# Technical Memorandum

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| Date: | Wednesday, October 17, 2018 |
| Project: | Whelan Energy Center Temporary Ash Disposal Area |
| To: | Public Power Generation Agency and Hastings Utilities, Hastings, Nebraska |
| From: | Greg Shafer, PE |
| Subject: | 'Fault Areas' Demonstration and Certification |

# Purpose

The Coal Combustion Residual (CCR) Rule, specifically CFR Title 40, Part 257, Section 257.62, states that, "New CCR landfills, existing and new CCR surface impoundment, and all lateral expansions of CCR units must not be located in within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time" unless demonstrate that an alternative setback distance will prevent damage to the structural integrity of the CCR unit.

Holocene is considered the second epoch of the Quaternary Period, approximately 11,700 years ago to today.

The purpose of this technical memorandum is to summarize the data that demonstrates that the existing CCR surface impoundment known as the Whelan Energy Center (WEC) Temporary Ash Disposal Area is not located in a fault area.

# Facility Background

The Whelan Energy Center consists of two fossil fuel combustion units. WEC Unit No. 1 (WEC1) is owned and operated by Hastings Utilities. WEC Unit No. 2 (WEC2) is owned by Public Power Generation Agency (PPGA) of which Hastings Utilities is a partner and operating agent for PPGA. Fossil fuel ash disposal at this site began in 1981, the same year when commercial operation of the WEC1 began. Commercial operation of WEC2 began on May 1, 2011. The WEC Temporary Ash Disposal Area is an existing CCR surface impoundment of approximately 23.2 acres that has historically received CCR for disposal/storage and is permitted with the State of Nebraska.

# Fault Area

The United States Geologic Survey (USGS) provides an interactive fault map for the United States as part of their Earthquake Hazards Program. As explained on their website, "This database contains information on faults and associated folds in the United States that demonstrate geological evidence of coseismic surface deformation in large earthquakes during

the Quaternary (the past 1.6 million years). Links to descriptions and citations are accessible through the Database Search or Interactive Fault Map."

A recent verification of the earthquake fault map (September 20, 2018) shows no fault lines in the state of Nebraska. See attached Figure 1.

Although the Humboldt Fault extends into Nebraska, it is only considered a Class C fault, which is defined by the following per USGS, "Geologic evidence is insufficient to demonstrate (1) the existence of tectonic fault, or (2) Quaternary slip or deformation associated with the feature." (USGS Quaternary Fault and Fold Database Background). Further, it is not located within 200 feet of the WEC Temporary Ash Disposal Area.

The WEC Temporary Ash Disposal Area and associated facilities are not located in a fault area, and therefore complies with the 40 CFR 257.62 requirement of the CCR Rule.

# References

1. Earthquake Fault Map and background, USGS; Quaternary Fault and Fold Database of the United States; Interactive Fault Map (https://earthquake.usgs.gov/hazards/qfaults/)
2. Title 132 Permit Renewal Application, WEC Temporary Ash Disposal Area, HDR, October 2016.

# Professional Engineer Certification

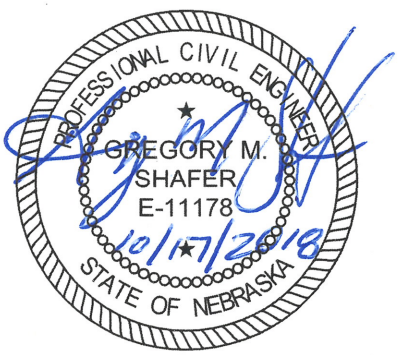
"I hereby certify that this Technical Memorandum for the existing WEC Temporary Ash Disposal Area at the Whelan Energy Center, operated by Hastings Utilities, meets the requirements of the Coal Combustion Residual Rule 40 CFR Section 257.62. I am a duly licensed Professional Engineer under the laws of the State of Nebraska."

Print Name: Gregory M Shafer

Signature:

Date: October 17, 2018

License #: E-11178




My license renewal date is December 31, 2018.

FIGURE 1: NEBRASKA EXCERPT OF INTERACTIVE FAULT MAP SEPTEMBER 20, 2018; SOURCE: USGS