solutions and action

Interstate Power and Light Company
Lansing Generating Station
CCR Surface Impoundment Structural Stability Assessment
154.018.029.002
Report issued: August 10, 2026 – Revision 2

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09/09/2026 - Classification: Internal - ECRM13805384

Executive Summary

This Structural Stability Assessment (Report) for the former Lansing Generating Station (LAN) has been prepared in accordance with the requirements of the United States Environmental Protection Agency rules for Hazardous and Solid Waste Management System – Disposal of CCR from Electric Utilities (40 CFR Parts 257 and 261, also known as CCR Rule).

This Report serves as the second update of the structural stability assessment for the CCR impoundments in Lansing, Iowa in accordance with §257.73(b) and §257.73(d) of the CCR Rule. Primarily, this Report is focused on documenting whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded within each CCR unit.

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1. INTRODUCTION

The owner or operator of Coal Combustion Residual (CCR) units must conduct an initial and periodic structural stability assessment and document whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein. Revision 2 of this Report has been prepared in accordance with the requirements of §257.73(b) and §257.73(d) of the CCR Rule.

1.1 CCR Rule Requirements

The CCR Rule requires an initial and periodic structural stability assessment by a qualified professional engineer (PE) for existing and legacy CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more; or the existing CCR surface impoundment has a height of 20 feet or more (40 CFR § 257.73(b), 257.73(d) and 257.83(b)).

1.2 Structural Stability Assessment Applicability

The Interstate Power and Light Company (IPL), Lansing Generating Station (LAN) in Lansing, Iowa (Figure 1) has one existing CCR surface impoundment (identified as the LAN Upper Ash Pond) that meet the requirements of §257.73(b)(1) and/or §257.73(b)(2) of the CCR Rule.

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2. FACILITY DESCRIPTION

LAN is located approximately three miles southeast of Lansing, Iowa on the western shore of the Mississippi River in Allamakee County, at 2320 Power Plant Drive, Lansing, Iowa (Figure 1). LAN was a fossil-fueled electric generating station that had used four steam turbine electric generating units throughout its history. Unit 1, Unit 2, and Unit 3 were retired by 2014 and at that time, Unit 4 was the only remaining operating unit. Sub-bituminous coal was the primary fuel for producing steam at LAN. The CCR at LAN was categorized into three types: bottom ash, fly ash, and scrubber byproduct. Fly ash was collected by electrostatic precipitators and pneumatically conveyed to an onsite fly ash silo, which was equipped with a baghouse for dust control. The fly ash was then either transported off-site for beneficial reuse, landfilled (in the case of high loss on ignition), or sluiced to the former LAN Upper Ash Pond (typically during startup and shutdown). Bottom ash was sluiced to the former LAN Upper Ash Pond where it was dredged, dewatered, and transported to the onsite landfill. The former LAN Upper Ash Pond was located south of the generating plant. Scrubber byproduct consisted of fly ash, unreacted lime, and activated carbon. Scrubber byproduct was collected in the byproduct silo prior to being landfilled onsite.

A historical CCR surface impoundment at LAN, identified as the Lower Ash Pond, was located west of the generating plant and north of Power Plant Drive. The Lower Ash Pond was closed in September 2015 by removing the CCR from the surface impoundment via hydraulic dredge and sluicing the CCR to the south end of the former LAN Upper Ash Pond. CCR was removed from the Lower Ash Pond prior to backfilling the surface impoundment.

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In mid-2023, Unit 4 was retired and the facility terminated all operations. In 2022 and 2023, closure construction activities were conducted for the former LAN Upper Ash Pond. In 2024, the LAN buildings were decommissioned and demolished. Currently, IPL is building a battery energy storage system (BESS) project on the former plant site and adjacent to the existing electrical substation.

General Facility Information:

Date of Initial Facility Operations:	1946
Historical NPDES Permit Number:	IA0300100
Latitude / Longitude:	41°56’38.43”N91°38’22.39”W
Unit Nameplate Ratings:	Unit 1 (1948): 16.6 MW (Retired)
	Unit 2 (1949): 11.4 MW (Retired)
	Unit 3 (1957): 35.8 MW (Retired)
	Unit 4 (1977): 270 MW (Retired)

2.1 LAN Upper Ash Pond

The former LAN Upper Ash Pond was located southwest of the generating plant and south of Power Plant Drive. The former LAN Upper Ash Pond received influent flows from the Unit 4 boiler floor sumps, water treatment sumps, fly ash hydroveyor system, storm water runoff from the active dry ash landfill and hillside east of the impoundment, as well as sluiced fly ash and bottom ash. The former LAN Upper Ash Pond was the only receiver of sluiced CCR at LAN. The CCR was sluiced from the generating plant to the southeast corner of the former LAN Upper Ash Pond where the majority of the CCR settled. Ongoing maintenance dredging was conducted in the southern portion of the former LAN Upper Ash Pond. The dredged CCR was temporarily stockpiled and dewatered prior to being transported to the on-site active dry ash landfill located south of the former LAN Upper Ash Pond.

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The sluiced water that was discharged into the former LAN Upper Ash Pond flowed to the west prior to flowing north through a series of five interconnected settling ponds separated by intermediate dikes. The intermediate dikes had 30-inch diameter corrugated metal pipes on the west and east sides, which hydraulically connected the five settling ponds. The water from each settling pond flowed north until it entered the large open settling area of the former LAN Upper Ash Pond.

In the Fall of 2021, a new concrete outlet Weir Box structure was commissioned for the former LAN Upper Ash Pond, while the previous discharge structure (Weir Box #1) was retrofitted to become an emergency stormwater overflow structure for sizeable precipitation events. The new outfall structure was in the northeast corner of the impoundment and equipped with fiberglass stoplogs to adjust the operating elevation of the former LAN Upper Ash Pond. Discharge was directed north in a 16-inch diameter HDPE pipe below Power Plant Drive. There it transitioned to a 20-inch diameter HDPE pipe and continued below the railroad tracks and then headed east where National Pollution Discharge Elimination System (NPDES) Outfall 010 discharged into the Mississippi River.

Emergency Overflow Weir Box #1, located at the north end of the former LAN Upper Ash Pond, where during an emergency, water overflowed a concrete weir into the concrete structure, and then through a 24-inch diameter corrugated metal pipe under Power Plant Drive and into Weir Box #2. The water left Weir Box #2 through a 24-inch diameter high density polyethylene pipe and into Weir Box #3 in the backfilled, former LAN Lower Ash Pond. The water flowed through Weir Box #3 and discharged to the west through a 24-inch diameter corrugated metal pipe into Unnamed Creek #1. Unnamed Creek #1 flowed to the north into Unnamed Creek #2 which then discharged into the Mississippi River.

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The total surface area of the former LAN Upper Ash Pond was approximately 11.5 acres and had an embankment height of approximately 20 feet from the crest to the toe of the downstream slope at its greatest height. The area of the entire CCR Unit inclusive of the impoundment and the dredging, staging, and dewatering area was approximately 17 acres. The interior storage depth of the former LAN Upper Ash Pond was approximately 28 feet.

During the closure construction activities in 2022 and 2023, a stabilized berm was constructed and bisected the former LAN Upper Ash Pond. This allowed for hydraulic dredging of the CCR from the northern portion of the Pond into the southern portion. The dredged CCR was pumped into geotubes and allowed to dewater. CCR was completely removed from the northern portion of the Pond. After CCR removal and dewatering of the impoundment was completed, a cap was placed over the CCR. The previous discharge structures (Weir Boxes 1 through 3 and the concrete discharge box constructed in 2021) were demolished and a portion of the western embankment was removed to allow for stormwater drainage to sheet drain into ditch lines that discharge directly into the Unnamed Creek #1 without retention within the former LAN Upper Ash Pond. SCS Engineers estimated the total volume of CCR post closure as 622,000 cubic yards.

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3. STRUCTURAL STABILITY ASSESSMENT- §257.73(d)

This Report documents whether the design, construction, operation, and maintenance of the LAN CCR unit is consistent with recognized and generally accepted good engineering practices for maximum volume of CCR and CCR wastewater which can be impounded.

3.1 LAN Upper Ash Pond

The former LAN Upper Ash Pond was constructed in 1974 in a valley directly south of the LAN generating station. The construction took place within the valley with the east and south side of the Upper Ash Pond being constructed against naturally occurring ground surface. The north and west sides of the impoundment were constructed of dredge spoil medium to fine sand from Mississippi River maintenance dredging.

To allow construction of the impoundment, the Unnamed Creek #1 was rerouted to run along the west side of the valley between the impoundment and a County Road on the east side slope of the valley. Soil investigations completed at the time of construction indicate the valley is underlain by a medium dense deposit of sand and gravel over the full valley floor with loose to very loose river silt laying on top of the sand and gravel at the north end of the planned Upper Ash Pond. Only organic topsoil was removed prior to constructing the two embankment sides of the former LAN Upper Ash Pond and the river silt remains in the foundation at the northern end of the former LAN Upper Ash Pond. The details of the former LAN Upper Ash Pond construction are shown in drawings prepared by Sargent & Lundy in 1974, Appendix A.

The embankment on the north side of the former LAN Upper Ash Pond has a 36-foot-wide crest to accommodate the Power Plant Drive access road. The western embankment has a 15-foot-wide crest. Both embankments were constructed with a 3 horizontal to 1 vertical outside slope.

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The inside slope of the embankment was lined with a layer of dry bentonite to reduce seepage loss through the permeable embankment soil.

The former LAN Upper Ash Pond was constructed with a four-foot square concrete riser well, Weir Box #1 for the control of process water and surface water discharge from the Pond. The concrete box was equipped with a wooden stop log system that was used to control the water elevation in the former LAN Upper Ash Pond. The normal operation elevation of the stop logs was 648 which maintained the pond water surface at elevation 648.75 feet during normal plant flows of 3,500 gpm. The crest elevation of the embankments was a minimum elevation of 654.

In 2015, a subsurface soil investigation was undertaken to collect soil samples and determine the in-situ density of the north and west embankments and the underlying foundation soil. The soil borings were undertaken with hollow stem augers and sampling was completed with a standard split spoon (ASTM D1556). The density information along with soil test results for water content, grain size, and Atterberg limits, Appendix B, indicate the conditions of the embankments as constructed in 1974.

In the summer of 2015, the west embankment of the former LAN Upper Ash Pond was improved by the installation of a cement-bentonite cutoff wall along the center line of the embankment. The cutoff wall reduced seepage loss through the embankment and eliminated the saturation of the embankment toe and flow of surface water from the toe to the Unnamed Creek #1.

Also in the summer of 2015, the north embankment of the former LAN Upper Ash Pond was improved by backfilling the Lower Ash Pond, substantially reducing the total height of the north embankment and improving its overall stability by surcharging the river silt layer in the foundation of the embankment.

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During the closure construction activities in 2022 and 2023, a stabilized berm was constructed and bisected the former LAN Upper Ash Pond which allowed for hydraulic dredging of the CCR from the northern portion into the southern portion. CCR was pumped into geotubes and allowed to dewater. CCR was completely removed from the northern portion and capped in the southern portion of the impoundment. After CCR removal and dewatering of the impoundment was completed, the previous discharge structures were demolished and a portion of the western embankment was removed to allow for stormwater drainage to sheet drain into ditch lines that discharge directly into the Unnamed Creek #1 without retention within the former LAN Upper Ash Pond, Figure 2.

3.1.1 CCR Unit Foundation and Abutments - §257.73(d)(1)(i)

The former LAN Upper Ash Pond was constructed on foundation soils that are medium dense sand and gravel in the southern part of the Pond and are suitable foundation soils. In the northern end of the pond the sand and gravels have an overlying river silt deposit that is loose to very loose and is saturated due to the Mississippi River. The original construction of the former LAN Upper Ash Pond was completed over the top of the river silt which has no claylike properties (Appendix B) and supported the embankment without substantial settlement after construction.

During assessment of embankment stability in the summer of 2015, prior to the effective date of the CCR Rule, it was determined that the river silt in the foundation resulted in slope stability safety factors less than the CCR Rule standards. As a result of the 2015 finding, the stability was improved within the northern embankment by filling the former Lower Ash Pond that had been excavated prior to the effective date of the CCR Rule, in order to surcharge the river silt, lessen the northern embankment height, and by stabilizing ground water elevation.

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The 2015 improvements increased the safety factor for slope stability controlled by the river silt layer to acceptable values as reported in the 2016 and 2021 Safety Factor Assessment Reports. The effects of the weak foundation soil were corrected, and the operation of the former LAN Upper Ash Pond was acceptable. The closure construction activities in 2023 have further increased the stability of the north embankment by removal of water retention from within the LAN Upper Ash Pond.

3.1.2 Slope Protection - §257.73(d)(1)(ii)

The impoundment is incised on the east and south sides. The north embankment crest is about 35 feet wide and contains Power Plant Road, which is the plant access road to the LAN. The northern slope is 3:1 and is comprised of shallow rooting vegetation, which is adequate to protect against surface erosion. The west embankment is also 3:1 and is vegetated with shallow rooting grasses, which is adequate to protect against surface erosion. The toe of the downstream west embankment has 10 feet of rip rap material, which protects from erosive forces during flooding of the Unnamed Creek #1. Lastly, backwater elevation from Mississippi River 100-year return elevation is 634, which does not reach the toe of the embankment.

Sudden drawdown is addressed in Section 3.1.7.

3.1.3 CCR Embankment Density- §257.73(d)(1)(iii)

The embankments were constructed in 1974 using dredge sand from maintenance dredging of the Mississippi River. The sand is medium to fine grained and very uniform throughout the embankments (see Appendix B). The density is medium dense to dense, indicating adequate compaction at the time of construction. Observation during installation of a cement-bentonite

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cutoff wall in 2015 in the west embankment, indicated further grain cementation in the formerly saturated areas of the embankment, likely due to calcium hydroxide from pond water.

The information from this assessment indicated that the CCR unit has been designed, constructed, operated, and maintained with sufficient embankment density.

3.1.4 Vegetation Management - §257.73(d)(1)(iv)

Historically, vegetation management has been conducted on a periodic basis. At the time of the 2025 Annual Inspection, the areas upstream and downstream slopes of the west embankment were properly managed grass slopes. The facility plans to continue managing the grassy vegetation on the embankments at a height that facilitates effective inspections.

3.1.5 Spillway Management - §257.73(d)(1)(v)

During the closure construction activities in 2023, the outlet Weir Box constructed in 2021 and the original Weir Box #1 discharge structures were demolished. A section of the west embankment berm was removed to allow the sheet flow of stormwater to discharge from the former LAN Upper Ash Pond into Unnamed Creek #1. As a result, there are no spillways associated with the former LAN Upper Ash Pond that remain.

3.1.6 Hydraulic Structures - §257.73(d)(1)(vi)

During the closure construction activities in 2023, the outlet Weir Box constructed in 2021 and the original Weir Box #1 discharge structures were demolished. A section of the west embankment berm was removed to allow the ditch lines of stormwater to directly discharge from the former LAN Upper Ash Pond into Unnamed Creek #1. As a result, there are no hydraulic structures associated with the former LAN Upper Ash Pond that remain.

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3.1.7 Sudden Drawdown - §257.73(d)(1)(vii)

The toe of the north embankment is above the 100-year flood elevation of Mississippi River Pool 9, Appendix C. The toe of the west embankment could be flooded by backwater in the Unnamed Creek #1. However, the creek overflows down a drop riffle structure that loses 15 feet of elevation under the bridge for Power Plant drive and is unlikely to have significant flood elevation profile on the west embankment toe. Therefore, sudden drawdown conditions from an adjacent water body do not occur for the former LAN Upper Ash Pond.

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4. QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

To meet the requirements of 40 CFR 257.73(d)(3), I Mark W. Loerop hereby certify that I am a licensed professional engineer in the State of Iowa; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in 40 CFR 257.73(b) and 40 CFR 257.73(d).

By: _____

Name: Mark Loerop

Date: 8/10/2026

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FIGURES

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

Structural Stability Assessment

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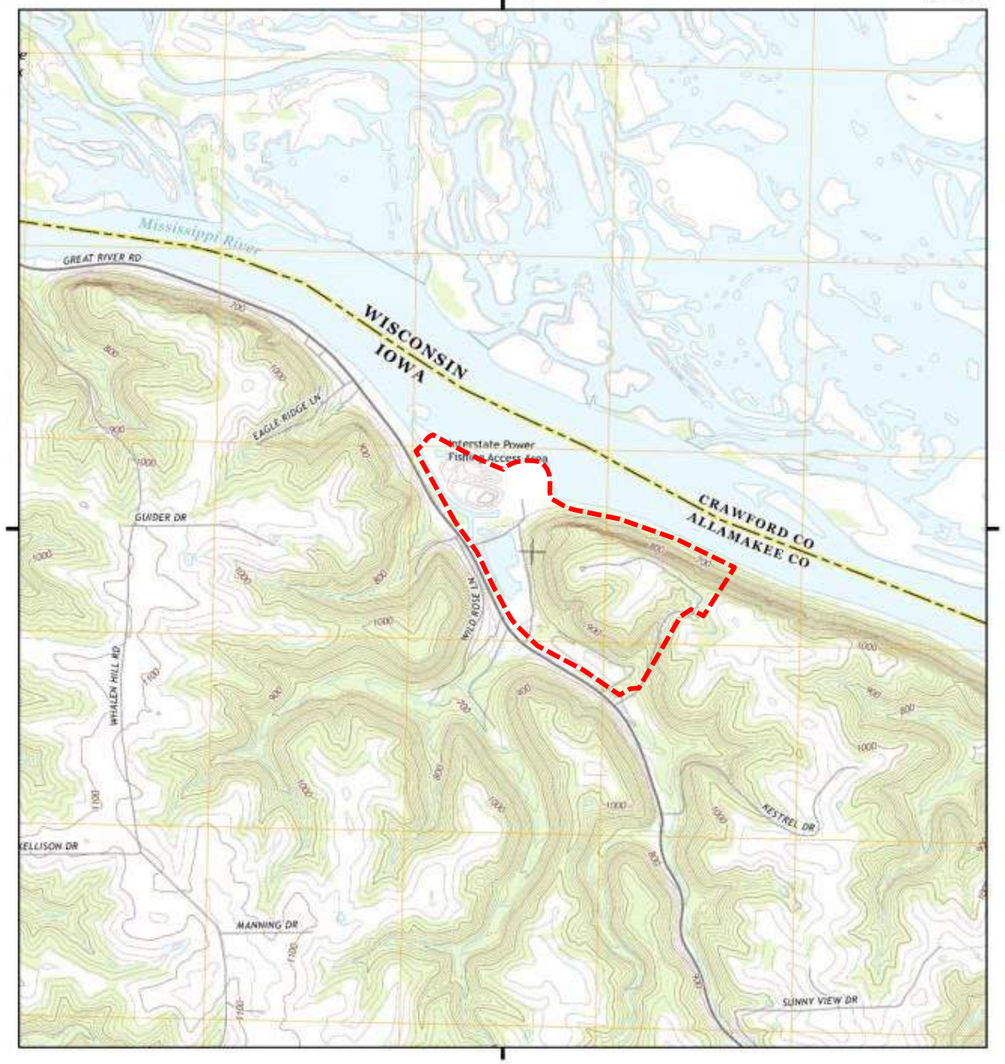
Historical Topo Map

2013



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

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Lansing, 2013, 7.5-minute

SITE NAME: Lasing Generating Station
ADDRESS: 2364-2366 Power Plant Dr
Lansing, IA 52151
CLIENT: Environmental Site Assessors

N

4555570 - 1 page 5

Historical Aerial Photo

Approximate Property Boundary

hard hat SERVICES

Site Location
Lansing Generating Station
Intersate Power and Light Company

Drawing: Figure 1
Date: 8/6/2026

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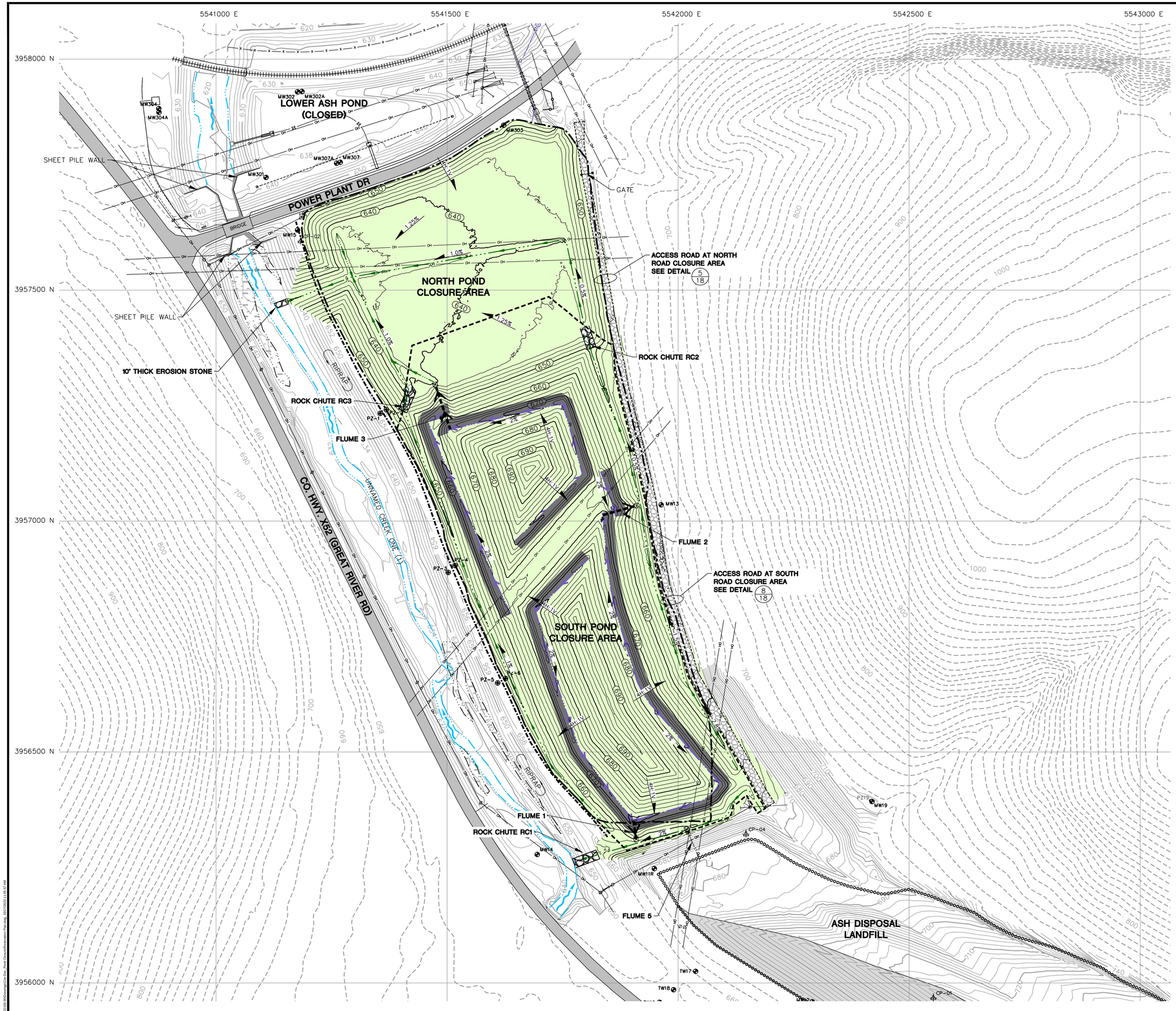

LEGEND

- 2008 EXISTING GRADE (10' CONTOUR)
- 2015/2020/2022 EXISTING GRADE (10' CONTOUR)
- 2015/2020/2022 EXISTING GRADE (2' CONTOUR)
- ASH DISPOSAL LANDFILL APPROVED LIMITS OF WASTE
- PAVED ROAD
- GRAVEL ROAD
- FENCE
- RAILROAD TRACKS
- EDGE OF WATER
- UNNAMED CREEK FLOW PATH
- OVERHEAD UTILITY
- TELEPHONE
- STORM DRAINAGE PIPE
- PROCESS WATER PIPE
- UPPER ASH POND OUTFALL REROUTE PIPING
- UTILITY POLE AND GUY WIRE
- LIGHT POLE
- CP-02 SURVEY CONTROL POINT
- MW17 MONITORING WELL
- MW17 ABANDONED MONITORING WELL
- MW12P PIEZOMETER
- MW12P ABANDONED PIEZOMETER
- PZ18 ABANDONED SHALLOW PIEZOMETER
- PZ-1 WEST EMBANKMENT SLURRY WALL PIEZOMETER (2015 BY HARD HAT SERVICES)
- SLURRY WALL (2015 BY HARD HAT SERVICES)
- APPROXIMATE LIMITS OF UPPER ASH POND
- ASH DISPOSAL LANDFILL FINAL COVER AREA
- 630 DOCUMENTED FINAL GRADE (5' CONTOUR)
- 632 DOCUMENTED FINAL GRADE (1' CONTOUR)
- FINAL COVER LIMITS
- DRAINAGE SWALE
- DIVERSION BERM
- DOWNSLOPE FLUME
- ENERGY DISSIPATOR
- ROCK CHUTE
- ACCESS ROAD RESTORATION
- VEGETATED RESTORATION

NOTES:

1. SEE SHEET 2 AND SHEET 3 FOR ADDITIONAL BASE MAP LEGEND ITEMS AND NOTES.
2. PLACED NON-CHANNEL EROSION MAT ON RESTORED SLOPES STEEPER OR EQUAL TO 4:1 OR AS NOTED.
3. PLACED CHANNEL EROSION MAT IN DRAINAGE SWALES.
4. CONTOURS WITHIN CONSTRUCTION LIMITS BASED ON SEPTEMBER 25, 2023 DRONE SURVEY PERFORMED BY AMES.

100 0 100
SCALE: 1" = 100'

N

DRAFT

DRAWN BY: BSS/KP
CHECKED BY: BSS/MRH
APPROVED BY:
PROJECT NO. 25222159.00
DRAWN: 10/05/2023
REVISED: 10/26/2023

INTERSTATE POWER AND LIGHT CO.
2320 POWER PLANT DRIVE
LANSING, IA 52151-9733
CLIENT

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830
ENGINEER

ASH POND CLOSURE
CONSTRUCTION DOCUMENTATION
LANSING GENERATING STATION
LANSING, IOWA
SITE

CLOSURE AREA RESTORATION

SHEET
12 of 19

L:\2025\159.00\Drawings\Cover\Fee_Road Closure\Restoration Plan.dwg, 10/27/2023 11:05:17 AM

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APPENDIX A – 1974 Upper Ash Pond Construction Drawings

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

Structural Stability Assessment

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NOTES

1. A-1 THRU A-22, 25' MAXIMUM OR TO ROCK.
2. B-1 AND B-2 CORE 10' INTO SOLID ROCK, B-3 THRU B-19 TO ROCK.
3. C-1 THRU C-6 25' MAXIMUM BELOW WATER LEVEL OR TO ROCK.
4. STANDARD PENETRATION TEST BLOW COUNTS AT 5' INTERVALS OR CHANGE IN STRATA SHALL BE PROVIDED FOR EACH SAMPLE OF GRANULAR SOIL ENCOUNTERED.
5. STANDARD PENETRATION TEST BLOW COUNTS, FIELD POCKET PENETROMETER TESTS, AND WATER CONTENT DETERMINATIONS AT 5' INTERVALS OR CHANGE IN STRATA, SHALL BE PROVIDED FOR EACH SAMPLE OF COHESIVE SOIL ENCOUNTERED.
6. THE TYPE, CONSISTENCY, RECOVERY RATIO, ROCK QUALITY DESIGNATION, AND LABORATORY UNCONFINED COMPRESSION TESTS ON REPRESENTATIVE ROCK SAMPLES SHALL BE PROVIDED FOR EACH ROCK CORE.
7. OBTAIN REPRESENTATIVE SOIL SAMPLES FROM THE RIVER BOTTOM, BORINGS NO. C-1 THRU C-6 AND THE SOUTHERN HALF OF THE SITE, BORINGS NO. A-1 THRU A-11, A-14, A-15 & A-18. PERFORM MODIFIED PROCTOR DENSITY TESTS AND GRAIN SIZE ANALYSIS ON REPRESENTATIVE SAMPLES.
8. FOR THE COMPLETE UNIT 4 BASE LINE & GRID SYSTEM SEE DWG S-11.
9. D-1 THRU D-14 TO ROCK.

N

INSET PLAN

0 1000 2000
SCALE IN FEET

NOTE : FOR BORINGS NOT SHOWN ON THIS LOCATION PLAN SEE INSET ABOVE.

SEE TOP OF DRAWING FOR NOTES

REFERENCE DRAWINGS

S-3	SOIL BORING LOGS - SHEET 1
S-4	SOIL BORING LOGS - SHEET 2
S-5	SOIL BORING LOGS - SHEET 3
S-6	SOIL BORING LOGS - SHEET 4
S-10	SITE DEVELOPMENT - COFFERDAM AND DREDGING PLAN
S-11	SITE DEVELOPMENT - PLANT FILL

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
Signed _____ Date 9-10 19 73
R. N. Bergstrom, P.E. Iowa Reg. No. 4480

R. N. BERGSTROM REGISTERED 4480 IOWA PROFESSIONAL ENGINEER

Drawing Release Record			
Rev.	Date	Init.	Description
	4-6-73	WML	FOR BORINGS
A	9-10-73		ADD TESTED BORINGS
B	9-27-73		ADDED BOR. LINES
C	12-3-74		ADDED B-19 & C-6 SET, LINES ETC.
D	9-9-77	WML	RELOCATED AS MARKED IN FIELD, RECORD DWG.

BORING LOCATION PLAN
UNIT 4
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

SCALE 1"= 100'
DRAWN WM. L. VOLK 4-3-73
CHECKED R.C. Oberbeck 9-7-73
ENGINEER R.N. Bergstrom 9-10-73
APPROVED R.N. Bergstrom 9-10-73
JOB NO. 4644-03

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO. S-1

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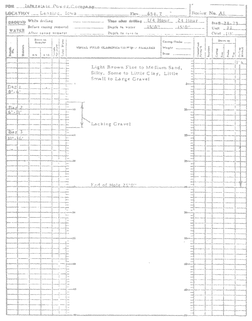
BORING A-1



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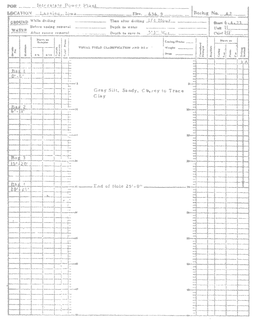
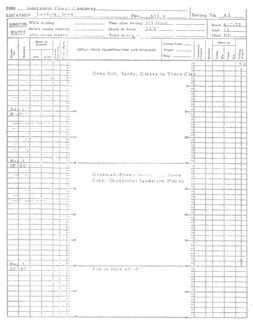
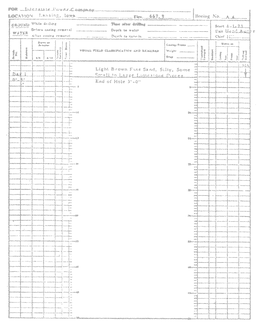


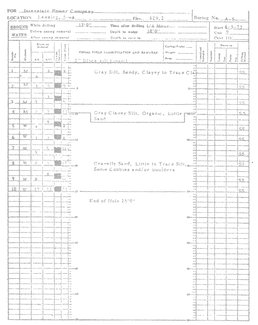
BORING A-3



BORING A-4



BORING A-5



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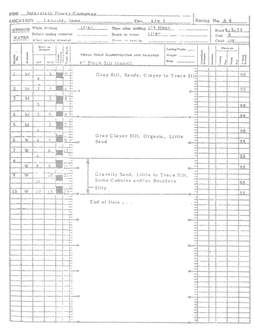

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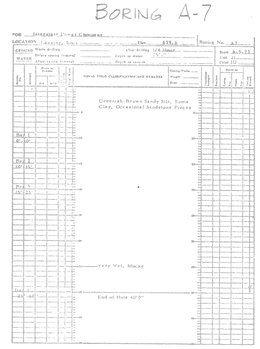

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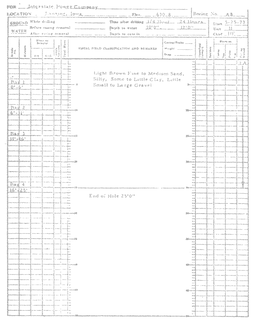

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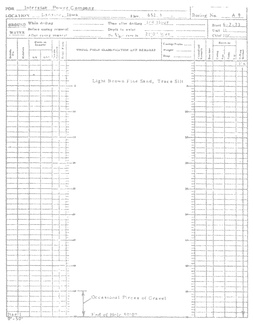

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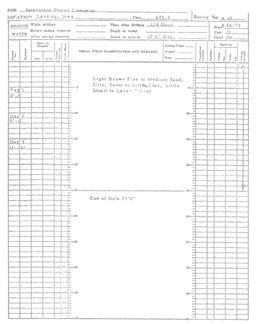

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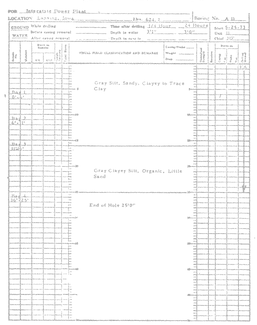

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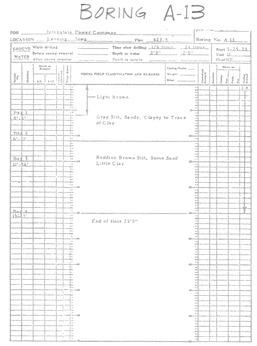

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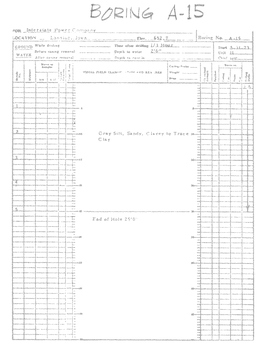

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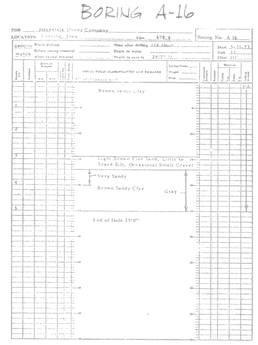

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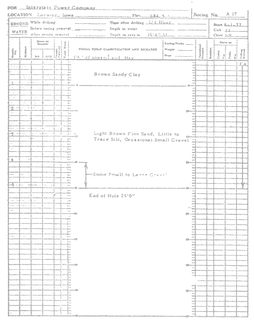

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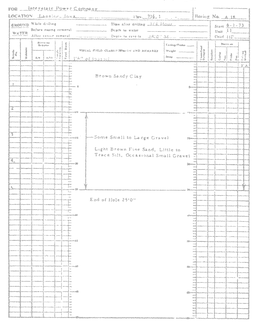

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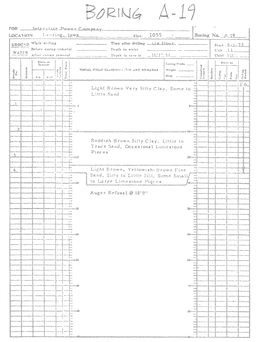

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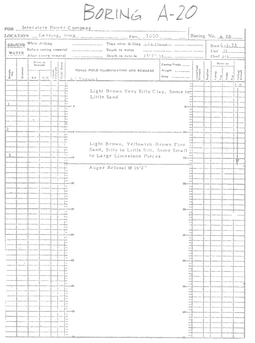

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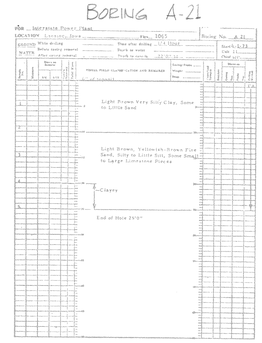

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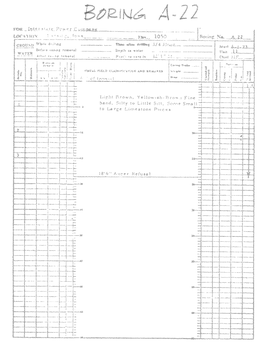

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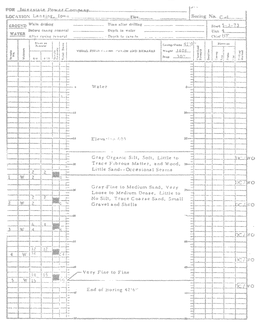

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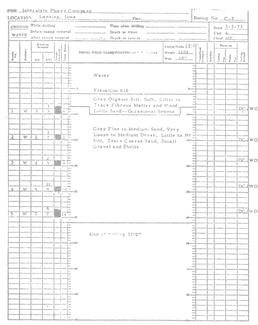

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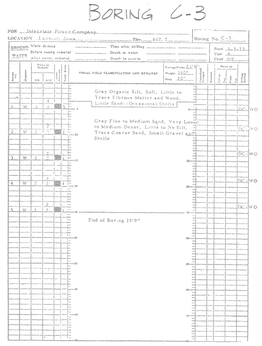

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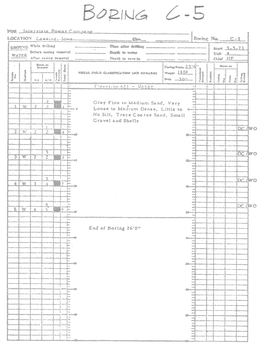

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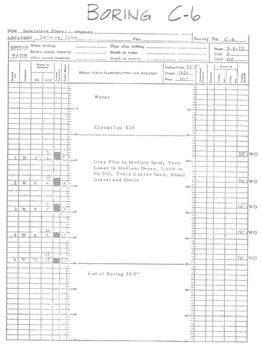

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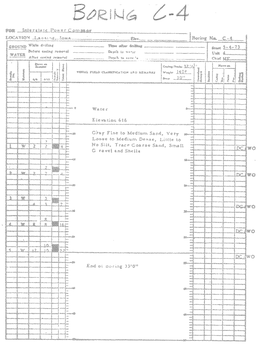


REFERENCE
BID SPEC. G-3105
1-21-74

NOTES

1 LEGEND FOR DRILLING METHODS

SS:	Split--Spoon--2" O.D.
DC:	Drove Casing--2½" I.D., except where noted
WO:	Washed Out
RC:	Rock Coring
RQD:	Rock Quality Designator
FA:	Flight Auger
HA:	Hand Auger

REFERENCE DRAWINGS

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Signed _____ Date 9-10-73

R. N. Bergstrom, P. E., Iowa Reg. No. 4480

R. N. BERGSTROM REGISTERED 4480 IOWA PROFESSIONAL ENGINEER

Drawing Release Record			
Rev.	Date	Init.	Description
1	9-10-73		CONSTR

SOIL BORING LOGS
SHEET 1
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

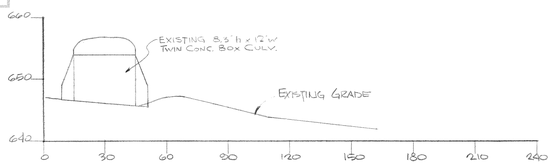
SCALE NONE
DRAWN J. CASTRO 8-24-73
CHECKED R.C. ODEGARD 9-7-73
ENGINEER R. N. Bergstrom 9-7-73
APPROVED R. N. Bergstrom 9-10-73
JOB NO. 4644-03

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO. S-3

8-CC 4

09/09/2026 - Classification: Internal - ECRM13805384



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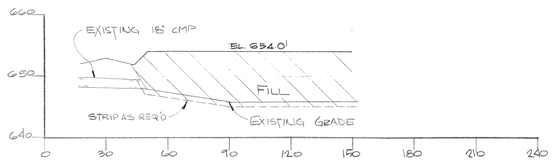

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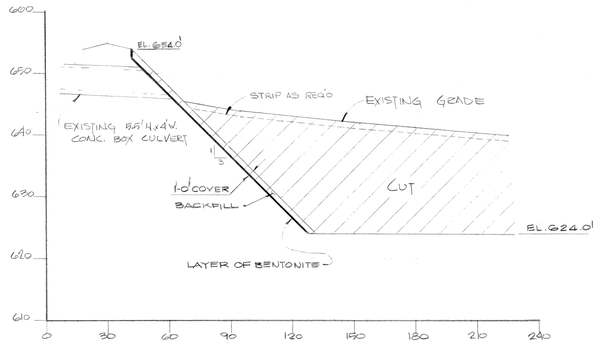

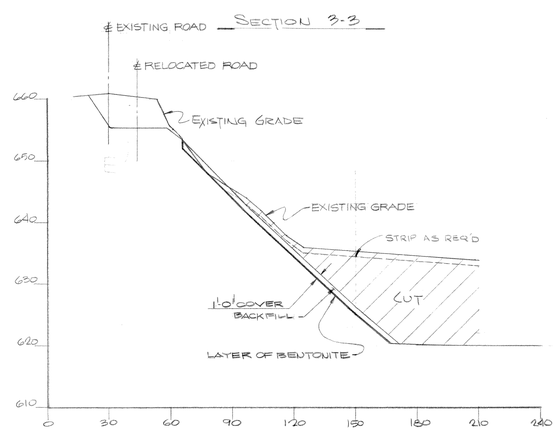

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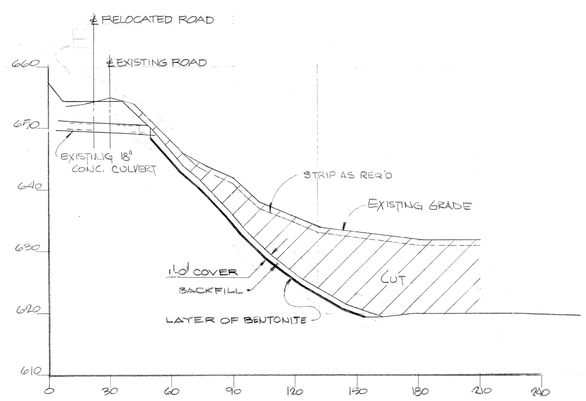

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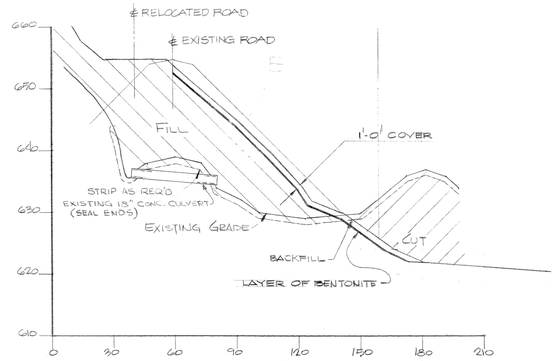

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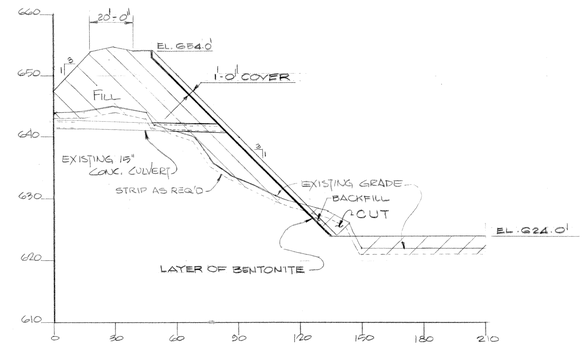

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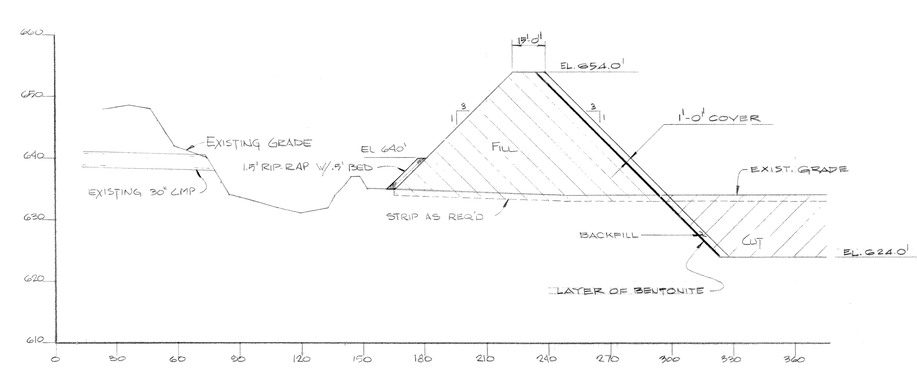

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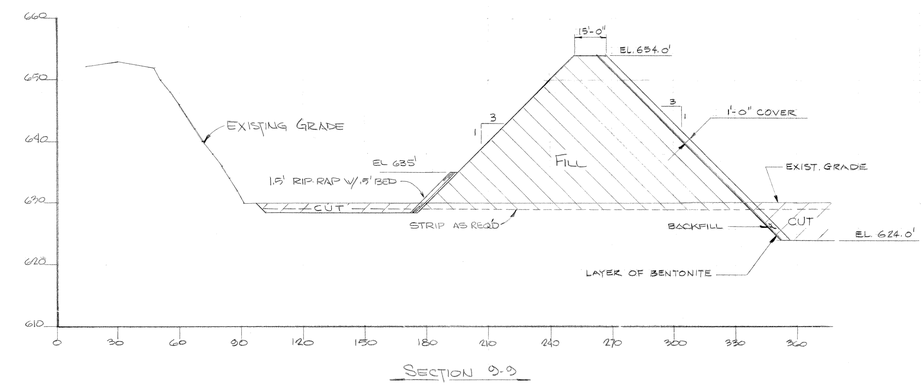
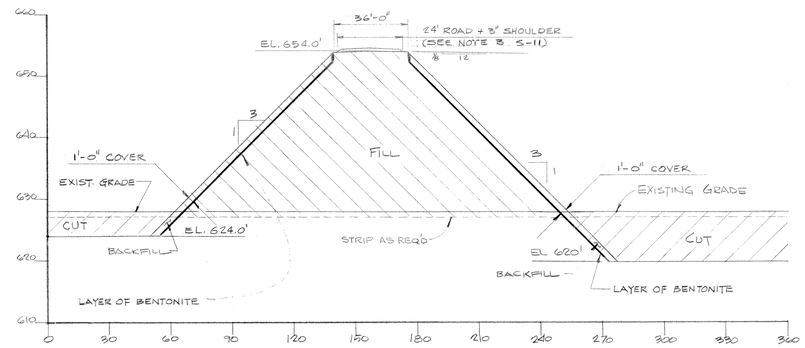


SECTION 9-9

SECTION 10-10



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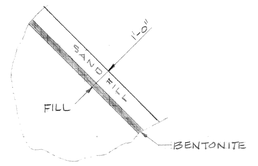
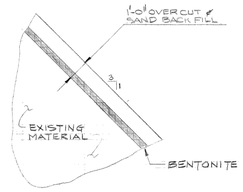


TYPICAL NEW SLOPED DIKE SECTION



TYPICAL EXISTING SLOPED DIKE SECTION

NOTES

1. WORK THIS DWG. WITH DWGS S-10 & S-11
2. ALL FILL SHALL CONFORM TO SPEC G-3105.
3. ASH DIKE SECTIONS 4, 5 & 6 REVISED AS PER FIELD INFORMATION DATED 7/30/70.

REFERENCE DRAWINGS

S-10	SITE DEVELOPMENT - COFFERDAM & DREDGING PLAN
S-11	SITE DEVELOPMENT - PLANT FILL - UNIT 4

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Signed R.M. Brox Date 6-5-74

R. M. Brox, Registered No. 6480

Drawing Release Record

Rev.	Date	Init.	Description
	6-7-74	ROC	PRELIMINARY
A	12-23-74		ISSUED AS FINAL
B	8-3-75	GHV	REV. BOT. COVER
C	8-5-76	GHV	REV SEC 10-10
D	12-30-76	GHV	REVISED SECTIONS 4, 5 & 6 AS BUILT & ADDED SECTIONS
E	9-9-77	RCV	ADDED SECTIONS

SITE DEVELOPMENT
ASH DIKE SECTIONS - SHEET 1
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

SCALE VERT 1"=10' HORIZ 1"=30'

DRAWN G. R. BOLE 5-20-74

CHECKED R. C. ODEGARD 5-28-74

ENGINEER [signature] 5-31-74

APPROVED [signature] 6-5-74

JOB NO. 4644-69

SARGENT & LUNDY ENGINEERS CHICAGO

DRAWING NO. S-14

09/09/2026 - Classification: Internal - ECRM13805384

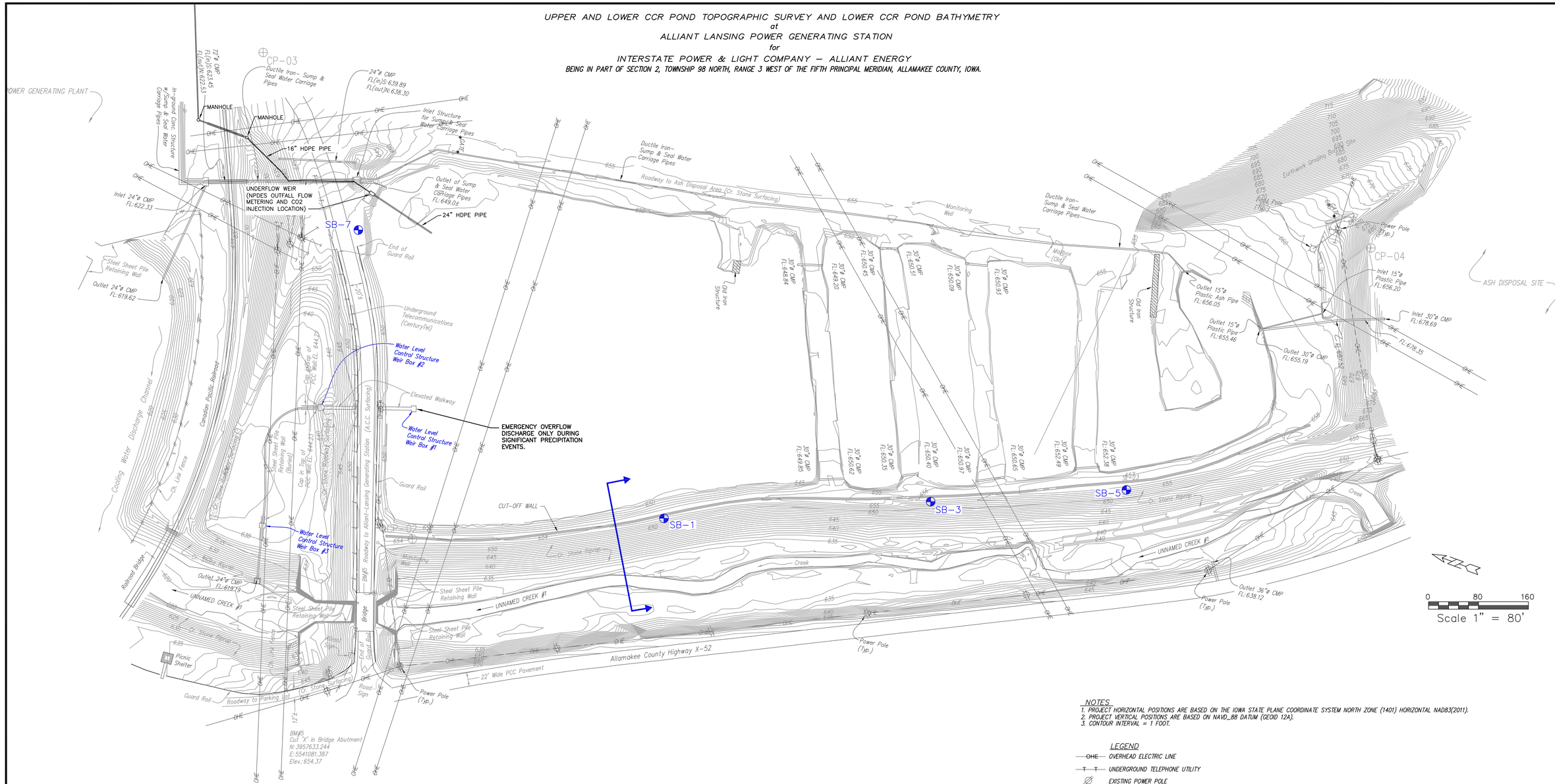
APPENDIX B – 2015 Embankment and Foundation Soil

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

Structural Stability Assessment

09/09/2026 - Classification: Internal - ECRM13805384

UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY
at
ALLIANT LANSING POWER GENERATING STATION
for
INTERSTATE POWER & LIGHT COMPANY – ALLIANT ENERGY
BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.



NOTES
1. PROJECT HORIZONTAL POSITIONS ARE BASED ON THE IOWA STATE PLANE COORDINATE SYSTEM NORTH ZONE (1401) HORIZONTAL NAD83(2011).
2. PROJECT VERTICAL POSITIONS ARE BASED ON NAVD_88 DATUM (GEOID 12A).
3. CONTOUR INTERVAL = 1 FOOT.

LEGEND
- OHE — OVERHEAD ELECTRIC LINE
- T T — UNDERGROUND TELEPHONE UTILITY
- EXISTING POWER POLE
- SB — SOIL BORING LOCATION
- ANALYSIS CROSS-SECTION

NOTE:
1. SURVEY INFORMATION PROVIDED ABOVE WAS COMPILED BY MOHN SURVEYING, INC. 1890 GREAT RIVER ROAD LANSING, IOWA 52151, APRIL 2015.
2. ALLIANT ENERGY REQUIRES 20 FEET OVERHEAD SEPARATION DISTANCE FOR EQUIPMENT OPERATING UNDER POWERLINES.

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REV	DATE	BY	APP	DESCRIPTION
5				
4				
3				
2				
1	4-19-21	MWL	MWL	REVISION 1 TO PLAN

SCALE: AS SHOWN | DATE: 4-19-21
DRAWN BY: JFD | CHECKED BY: MWL | APPROVED BY: MWL

HARD HAT SERVICES™
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SOIL BORING AND
SLOPE STABILITY CROSS-SECTION LOCATION

JOB 154.018.024.004
SHT. FIGURE 2
DWG. 154.018.024.004-D2

09/09/2026 - Classification: Internal - ECRM13805384

BORING LOG

CABENO Environmental Field Services, LLC
More Than Just A Probing Company

CLIENT: Hard Hat

COORDINATES: N NOT SURVEYED, E NOT SURVEYED

PROJECT: Lansing, IA

BORING NO.: SB1

LOGGED BY: John Noyes
EDITED BY: John Noyes
CHECKED BY: Mark Loerop
DATE BEGAN: 1/22/15
DATE FINISHED: 1/2213/15
GROUND SURFACE ELEVATION: NOT MEASURED

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFROMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	DESCRIPTION
▽	SS1	18"	4 4 5	9.0		0		SILT; brown; plastic; moist; trace clay
	SS2	18"	4 5 10	15.0		-2		
	SS3	18"	3 6 9	15.0		-4		SAND; brown; fine grained; poorly graded; well sorted; dry to moist
	SS4	18"	7 9 11	20.0		-6		1'-5' sample collected for geotech analysis
	SS5	18"	7 10 13	23.0		-8		
	SS6	18"	7 11 18	29.0		-10		@ 9'2" black stained with plant matter
	SS7	18"	8 11 14	25.0		-12		
	SS8	18"	8 11 13	24.0		-14		SAND; gray; fine to medium grained; moist; graded; trace gravel and snail shells
	SS9	18"	8 11 11	22.0		-16		
	SS10	18"	4 7 7	14.0		-18		@ 15' grades wet
	SS11	18"	2 3 6	8.0		-20		15'-20' sample collected for geotech analysis
	SS12	18"	0 0 0	0.0		-22		@17.5' grades brown
	SS13	18"	0 0 0	0.0		-24		
	SS14	18"	1 1 2	3.0		-26		@23.5' grades fine to coarse, well graded
	SS15	18"	3 4 4	8.0		-28		SILT; gray; non plastic; wet; trace clay
	SS16	18"	0 9 11	20.0		-30		28'-32' sample collected for geotech analysis
	SS17	18"	5 11 10	21.0		-32		@29' grades trace plant matter and snail shells
	SS18	18"	4 5 7	12.0		-34		
	SS19	18"	3 4 8	12.0		-36		
						-38		GRAVEL; brown; coarse; poorly graded; wet; trace cobbles
						-40		40'-50' sample collected for geotech analysis
						-42		
						-44		
						-46		
						-48		SAND; light gray; coarse grained; poorly graded; wet
						-50		
						-52		Bottom of boring @ 50'
						-54		1" PVC temp well installed @ 50'. 10' screen, natural sand pack

09/09/2026 - Classification: Internal - ECRM13805384

BORING LOG

CABENO Environmental Field Services, LLC
More Than Just A Probing Company

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED* *E NOT SURVEYED*

PROJECT: Lansing, IA

BORING NO.: *SB3*

LOGGED BY: *John Noyes*
EDITED BY: *John Noyes*
CHECKED BY: *Mark Loerop*
DATE BEGAN: *1/22/15*
DATE FINISHED: *1/22/15*
GROUND SURFACE ELEVATION: *NOT MEASURED*

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFROMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	DESCRIPTION
▽	SS1	18"	6 7 7	14.0		0		SILT; gray to black; non plastic; moist; some bottom ash
	SS2	18"	4 9 10	19.0		-2		SAND; brown; fine grained; poorly graded; moist
	SS3	18"	5 10 19	29.0		-4		2'-5' sample collected for geotech analysis
	SS4	18"	7 13 16	29.0		-6		
	SS5	18"	6 12 17	29.0		-8		
	SS6	18"	6 12 16	28.0		-10		13'-20' sample collected for geotech analysis
	SS7	18"	12 21 21	42.0		-12		@13.5' grades wet and trace snail shells
	SS8	18"	8 12 15	27.0		-14		
	SS9	18"	8 19 21	40.0		-16		@16' grades fine to medium grained; graded
	SS10	18"	8 5 6	11.0		-18		
	SS11	18"	6 8 15	23.0		-20		
	SS12	18"	5 5 10	15.0		-22		
	SS13	18"	3 1 1	2.0		-24		24'-27' sample collected for geotech analysis
	SS14	18"	6 10 10	20.0		-26		SILT; gray; non plastic to low plasticity; wet; some clay; trace organic plant matter
	SS15	18"	4 6 12	18.0		-28		GRAVEL; gray; coarse to cobbles; poorly graded; wet; trace to some sand
	SS16	18"	10 9 7	16.0		-30		27'-32' sample collected for geotech analysis
	SS17	18"	6 8 10	18.0		-32		SILT; gray to black; non plastic; wet; trace to some clay and organic plant matter
	SS18	18"	22 24 21	45.0		-34		GRAVEL; gray; coarse to cobbles; poorly graded; wet; trace to some sand
	SS19	18"	10 10 12	22.0		-36		
	SS20	18"	14 9 12	21.0		-38		
						-40		
						-42		
						-44		
						-46		
						-48		
						-50		Bottom of boring @ 50'
						-52		1" PVC temp well installed @ 50'.
						-54		10' screen, natural sand pack

09/09/2026 - Classification: Internal - ECRM13805384

BORING LOG

CABENO Environmental Field Services, LLC
More Than Just A Probing Company

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED* *E NOT SURVEYED*

PROJECT: Lansing, IA

BORING NO.: *SB5*

LOGGED BY: *John Noyes*
EDITED BY: *John Noyes*
CHECKED BY: *Mark Loerop*
DATE BEGAN: *1/23/15*
DATE FINISHED: *1/23/15*
GROUND SURFACE ELEVATION: *NOT MEASURED*

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFROMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	DESCRIPTION
⊻	SS1	18"	4 4 3	7.0		0		SILT; black; non plastic; dry to moist
	SS2	18"	5 7 12	19.0		-2		SAND; brown; fine grained; poorly graded; moist; trace to some bottom ash
	SS3	18"	5 13 19	32.0		-4		5' bottom ash grades out
	SS4	18"	5 13 15	28.0		-6		
	SS5	18"	5 11 13	24.0		-8		
	SS6	18"	6 12 16	28.0		-10		10'-16' sample collected for geotech analysis
	SS7	18"	12 14 17	31.0		-12		@12' grades wet and trace snail shells
	SS8	18"	3 2 2	4.0		-14		
	SS9	18"	4 4 4	8.0		-16		@ 16' grades gray to olive
	SS10	18"	14 9 2	11.0		-18		
	SS11	18"	2 2 4	6.0		-20		Silty CLAY; black to dark gray; low plasticity; moist; trace fine sand and organic plant matter
	SS12	18"	6 7 8	15.0		-22		18.5'-20' sample collected for geotech analysis
	SS13	18"	9 10 10	20.0		-24		SAND & GRAVEL; black; fine to coarse; well graded; wet; trace to some silt
	SS14	18"	10 36 8	44.0		-26		22'-27.5' sample collected for geotech analysis
	SS15	18"	15 12 9	21.0		-28		
	SS16	18"	20 14 14	28.0		-30		
	SS17	18"	11 12 18	30.0		-32		
	SS18	18"	17 14 15	29.0		-34		
	SS19	18"	13 14 17	31.0		-36		
	SS20	18"	18 19 24	43.0		-38		
						-40		40'-45' sample collected for geotech analysis
						-42		
						-44		@43.5' grades brown
						-46		
						-48		
						-50		Bottom of boring @ 50'
						-52		1" PVC temp well installed @ 50'.
						-54		10' screen, natural sand pack

09/09/2026 - Classification: Internal - ECRM13805384

BORING LOG

CABENO Environmental Field Services, LLC
More Than Just A Probing Company

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED* *E NOT SURVEYED*

PROJECT: Lansing, IA

BORING NO.: *SB7*

LOGGED BY: *John Noyes*
EDITED BY: *John Noyes*
CHECKED BY: *Mark Loerop*
DATE BEGAN: *1/23/15*
DATE FINISHED: *1/23/15*
GROUND SURFACE ELEVATION: *NOT MEASURED*

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFROMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	DESCRIPTION
▽	SS1	18"	3 2 2	4.0		0		Bottom ASH; black; fine grained; poorly graded
	SS2	18"	9 11 19	20.0		-2		SAND; brown; fine grained; poorly graded; moist
	SS3	18"	4 5 13	18.0		-4		
	SS4	18"	7 14 18	32.0		-6		4'-10' sample collected for geotech analysis
	SS5	18"	5 11 20	31.0		-8		
	SS6	18"	8 15 20	35.0		-10		
	SS7	18"	7 12 14	26.0		-12		
	SS8	18"	7 9 14	23.0		-14		
	SS9	18"	11 13 17	30.0		-16		@16' grades wet
	SS10	18"	8 12 14	26.0		-18		
	SS11	18"	2 3 3	6.0		-20		19'-25' sample collected for geotech analysis
	SS12	18"	1 1 1	2.0		-22		@ 21' grades gray
	SS13	18"	3 3 6	9.0		-24		
	SS14	18"	2 3 4	7.0		-26		
	SS15	18"	1 2 2	4.0		-28		
	SS16	18"	0 0 0	0.0		-30		SILT; black to gray; no plasticity; moist to wet; trace clay
	SS17	18"	2 3 4	7.0		-32		29'-32.5' sample collected for geotech analysis
	SS18	18"	3 2 2	4.0		-34		
	SS19	18"	8 4 7	11.0		-36		36'-40' sample collected for geotech analysis
	SS20	18"	2 8 9	17.0		-38		
						-40		
						-42		@ 41' grading trace organic plant matter and trace intermittent 1/16" sand seams
						-44		@ 44' is a thin, 1" gravel seam
						-46		
						-48		GRAVEL; brown; coarse; poorly graded; wet; trace to some silt and sand 46'-50' sample collected for geotech analysis last spoon blocked with large gravel
						-50		
						-52		Bottom of boring @ 50' 1" PVC temp well installed @ 50'. 10' screen, natural sand pack
						-54		

09/09/2026 - Classification: Internal - ECRM13805384

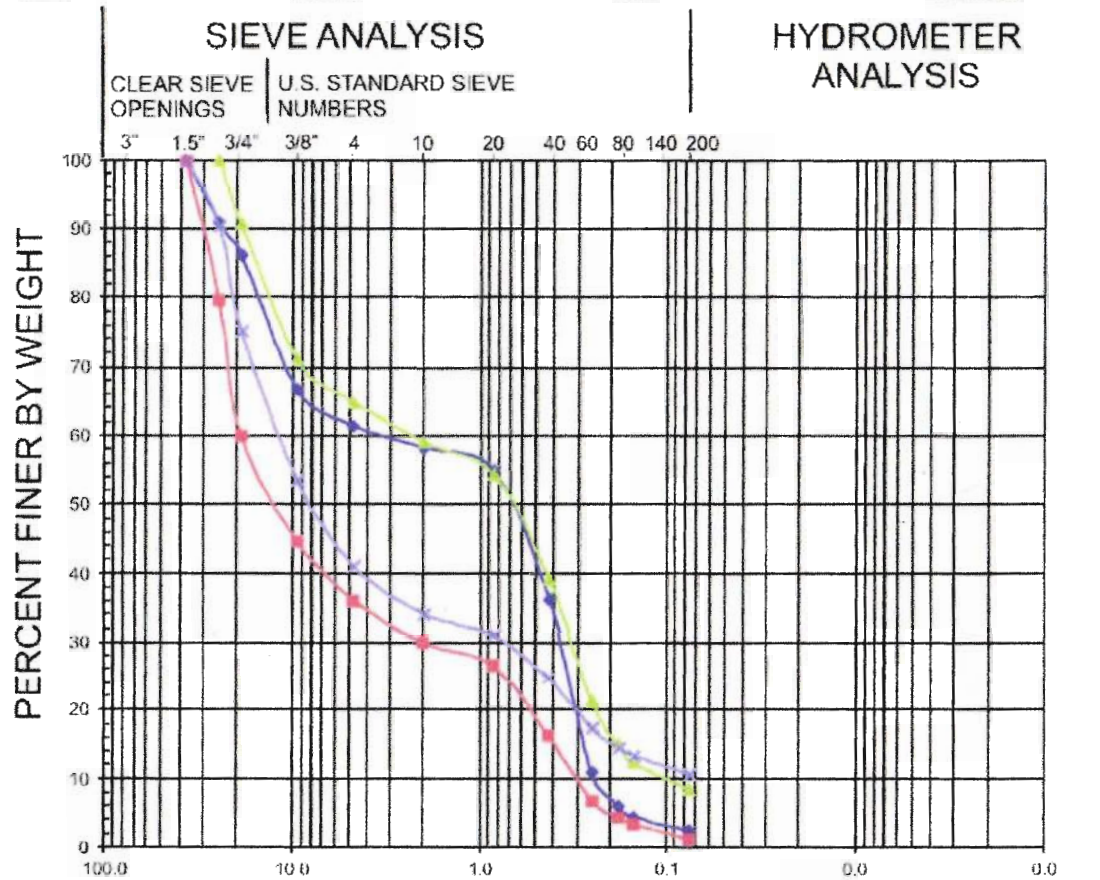
APPENDIX B

UPDATE TO ADD SB-7
SEPARATE 8½x11

HARD HAT SERVICES
Engineering, Construction and Management Solutions

Particle Size Distribution

Project: IPL Lansing Generating Station — Tested By: Test America — Date: 2/3/2015
Boring No.: SB-1, SB-3 & SB-5 **"SAND & GRAVEL"**



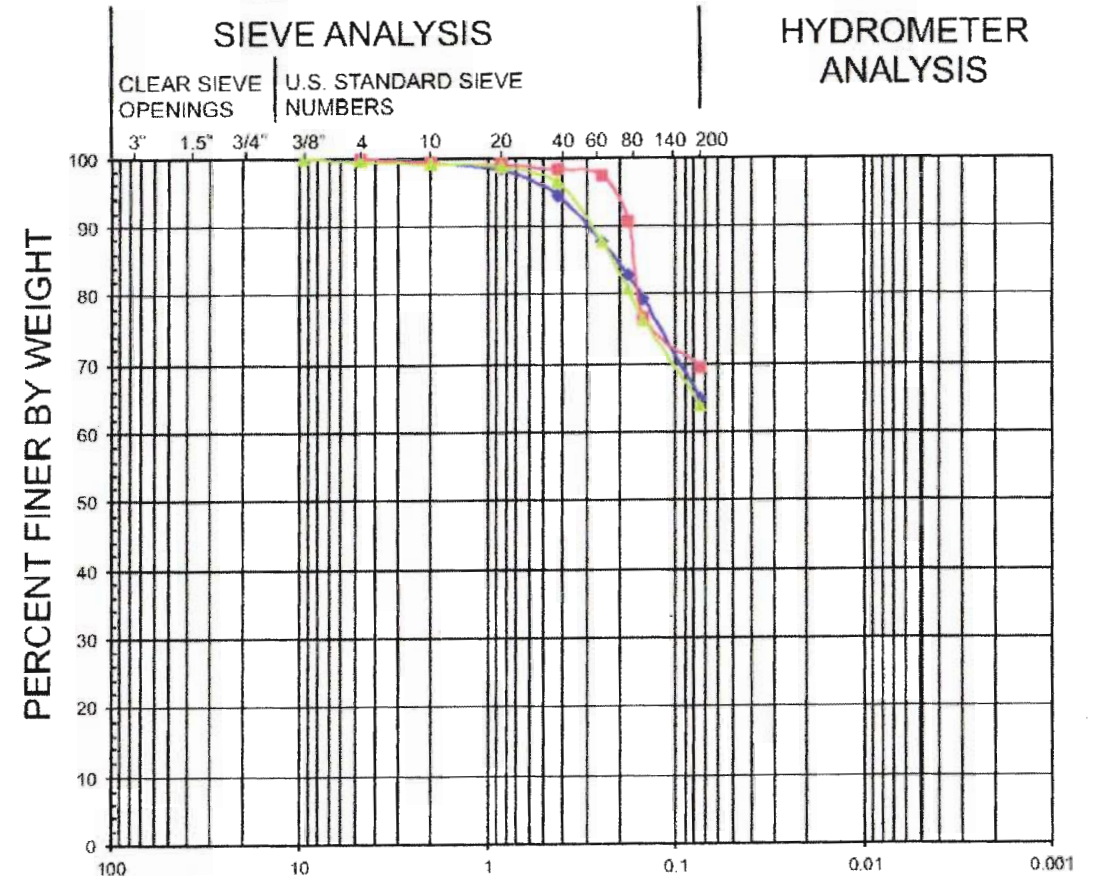
COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	W %
	SB-1	40 - 50	SAND & GRAVEL	SW / GW	16.5
	SB-3	27 - 32	SAND & GRAVEL	SW / GW	13.4
	SB-5	22 - 27.5	SAND & GRAVEL	SW / GW	32.1
	SB-5	44 - 45	SAND & GRAVEL	SW / GW	9.8

HARD HAT SERVICES
Engineering, Construction and Management Solutions

Particle Size Distribution

Project: IPL – Lansing Generating Station — Tested By: Test America — Date: 2/3/2015
Boring No.: SB-1, SB-3 & SB-5 **"SANDY SILT"**



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W %
	SB-1	28 - 32	Sandy Silt	ML	28	26	36.1
	SB-3	24.5 - 27	Sandy Silt	ML	27	23	25.4
	SB-5	18.5 - 20	Sandy Silt	ML	24	20	21.8

NOTICE
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REV	DATE	BY	APP	DESCRIPTION
5				
4				
3				
2				
1	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS

SCALE: NONE | DATE: 5-14-15
DRAWN BY: JFD | CHECKED BY: TJH | APPROVED BY: MWL

HARD HAT SERVICES™
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SEEPAGE CONTROL CUT-OFF WALL
PARTICLE SIZE DISTRIBUTION
SB-1 & SB-3

JOB 154.021.003
SHT. 8
DWG. 154021SW-08-12

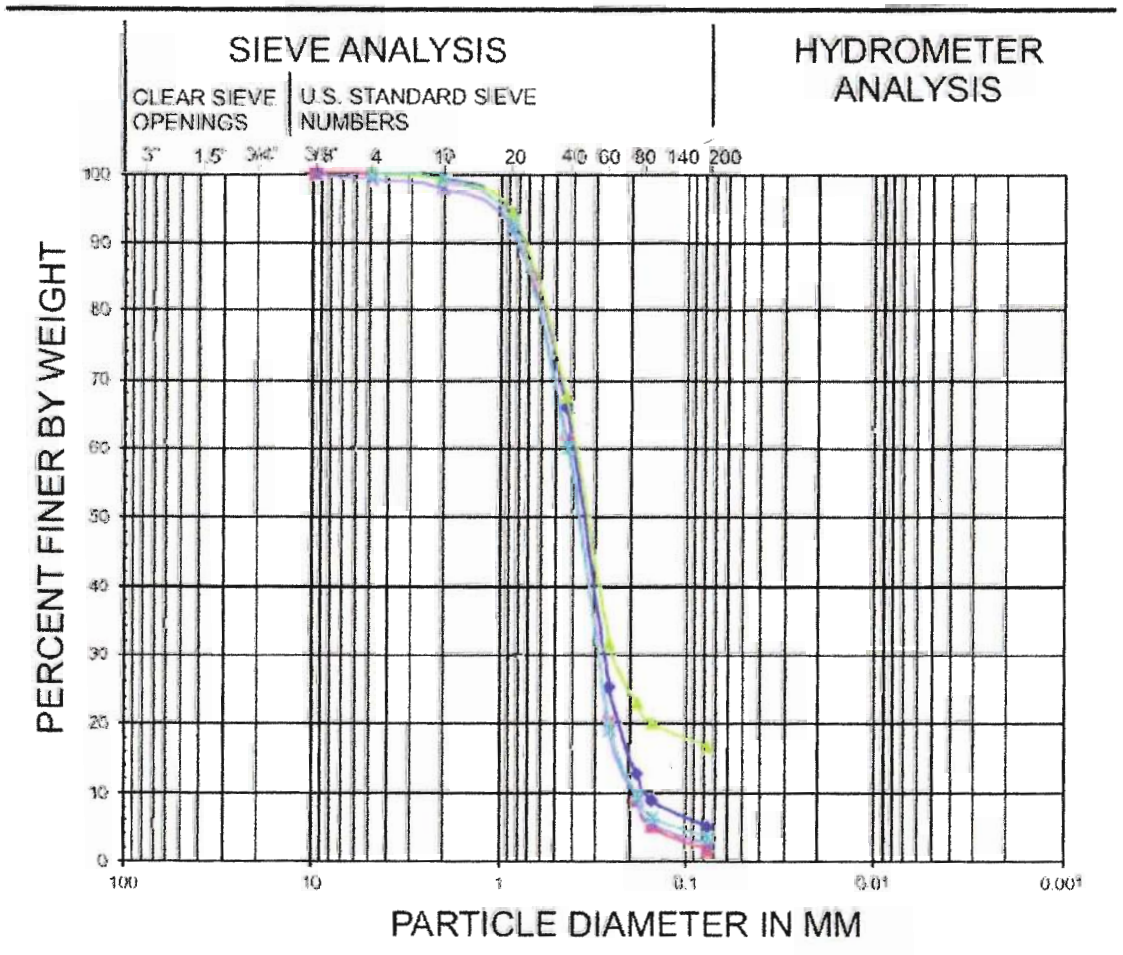
09/09/2026 - Classification: Internal - ECRM13805384

APPENDIX B
UPDATE TO ADD SB-7
SEPARATE 8½x11

HARD HAT SERVICES
Engineering, Construction and Management Solutions

Particle Size Distribution

Project: IPL Lansing Generating Station — Tested By: TestAmerica — Date: 2/3/2015
Boring No.: SB-1, SB-3 & SB-5 "UPPER SAND"



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	W %
	SB-1	1 - 5	Medium - Fine Sand	SP	4.1
	SB-1	15 - 20	Medium - Fine Sand	SP	20.1
	SB-3	2 - 5	Silty Medium - Fine Sand	SM	3.1
	SB-3	13 - 20	Medium - Fine Sand	SP	19.0
	SB-5	10 - 16	Medium - Fine Sand	SP	13.3

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REV	DATE	BY	APP	DESCRIPTION
5				
4				
3				
2				
1	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS

SCALE: NONE | DATE: 5-14-15
DRAWN BY: JFD | CHECKED BY: TJH | APPRDVED BY: MWL

HARD HAT SERVICES™
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE PDWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
232D PDWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SEEPAGE CONTROL CUT-OFF WALL
PARTICLE SIZE DISTRIBUTION
SB-5

JOB 154.021.0D3
SHT. 9
DWG. 154021SW-08-12

09/09/2026 - Classification: Internal - ECRM13805384

HEC
Harrington Engineering & Construction, Inc.

Particle Size Distribution

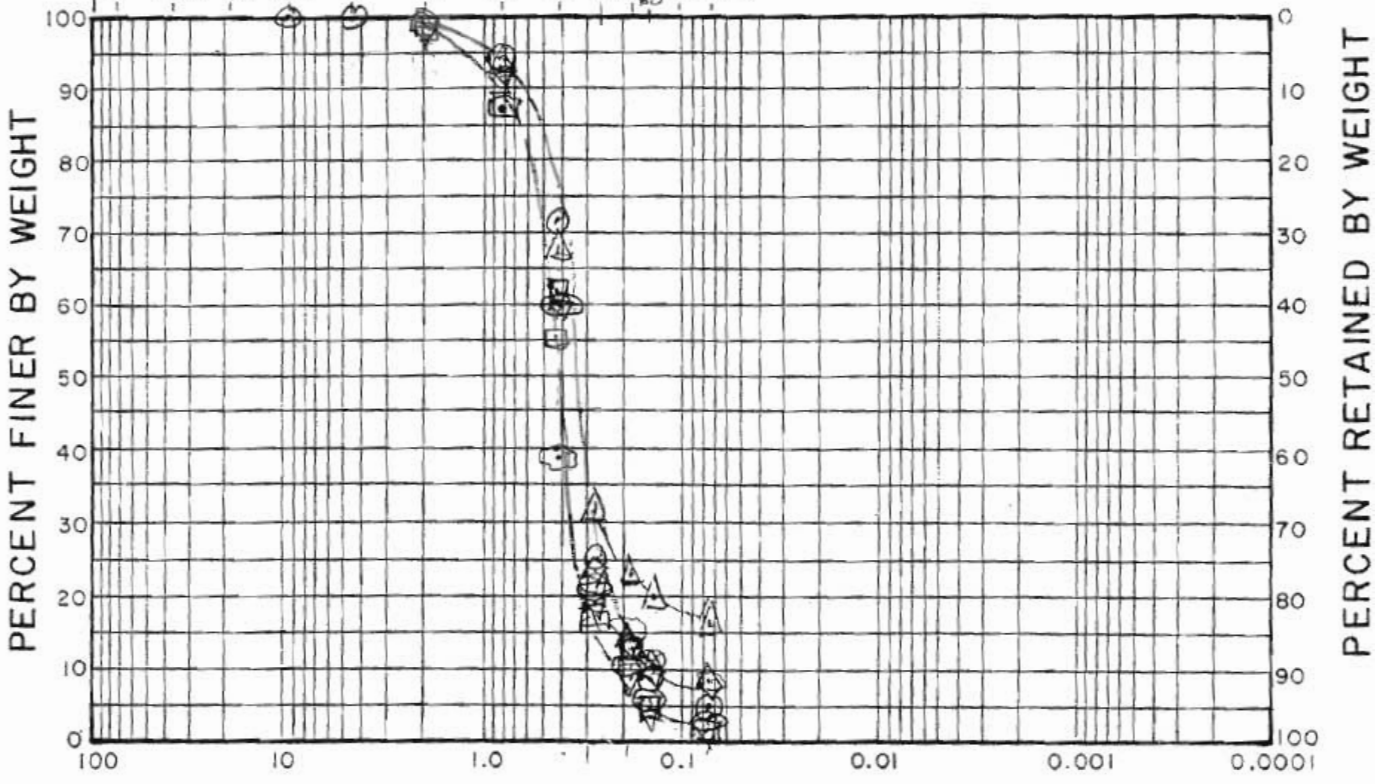
" UPPER SAND "

PROJECT _____ TESTED BY _____ DATE _____
PROJECT NO. _____ CALC BY _____ DATE _____
BORING NO. _____ CHKD BY _____ DATE _____

SIEVE ANALYSIS | HYDROMETER ANALYSIS

CLEAR SIEVE OPENINGS | U.S. STANDARD SIEVE NUMBERS

3" 1 1/2" 3/4" 3/8" 4 10 20 40 60 80 140 200



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W%
⊙	SB-1		1-5	MED-FINE SAND	SP			4.1
⊡	SB-1		15-20	"	SP			20.1
△	SB-3		2-5	SILTY MED-FINE SAND	SM			3.1
▽	SB-3		13-20	MED-FINE SAND	SP			19.0
⊙	SB-5		10-16	"	SP			13.3
◇	SB-7		4-10	"	SP-SM			3.1
▭	SB-7		19-25	"	SP			17.1

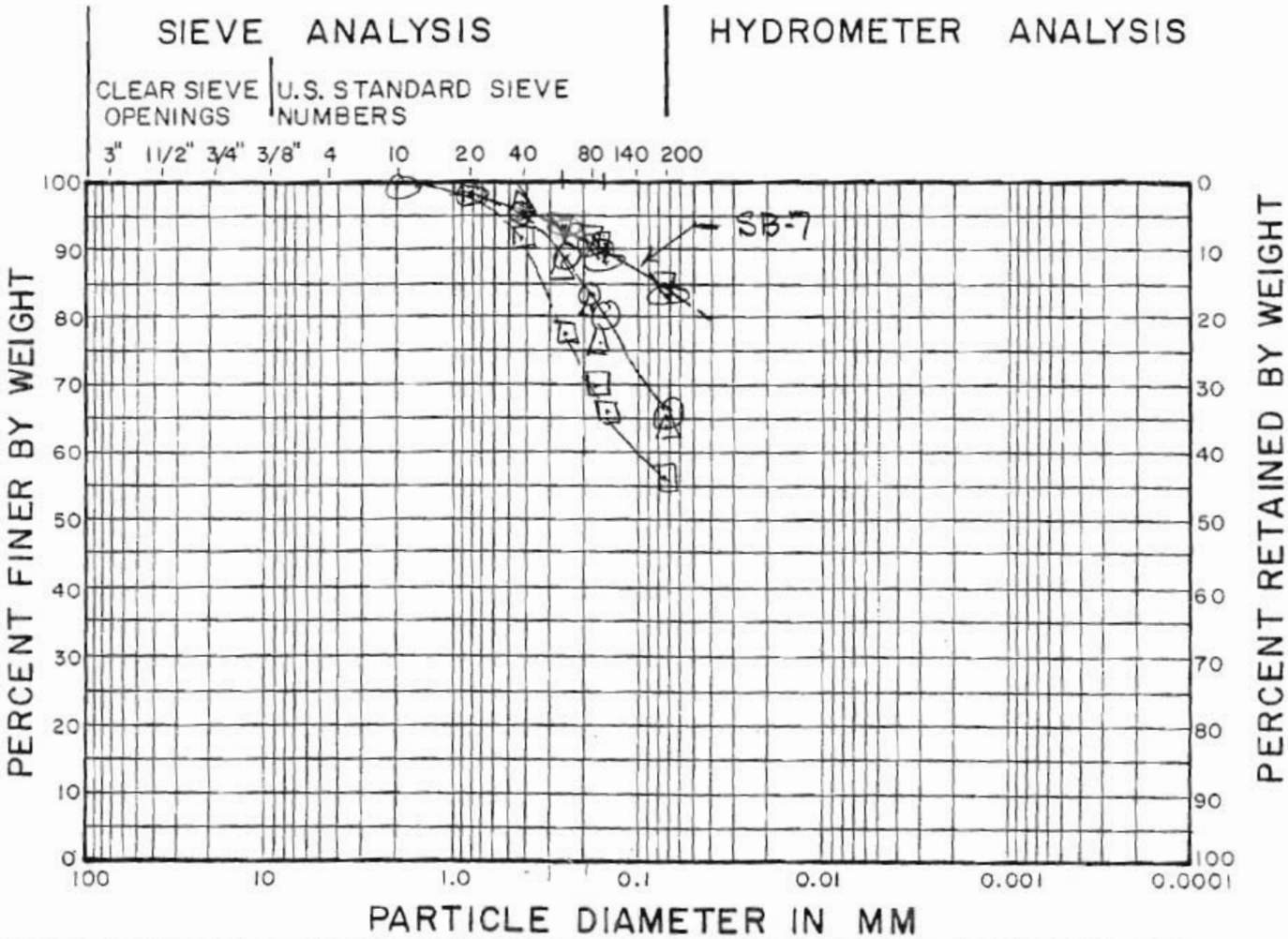
09/09/2026 - Classification: Internal - ECRM13805384

HEC
Harrington Engineering & Construction, Inc.

Particle Size Distribution

"SANDY SILT"

PROJECT _____ TESTED BY _____ DATE _____
PROJECT NO. _____ CALC BY _____ DATE _____
BORING NO. _____ CHKD BY _____ DATE _____



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W%
○	SB-1		28-32	SANDY SILT	ML	28	26	36.1
□	SB-3		24.5-27	SANDY SILT	ML	27	23	23.4
△	SB-5		18.5-20	SANDY SILT	ML	24	20	21.8
▽	SB-7		29-32.5	SANDY SILT	ML	29	25	27.0
◇	SB-7		36-40	SANDY SILT	ML	31	26	35.7

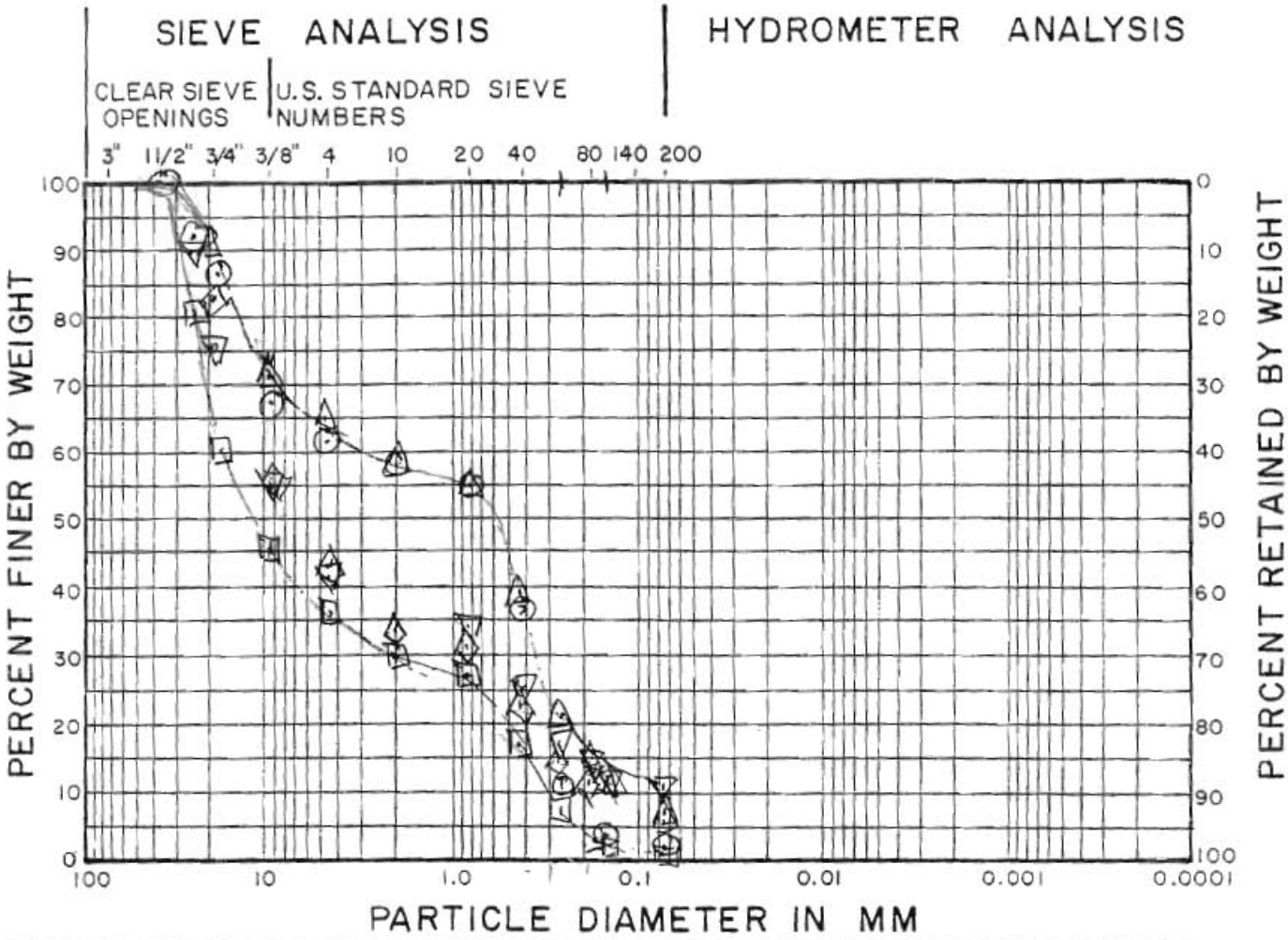
09/09/2026 - Classification: Internal - ECRM13805384

HEC
Harrington Engineering & Construction, Inc.

Particle Size Distribution

"SANDY GRAVEL"

PROJECT _____ TESTED BY _____ DATE _____
PROJECT NO. _____ CALC BY _____ DATE _____
BORING NO. _____ CHKD BY _____ DATE _____



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W%
○	SB-1		40-50	SAND & GRAVEL	SW/GW			16.5
□	SB-3		27-32	"	"			13.4
△	SB-5		22-27.5	"	"			32.1
▽	SB-5		44-45	"	"			9.8
◇	SB-7		46-50	"	"			35.7

09/09/2026 - Classification: Internal - ECRM13805384

APPENDIX C – Flood Elevations for Mississippi River Pool #9

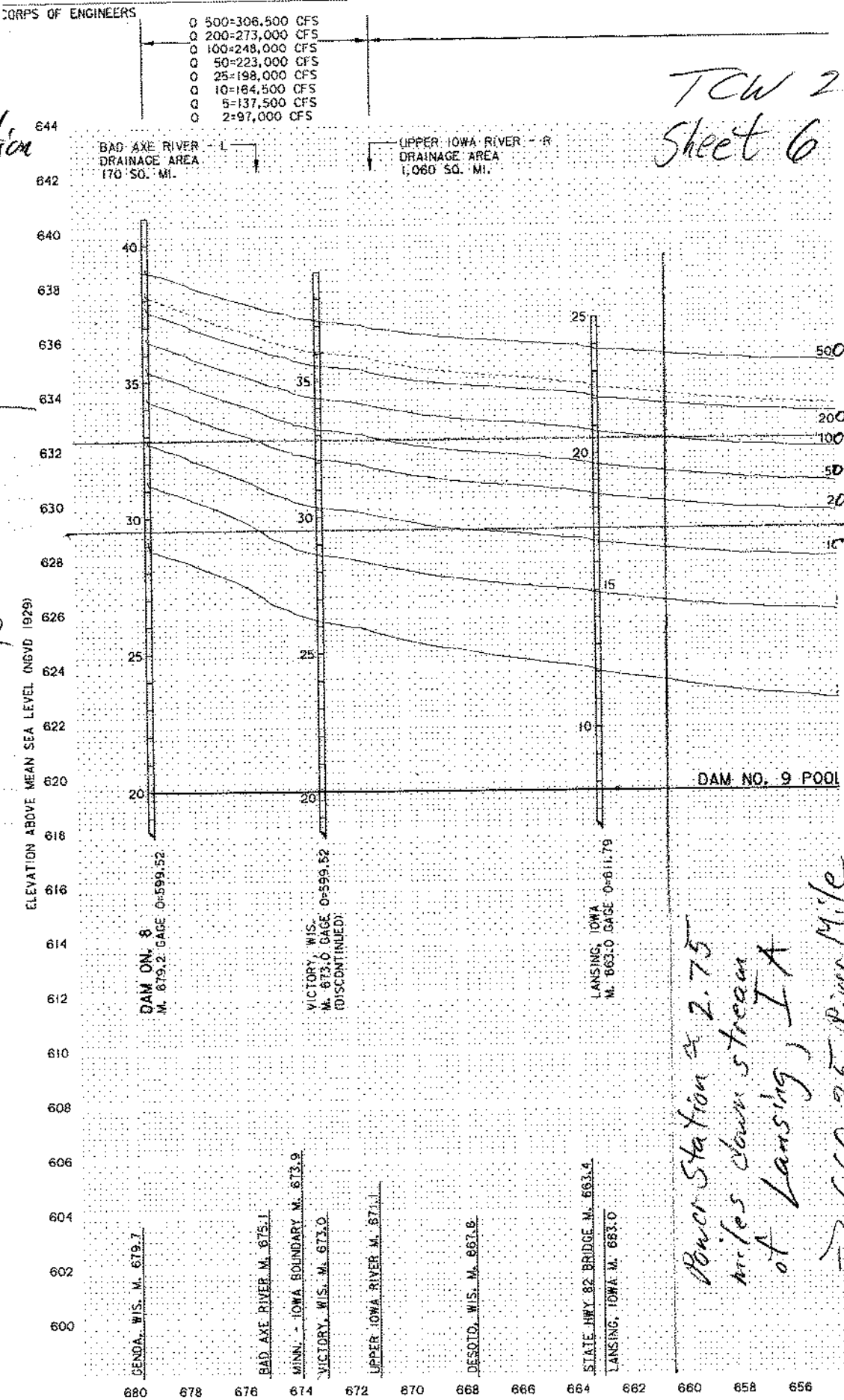
Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

Structural Stability Assessment

09/09/2026 - Classification: Internal - ECRM13805384

IPL
Lansing IA
Power Station

TCW 2-9-15
Sheet 6 of 8



100 Year Level

632.3
Datum 1929

632.8
Datum 1912

632.15
Datum 1968

500 year

200 year

100 year

50 year

20 year

10 year

5 year

2 year

619.5'
(1929)

Power Station ≈ 2.75 miles downstream of Lansing, IA

⇒ 660.25' River M/e

Ref: USACE Upper Mississippi River Flow Frequency Query

09/09/2026 - Classification: Internal - ECRM13805384