

**VIA EMAIL**

April 12, 2018

Mr. Jeffrey Maxted  
Alliant Energy – Lead Environmental Specialist  
4902 North Biltmore Lane  
Madison, WI 53718-2148

**Re: Inflow Design Flood Control System Assessment- §257.82 and §257.100(a)  
Alliant Energy – Wisconsin Power and Light Company  
WPL – Nelson Dewey Generating Station  
Cassville, Wisconsin**

Dear Mr. Maxted;

Hard Hat Services (HHS) has assessed the inflow design flood control system and the impact on the hydrologic and hydraulic capacity for the inactive coal combustion residuals (CCR) surface impoundment located at the Wisconsin Power and Light Company (WPL) Nelson Dewey Generating Station in Cassville, Wisconsin.

### **Background Information**

In accordance with the requirements set forth in §257.82 and §257.100(a) of the CCR Rule, an owner or operator of an existing or inactive CCR surface impoundment is required to prepare an initial and periodic inflow design flood control system plan certified by a qualified professional engineer. The inflow design flood is to be selected based on the hazard potential classification (§257.73(a)(2) and §257.100(a)) for the CCR surface impoundment.

HHS' assessment generally meets the intent of the CCR Rule, however, a complete inflow design flood control system analysis was not conducted as part of the assessment due to the current status of the generating station, as well as the existing conditions of the inactive CCR surface impoundment. Specifically, the facility retired in December 2015 and has been demolished. The CCR within the NED WPDES Pond has been removed and the former surface impoundment area has been regraded. WPL is completing groundwater monitoring to complete the closure in accordance with 40 CFR 257.102(c) of the CCR Rule.

### **Facility Specific Information**

NED is located north of the Village of Cassville, Wisconsin on the eastern shore of the Mississippi River in Grant County, at 11999 County Highway VV, Cassville, Wisconsin. Figure 1 provides both a topographic map and an aerial of the NED facility location, with the approximate property boundary of the facility identified. NED ceased burning coal in December 2015. At that time the

generating station was decommissioned and permanently closed. As of December 2017, the generating station had been demolished.

NED has one remaining inactive CCR surface impoundment, which is identified as the NED WPDES Pond. The NED WPDES Pond is located north of the former generating plant and north of the former coal pile storage area. The NED WPDES Pond, prior to NED ceasing coal burning operations in December 2015, received influent flow of non-chemical boiler cleaning during maintenance activities on the facility's boilers, which occurred a few times a year. Other influent flows included surface water runoff that drained into the NED WPDES Pond via the former coal pile storage area and part of the former generating plant area located to the south of the NED WPDES Pond. The NED WPDES Pond typically operated as a zero-discharge pond system, with infiltration and evaporation being the only forms of release. Occasionally, if the water elevation rose above the operating elevation in the CCR surface impoundment, the water would be pumped to the former NED Slag Pond.

As of December 2017, the CCR within the NED WPDES Pond has been removed, and the CCR unit is completing groundwater monitoring in accordance with the closure requirements of 40 CFR 257.102(c) of the CCR Rule. As it exists today, the inactive CCR surface impoundment only receives influent flows from storm water runoff from various areas of the site as identified in Figure 2. The storm water runoff that drains into the NED WPDES Pond either infiltrates or evaporates as there is no longer a discharge associated with the inactive CCR surface impoundment.

### **Inflow Design Flood Control System Assessment**

As of December 2017 the CCR within the NED WPDES Pond had been removed as part of the closure requirements of §257.102(c) of the CCR Rule. However, the inactive CCR surface impoundment has not completed closure in accordance with the CCR Rule due to ongoing groundwater monitoring to confirm that groundwater protection standards are not exceeded. Therefore, an assessment of the inflow design flood control system was completed to meet the general intent of the CCR Rule requirements.

From HHS' review of readily available information associated with a WDNR approved NED WPDES Pond Closure Plan<sup>1</sup> prepared by SCS Engineers (SCS), the closure activities associated with the inactive CCR surface impoundment included removal of CCR, removal of the intermediate berms located within the inactive CCR surface impoundment, regrading of the surface area of the NED WPDES Pond, and removal of the pump house previously located in the northwest corner of the inactive CCR surface impoundment. With removal of the pump house the inactive CCR surface impoundment no longer consists of a discharge, therefore, the storm water runoff either infiltrates or evaporates.

For the NED WPDES Pond to meet the inflow design flood control system requirements of the CCR Rule, the storm water volume produced from a peak discharge of the selected design storm would need to be stored within the inactive CCR surface impoundment. The design storm for an inactive CCR surface impoundment with a low hazard potential is a 100-year return event SCS

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<sup>1</sup> NED WPDES Pond Closure Plan, SCS Engineers (March 31, 2017)



Type II 24-hour storm as defined in §257.82(3)(ii) and 257.100(a). Based on the HydroCAD® analysis from SCS' WDNR approved Closure Plan, the total rainfall for a 100-year storm event is approximately 7.47 inches. The total rainfall for the design storm was similar to the design storm selected for the Inflow Design Flood Control System Plan<sup>2</sup> that was prepared by HHS in 2016 for the former NED Slag Pond.

From the HydroCAD® analysis that was completed as part of SCS' Closure Plan, the new watershed for the inactive CCR surface impoundment includes the NED WPDES Pond, the area located south of the NED WPDES Pond formerly identified as the coal pile storage area, as well as a portion of the closed CCR landfill which includes closed areas along the eastern portion of the former NED Slag Pond (See Figure 2). From the HydroCAD® analysis, the total watershed acreage for the NED WPDES Pond was determined to be approximately 28.72 acres. The total storm water inflow volume required to be stored by the regraded NED WPDES Pond area from a 100-year event was determined to be approximately 13.207 acre-feet (575,301 cubic feet).

The HydroCAD® analysis completed by SCS identified the storage capacity of the NED WPDES Pond based on the proposed design that was included as part of the WDNR approved Closure Plan. From the design drawings, the depths of the inactive CCR surface impoundment varied between an elevation of 606 feet and 618 feet.

HHS' review of SCS' Storm Water Management calculations provided as part of the WDNR approved Closure Plan identified key assumptions, one of which assumed that the starting water elevation of the NED WPDES Pond was assumed to be 615 feet which was based on the highest historical groundwater elevation data observed for the site. The peak elevation of the NED WPDES Pond during a 100-year storm event was determined to be approximately 616.79 feet, approximately 1.21 feet below the embankment crest. Therefore, the NED WPDES Pond was determined to have sufficient storage capacity to contain the peak discharge from a 100-year return event SCS Type II 24-hour storm based on the WDNR approved Closure Plan design prepared by SCS.


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<sup>2</sup> Inflow Design Flood Control Plan, Hard Hat Services, September 20, 2016, Revision 0

**Qualified Professional Engineer Certification**

I Mark W. Loerop hereby certify that I am a licensed Professional Engineer in the State of Wisconsin; and that, to the best of my knowledge, all information contained in this document is correct and the existing conditions of the inactive CCR surface impoundment match the WDNR approved Closure Plan prepared by SCS. The information contained within this document has been prepared in accordance with standard good engineering practice.



By:   
Name: MARK LOEROP  
Date: APRIL 12, 2018

cc: Tony Morse, Alliant Energy

att: Figure 1 – Facility Location Map  
Figure 2 – NED WPDES Pond Watershed Map

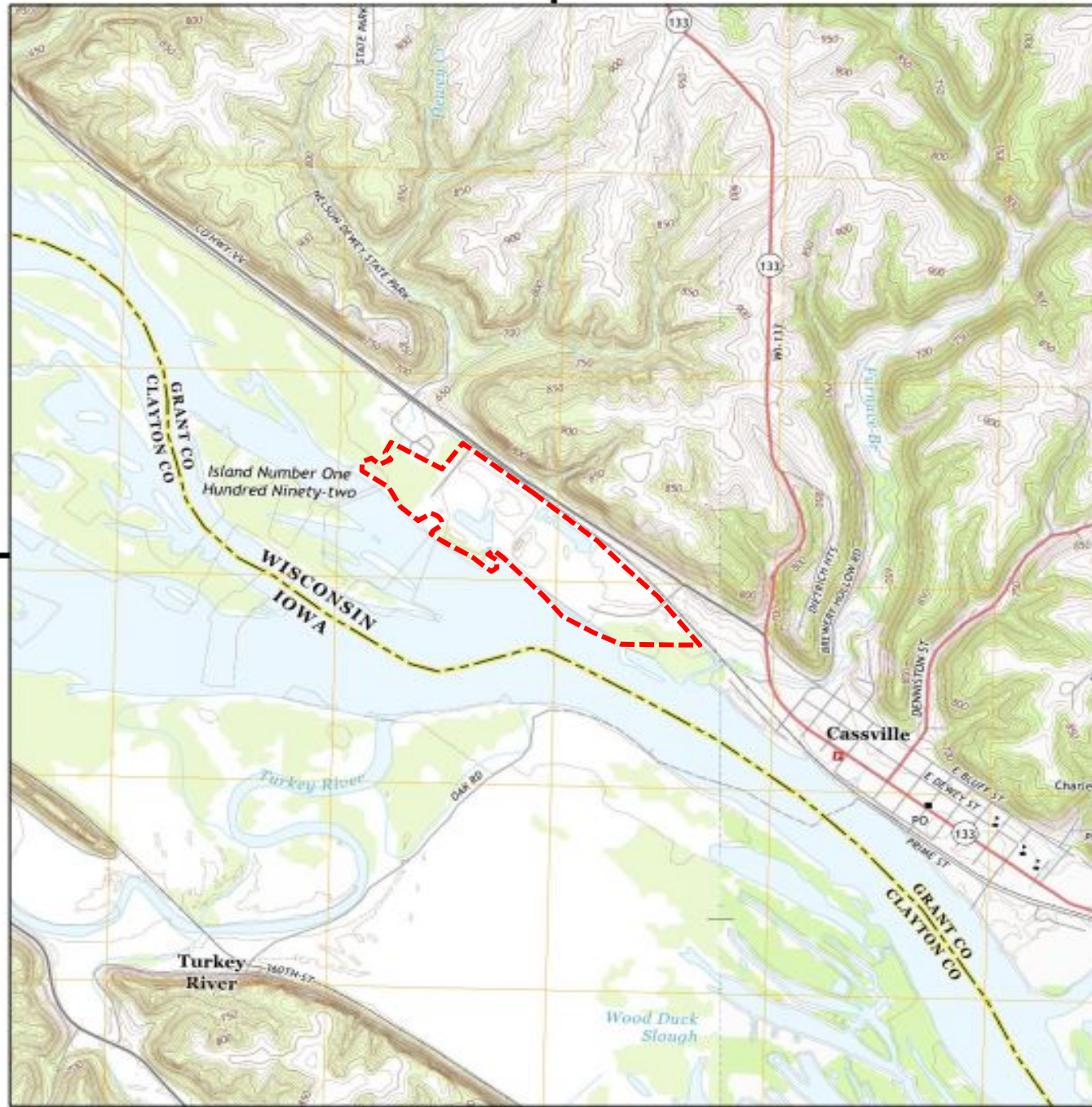
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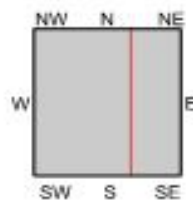
Historical Topo Map

2013

Historical Aerial Photo 5/30/2015



This report includes information from the following map sheet(s).



TP, Turkey River, 2013, 7.5-minute  
SE, Cassville, 2013, 7.5-minute

SITE NAME: Nelson Dewey Generating Station  
ADDRESS: 11999 County Highway VV  
Cassville, WI 53806  
CLIENT: Environmental Site Assessors



----- Approximate Property Boundary



**HARD HAT SERVICES**<sup>TM</sup>  
Engineering, Construction and Management Solutions

Site Location  
Nelson Dewey Generating Station  
Wisconsin Power and Light Company

Drawing  
Figure 1  
Date  
7/13/2016





--- NED WPDES Pond - Post Closure Drainage Area



NED WPDES Pond - Post Closure Drainage Areas  
 (Closure Plan Prepared By SCS Engineers)  
 Nelson Dewey Generating Station  
 Wisconsin Power and Light Company

Drawing  
 Figure 2  
 Date  
 3/26/2018