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MEMORANDUM

17 October 2018
File No. 128064-005

SUBJECT: Location Restriction Demonstration – 40 CFR §257.64 Unstable Areas
Thomas Hill Energy Center
Pond 1 - Cell 003
Clifton Hill, MO

Associated Electric Cooperative Inc. (AECI) operates the coal-fired Thomas Hill Energy Center (THEC, Plant) located near Clifton Hill, Missouri. Pond 1 – Cell 003 (Unit) is an existing coal combustion residuals (CCR) surface impoundment at the Plant. This demonstration addresses the requirements of 40 CFR §257.64 *Unstable Areas* of the U.S. Environmental Protection Agency's (EPA's) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, 40 CFR Part 257 rule (CCR Rule), effective 19 October 2015, with Amendments effective 29 August 2018, for the Unit.

> *§257.64(a): An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.*
>
> *§257.64(b): The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable:*
> *(1) On-site or local soil conditions that may result in significant differential settling;*
> *(2) On-site or local geologic or geomorphologic features; and*
> *(3) On-site or local human-made features or events (both surface and subsurface).*

Determination of compliance with §257.64(b)(1) - Conditions associated with the potential for significant differential settlement due to liquefaction were not identified in the area where the Plant is located. Accordingly, it is Haley & Aldrich'sopinion that the Unit is not located in an area that has on-site or local soil conditions that may result in significant differential settling.

Determination of compliance with §257.64(b)(2) - Based on available United States Geological Survey (USGS), Missouri Department of Natural Resources (MDNR) information, and communication with AECI representatives familiar with the Plant's history, karst topography or physiographic features such as sinkholes, vertical shafts, sinking streams, caves, large springs, or blind valleys do not exist at the Plant.

To evaluate the susceptibility of landslides, Haley & Aldrich reviewed readily available USGS and MDNR data. The USGS data indicates that the Plant is in an area of moderate landslide susceptibility and low

landslide incidence, however more detailed MDNR data indicates that there has not been a documented landslide occurrence at or near the Unit. The closest documented landslide is located more than 10 miles away from the Unit. Accordingly, it is Haley & Aldrich'sopinion that the Unit is not located in an area that has high susceptibility to landslides.

Determination of compliance with §257.64(b)(3) - There are no documented surface or subsurface anthropogenic activities that would be indicative of creating unstable foundation conditions.

> *§257.64(c): The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration meets the requirements of paragraph (a) of this section.*

I, Steven F. Putrich, being a Registered Professional Engineer in good standing in the State of Missouri, 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 CCR Unit is demonstrated as not being located in an unstable area per 40 CFR §257.64(a).

Signed: _____
Consulting Engineer

Print Name:	Steven F. Putrich
Missouri License No.:	2014035813
Title:	Project Principal
Company:	Haley & Aldrich, Inc.

Professional Engineer's Seal: