

Annual Progress Report – Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundments

Lansing Generating Station
Lansing, Iowa 52151

Prepared for:

Interstate Power and Light Company
2320 Power Plant Road
Lansing, Iowa 52151

SCS ENGINEERS

25220100.00 | November 30, 2021

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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1.0 INTRODUCTION AND PURPOSE

This Annual Progress Report was prepared to document the continued lack of alternative capacity and the progress towards closure of the coal combustion residual (CCR) surface impoundments at the Interstate Power and Light Company (IPL) Lansing Generating Station (LAN). Specifically, this report was prepared to comply with the requirements of [40 CFR 257.103\(f\)\(2\)\(x\)](#) in the U.S. Environmental Protection Agency (U.S. EPA) regulations regarding the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities [[40 CFR 257.50-107](#)], or the “CCR Rule” (Rule).

2.0 BACKGROUND

2.1 ALTERNATIVE DEADLINE APPLICATION

The Upper Ash Pond at the Lansing Generating Station is an existing unlined CCR impoundment that is subject to the requirements of [§257.101\(a\)\(1\)](#). In November 2020, IPL submitted an application to demonstrate the absence of alternative capacity for managing CCR and non-CCR wastestreams (application) and requested U.S. EPA approval to continue disposal of these wastestreams beyond April 11, 2021, as allowed by [§257.103\(f\)\(2\)](#). The application described IPL’s plans to cease placing CCR and non-CCR wastestreams in the CCR surface impoundment (Upper Ash Pond) by December 31, 2022, and will complete closure of the unlined CCR surface impoundment by October 17, 2023. IPL will end coal-fired operation of the boiler by December 31, 2022, and cease operations at LAN. U.S. EPA approval of the November 2020 application is pending as of the date of this report.

2.2 SITE INFORMATION AND MAPS

LAN is located along the west bank of the Mississippi River, south of the City of Lansing, in Allamakee County, Iowa. The address of the generating station is 2320 Power Plant Drive in Lansing, Iowa (**Figure 1**). The facility includes a coal-fired generating plant, a CCR landfill, the LAN Upper Ash Pond, and a coal stockpile.

2.3 GROUNDWATER

The two CCR units at the facility (LAN Landfill and Upper Ash Pond) are monitored with a multi-unit groundwater monitoring system and are the subject of this Annual Progress Report. A map showing the CCR units and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program is provided as **Figure 2**.

Groundwater flow at the site is generally to the north-northwest, and the groundwater flow direction and water levels fluctuate seasonally due to the proximity to the river. Depth to groundwater, as measured in the site monitoring wells, varies from 1 to 75 feet below ground surface due to topographic variations across the facility and seasonal variations in water levels.

In the November 2020 application, IPL provided certification of compliance with all other requirements of the CCR Rule as of the date of application submittal, including the requirement to conduct any necessary corrective action, as required in [§257.103\(f\)\(2\)\(iii\)](#). Arsenic has been detected at statistically significant levels (SSL) above the groundwater protection standard (GPS) in samples from one downgradient monitoring well at LAN. In response to a detection of arsenic at an SSL above the GPS at MW-302 (**Figure 2**), an Assessment of Corrective Measures (ACM) was completed in September 2019, and Addendum No. 1 to the ACM was completed in November 2020.

The selection of remedy is currently in progress. Additional monitoring wells have been installed and sampled as part of the ACM and selection of remedy, and assessment monitoring has continued, in accordance with [§257.96\(b\)](#).

Results from a new monitoring well nest (MW-307/MW-307A) installed between the CCR Units and monitoring well MW-302 appear to indicate that the CCR Units are not the cause of the arsenic SSL at MW-302. The MW-307/MW-307A well nest was installed and sampled after completion of the ACM and ACM addendum at a location downgradient from the Upper Ash Pond and upgradient from monitoring well MW-302. This location was not accessible when the original monitoring system was installed. Two sampling rounds have been performed on the MW-307/MW-307A nest since the wells were installed. Both sets of sample contained arsenic concentrations that are well below the GPS, which indicate that the GPS exceedances in well MW-302 may not be caused by the CCR Units. IPL continues to evaluate these results as part of the remedy selection process.

3.0 ALTERNATIVE DISPOSAL CAPACITY ASSESSMENT

The November 2020 application described the following CCR and non-CCR wastestreams produced during plant operations. These wastestreams are wet handled or are wastewaters managed within the on-site CCR surface impoundments.

CCR

- Bottom ash and sluice water
- Fly ash and sluice water – upon startup of Unit 4 only

Non-CCR

- Unit 4 service water for non-contact cooling of auxiliary equipment
- Water treatment area floor drains, reverse osmosis (RO) system reject, and demineralizer regeneration wastes
- Storm water

Fly ash generated at LAN is already managed off site through beneficial use, and IPL intends to continue beneficially using CCR when and where it is appropriate.

It was concluded in the November 2020 application that there is no current on-site or off-site alternative capacity after a review of the on-site and off-site alternative capacity for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams described above. New alternative disposal capacity would be needed to enable IPL to cease discharges of these wastestreams to the CCR surface impoundments. The development of that alternative disposal capacity would require the installation of significant new infrastructure (e.g., new storage and/or treatment facilities, force mains, etc.) to access potential off-site disposal alternatives.

On-site Capacity

The assessment completed for the November 2020 application concluded that no current alternate on-site capacity exists for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams produced at LAN. The assessment in the November 2020 application remains valid and there has been no change in the availability of alternate on-site capacity at LAN. There are no additional on-site impoundments that can be placed into service to provide alternative

on-site disposal capacity. No current alternate on-site capacity in the form of tanks is available. Based on the flows described above and on Figure 8 of the November 2020 application, an average of 2.16 MGD and up to 5.9 MGD (approximately 1,500 gallons per minute [gpm] or up to 4,100 gpm) of CCR and non-CCR wastestreams need to be treated. This would require as many as 80 temporary portable weir tanks with a capacity of 50 gpm for a 6-hour residence time (CCG 2020) and an estimated 2.6 acres of space (minimum) to manage these wastestreams on site. There is not 2.6 acres of available space within the developed areas of the site and space to the northeast cannot be developed due to terrain or impacts to cultural resources, as described below. This number of tanks also creates a risk of leaks in the interconnected piping, which would be considered an unauthorized bypass by the facility's NPDES permit. For these reasons, the installation of a temporary tank farm is not considered a feasible option at LAN.

IPL owns land to the northeast of the LAN Upper Ash Pond and LAN Landfill, but these areas include steep wooded terrain (see Figure 1 and Figure 9 of the November 2020 application) and sensitive cultural resources (UI 2005). The terrain and potential impacts to cultural resources prevent the use of this property. IPL does not own additional land to the west or south of the site. The Mississippi River is directly north and east of the plant, and it is not possible to develop capacity within a major waterway due to the environmental impact and because it would encroach on floodways.

Off-site Capacity

The assessment completed for the November 2020 application concluded that no current alternate off-site capacity exists for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams produced at LAN. The assessment in the November 2020 application remains valid and no alternative off-site disposal capacity has been identified by IPL since the submittal of the application. Alternative treatment and disposal of some of these wastestreams using publicly owned treatment works (POTW) might be possible if LAN was located in an existing service area of a local POTW, and it was allowed under current regulations for the facility to accept the wastestreams. However, the facility is not located in an existing POTW service area, and there is no existing connection to a POTW that provides conveyance of the wastestreams from LAN. Off-site disposal of these wastestreams at a POTW would require IPL to develop significant new infrastructure, including pumps, interconnected piping, tanks, and loadout equipment for hauling by trucks, or new conveyance infrastructure (a force main and lift station) to send wastewaters off site. Hauling these wastestreams offsite for treatment and disposal is not feasible based on the number of trucks and truckloads required to transport the wastewater (estimated at over 280 truckloads per day on average assuming a 7,500-gallon tanker truck is used to take wastewater to a POTW approximately 2.6 miles away). This number of truckloads would require a truck to fill and depart LAN every 5 minutes for 24 hours each day, which is not feasible or safe. The number of trucks required traveling the rural highway, including residential areas where residents must cross the highway to access waterfront facilities such as boat docks, between LAN and the POTW also presents a safety hazard. Off-site capacity has been evaluated but is not available for the reasons stated above.

Due to the short period of time that the coal-fired unit at LAN will operate after April 11, 2021 (approximately 21 months), it is illogical for IPL to develop new alternative disposal capacity. Activities to develop new on- or off-site alternate disposal capacity for wet-handled wastestreams or to install alternative technologies to transition LAN from wet to dry handling of remaining CCR wastestreams will not provide a significant benefit to the environment over the short period of remaining operations at LAN. If undertaken, these activities will only serve to distract from the work

required to plan, design and permit the closure of the existing CCR surface impoundment. This opinion is consistent with the discussion by the EPA in the preamble to both the proposed Part A revisions and the final rule revisions published in the Federal Register (U.S. EPA, 2020).

Since submitting the November 2020 application, IPL has focused efforts on how to close the Upper Ash Pond after the cessation of coal-fired operations at LAN on December 31, 2022. An update on the progress IPL has made toward closing the CCR surface impoundment is provided in **Section 4.0**.

4.0 CCR SURFACE IMPOUNDMENT CLOSURE

IPL has made significant progress toward the closure of the CCR surface impoundment at LAN. IPL has completed the following activities since the November 2020 application was submitted to achieve closure of the unlined CCR surface impoundment at LAN by the October 17, 2023 closure deadline in [§257.103\(f\)\(2\)\(iv\)\(A\)](#):

- Completed planning and preliminary design of the Upper Ash Pond.
- Issued a request for proposals (RFP) and obtained impoundment closure proposals based on a preliminary closure design.
- Procured pre-construction services support from a pond closure contractor.
- Initiated pre-construction services, including additional site investigation consisting of:
 - Installed additional test pits in the impoundment.
 - Conducted in-field pilot-scale feasibility testing of bridge lift construction, including settlement plate installation/monitoring and vibrating-wire piezometer installation/monitoring.
 - Conducted in-field pilot-scale feasibility testing of wet dredging within the impoundment.
 - Conducted laboratory bench-scale studies of CCR polymer treatment and dewatering with geotextile tubes.
 - Conducted in-field pilot scale feasibility testing of CCR polymer treatment and dewatering with geotextile tubes in conjunction with wet dredging.
 - Conducted laboratory bench-scale studies of in situ stabilization (ISS) of CCR with Portland cement.
 - Conducted in-field pilot-scale feasibility testing of large diameter (8-foot) soil/grout mixing equipment for ISS stabilization of CCR.
 - Evaluating CCR moisture conditioning methods.
 - Permitting and installing groundwater dewatering pilot test wells.
 - Conducting groundwater dewatering pump tests.
 - Conducting constructability and value engineering reviews.
- Identified permits required to complete closures and initiated drafting of permit applications.
- Initiated final impoundment closure design activities.

Currently, the CCR surface impoundment closures are on track to be completed by October 17, 2023, as planned. IPL plans to close the impoundments as generally described in the Closure Plan for Existing CCR Surface Impoundment, Amendment No. 2 submitted with the November 2020 application, with the exception of the previously estimated timing of the start of impoundment closure construction activities. IPL currently anticipates an acceleration of closure activities, beginning in 2022 after the procurement phase is complete.

5.0 REFERENCES

Continental Carbon Group (CCG), 2020, Weir Tanks for Rent website, Accessed October 19, 2020, <https://continental-carbon.com/services/weir-tanks-for-rent/>

SCS Engineers, 2020, Application for Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundment – Lansing Generating Station, Lansing, IA: Madison, WI, November 25, 2020.

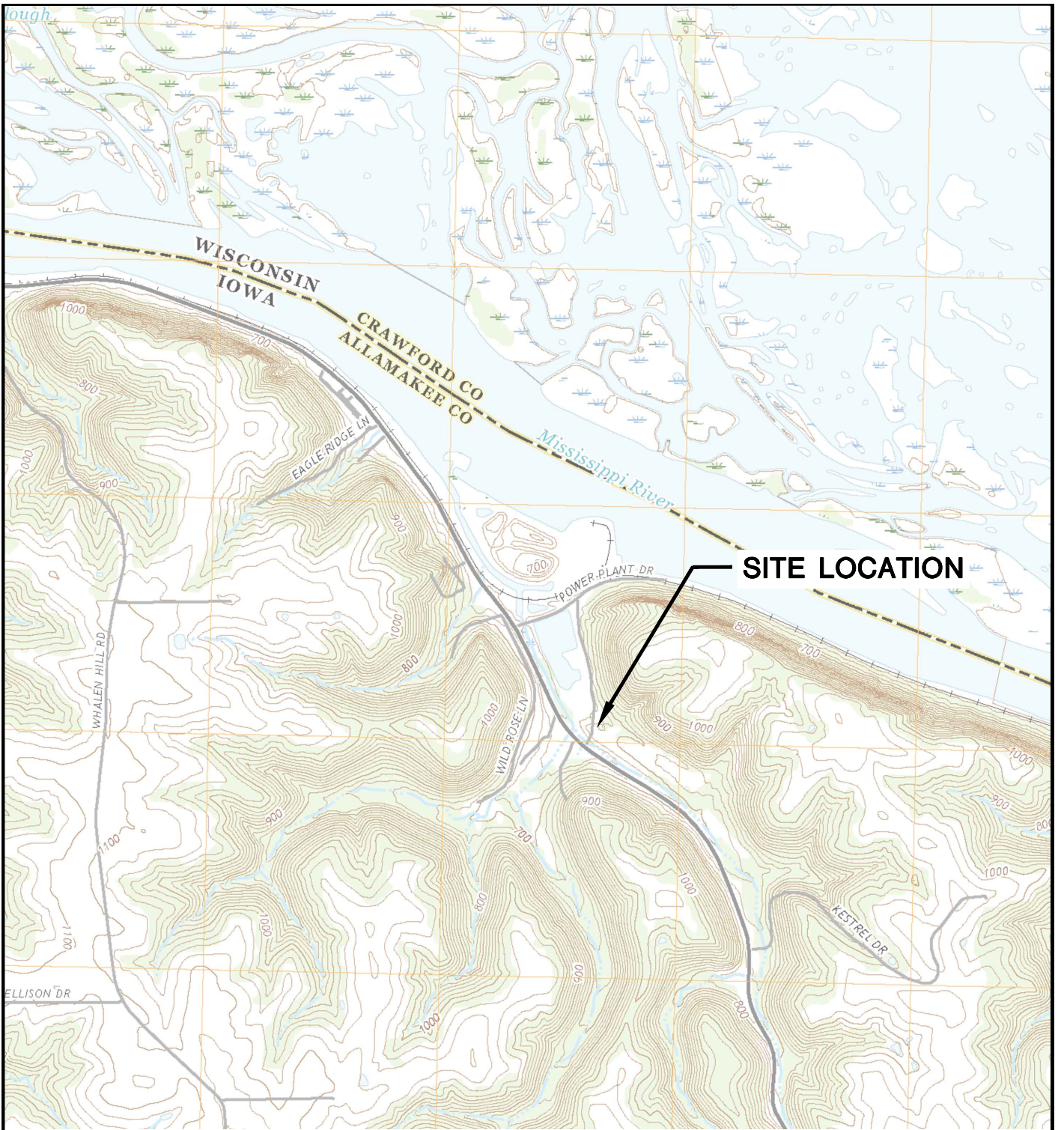
SCS Engineers, 2021, Semiannual Progress Report, Selection of Remedy – Lansing Generating Station, Lansing, IA: Madison, WI, September 10, 2021.

U.S. EPA, 2020, Federal Register / Vol. 85, No. 168 / Friday, August 28, 2020 / Rules and Regulations, p53516-53566, <https://www.govinfo.gov/content/pkg/FR-2020-08-28/pdf/2020-16872.pdf>

University of Iowa Office of the State Archaeologist (UI), 2005, Phase IA Archaeological Reconnaissance Survey of Proposed IC&E/Alliant Energy Railroad Improvements and Recycling Relocation Project (DNI Project Number 5037), Allamakee County Iowa.

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations



SITE LOCATION

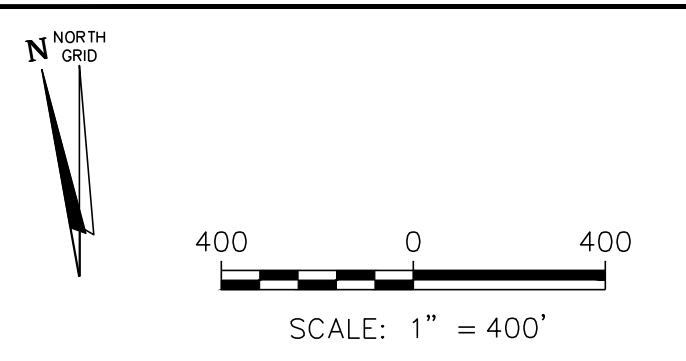
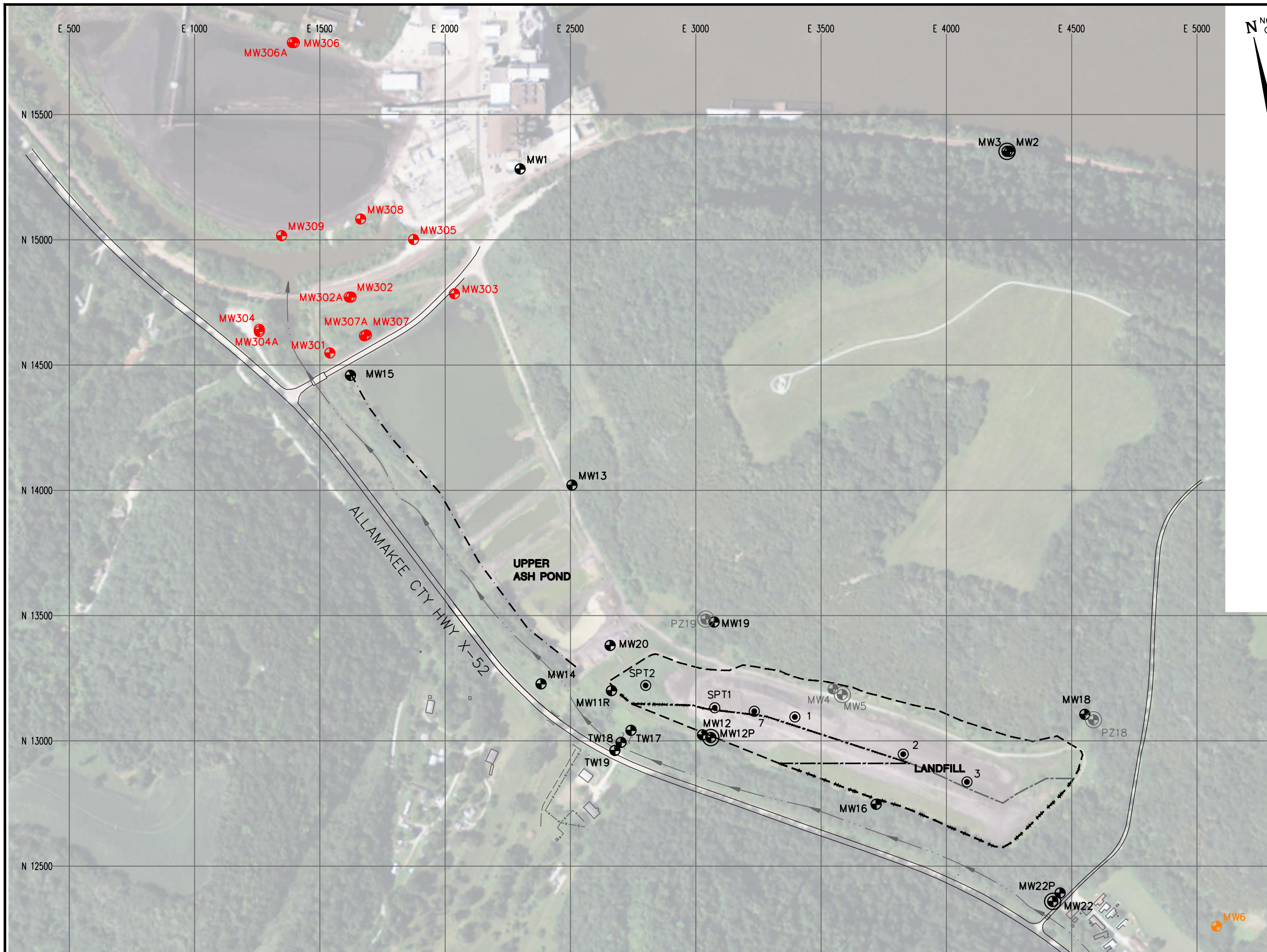


LANSING QUADRANGLE
 IOWA-ALLAMAKEE CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	INTERSTATE POWER AND LIGHT 2320 POWER PLANT DRIVE LANSING, IA 52151-9733		SITE	ALLIANT ENERGY LANSING GENERATING STATION LANSING, IOWA		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25219070.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
	DRAWN:	11/27/2019		CHECKED BY:	MDB			1
REVISD:	03/12/2020	APPROVED BY:	TK 02/12/2020					

I:\25220070.00\Drawings\Site Location Map.dwg, 3/12/2020 10:20:28 AM



LEGEND

	APPROVED LIMITS OF WASTE
	LIMITS OF PHASE 1 FINAL COVER
	LIMITS OF PHASE 2 FINAL COVER
	SLURRY WALL
	EXISTING STREAM
	EXISTING MONITORING WELL
	EXISTING PIEZOMETER
	ABANDONED MONITORING WELL
	ABANDONED PIEZOMETER
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
	SOIL BORING

- NOTES:
- 2011 AERIAL PHOTOGRAPH FROM THE USDA-FSA AERIAL PHOTOGRAPHY FIELD OFFICE.
 - MONITORING WELL LOCATIONS AND CCR UNIT LIMITS ARE APPROXIMATE.
 - MONITORING WELLS MW20, MW301, MW302, AND MW303 WERE INSTALLED BY CASCADE DRILLING IN NOVEMBER 2015.
 - MONITORING WELLS MW304, MW305, AND MW306 WERE INSTALLED BY ROBERTS ENVIRONMENTAL DRILLING IN MAY 2019.
 - MONITORING WELLS MW302A, MW304A, AND MW306A WERE INSTALLED BY CASCADE DRILLING IN DECEMBER 2019.
 - MONITORING WELLS MW307, MW307A, MW308, AND MW309 WERE INSTALLED BY CASCADE DRILLING IN JUNE 2021.
 - ONLY BORINGS USED FOR GEOLOGIC CROSS SECTION A-A' ARE SHOWN.
 - MW6 IS SAMPLED UNDER BOTH THE STATE AND CCR RULE MONITORING PROGRAMS.
 - THE BACKGROUND MONITORING WELL FOR THE LANSING POWER STATION IS MW6.

PROJECT NO. 25221070.00	DRAWN BY: BSS/KP	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	INTERSTATE POWER AND LIGHT 2320 POWER PLANT DRIVE LANSING, IA 52151-9733	SITE	ALLIANT ENERGY LANSING POWER STATION LANSING, IOWA	SITE PLAN AND MONITORING WELL LOCATIONS	FIGURE
DRAWN: 11/27/2019	CHECKED BY: MDB								2
REVISED: 08/04/2021	APPROVED BY: TK 8/22/2021								

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