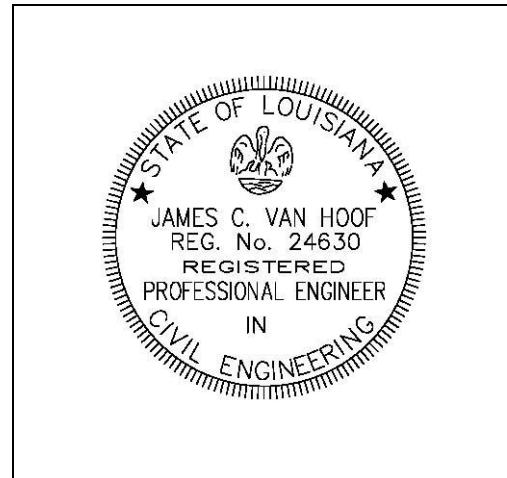
State

James C. Van Hoof, P.E.

Signature

9/19/18

Date



(Seal)