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January 31, 2025

Submitted via electronic mail

Mr. Tony Peterson
Wisconsin Department of Natural Resources
141 NW Barstow St Ste 180
Waukesha, WI 53188-3789

Subject: **Annual CCR Landfill Report**
Wisconsin Power and Light Company
Dry Ash Disposal Facility (WDNR License #3025)
Columbia Energy Center
Portage, WI

Dear Mr. Peterson,

On behalf of Wisconsin Power and Light Company (WPL), Alliant Energy is submitting this Annual CCR Landfill Report in accordance with NR 506.20(3). The annual report consists of the following required documents:

- Annual CCR Fugitive Dust Control Report
- Annual Inspection Report [NR 506.20(2)(b)]
- Annual Groundwater Monitoring and Corrective Action Report [NR 507.15(3)(m)]
  - This includes the Biennial Groundwater Monitoring Report for License #2325
- Leachate Pipe Cleaning and Inspection Report [NR 506.07(5)(g)]

Please note that some of these items are also required by the federal Coal Combustion Residuals (CCR) Rule and have been prepared to satisfy federal requirements. Please call me if you have any questions or concerns regarding these documents and Wisconsin-specific requirements.

Thank you very much for your consideration of this initial submittal. If you have any questions or comments regarding this information, please call me at (608) 458-3853.

Regards,

Jeff Maxted
Manager – Environmental Services
Alliant Energy

CC: Tyler Sullivan – Wisconsin DNR
Eric Sandvig, Director of Operations – Columbia Energy Center
Brian Clepper – Columbia Energy Center
Phil Gearing, Tom Karwoski, Meg Blodgett – SCS Engineers

Annual CCR Fugitive Dust Control Report

Wisconsin Power and Light Company

Columbia Energy Center (COL)

Annual Coal Combustion Residuals (CCR) Fugitive Dust Control Report

November 15, 2024

This report applies to the following CCR units at this facility:

CCR Surface Impoundments

COL Primary Ash Pond

COL Secondary Ash Pond

CCR Landfill

COL Dry Ash Disposal Facility Modules 1-3 (Existing CCR Landfill)

COL Dry Ash Disposal Facility Modules 4-6 (New CCR Landfill)

COL Dry Ash Disposal Facility Modules 10-11 (New CCR Landfill)

Annual Coal Combustion Residuals (CCR) Fugitive Dust Control Report

November 15, 2024

Background

This report describes the actions taken to minimize fugitive CCR dust from CCR units at this facility, provides a record of citizen complaints received since the previous report, and summarizes any corrective actions taken to minimize CCR fugitive dust. This report has been developed in accordance with 40 CFR 257.80(c).

COL Dry Ash Disposal Facility Modules 10-11 (a new CCR landfill) opened in the summer of 2023. A dry ash handling system was commissioned in 2023, resulting in the permanent discontinuation of sluicing at the facility. Subsequently, closure of the COL Primary Ash Pond was initiated in 2023, and all CCR from the Primary Ash Pond was excavated. All CCR has also been excavated from the Secondary Ash Pond.

Description of the Actions Taken to Control CCR Fugitive Dust

In accordance with the CCR Fugitive Dust Control Plan developed for this facility, the following measures were taken when needed to minimize CCR from becoming airborne:

- Establishing and enforcing a vehicle speed limit of 10 mph or less. Reduced speeds minimize fugitive dust generated from vehicle traffic.
- Storing fly ash in silos and/or buildings prior to transport. Enclosing CCR in silos and/or buildings minimizes exposure to conditions that could lead to airborne CCR.
- Covering open-bodied vehicles that are transporting CCR as needed to minimize the generation of fugitive dust during transport of CCR.
- Minimizing fall distances when handling or transferring CCR. The use of telescoping chutes, best practices when handling CCR with end loaders, and other best management practices can be used to minimize the generation of fugitive dust.
- Promptly collecting CCR that is observed in vehicle loading/unloading areas to minimize the potential for CCR to become airborne.
- Applying water directly to CCR using a water truck or irrigation system. Moistened CCR is less likely to become airborne.
- Suspending CCR management activities, including placement of CCR, during excessively windy conditions to minimize CCR from becoming airborne.
- Placement of soil and/or vegetated cover to minimize exposure of CCR in inactive landfill areas to conditions that could lead to fugitive dust.

Record of Citizen Complaints

Citizen complaints pertaining to fugitive dust are managed in accordance with Alliant Corporate Policy ENV-107. Specifically, the complaint must be reported to Environmental Services (1) via phone call and (2) in writing by submitting a completed Environmental Incident Report to Environmental Services within 10 business days. Citizen complaints are tracked within the Alliant Environmental Management Information System ("ENVIANCE").

There were no citizen complaints at this facility related to CCR fugitive dust during this reporting period.

Summary of Corrective Measures Taken

Corrective actions in response to citizen complaints were not required during this reporting period.

Periodic Review of CCR Fugitive Dust Control Plan

The CCR Fugitive Dust Control Plan is reviewed annually, and updated as necessary, in conjunction with preparation of the Annual CCR Fugitive Dust Control Report [40 CFR 257.80(c)]. During the periodic review, staff evaluate each measure for controlling fugitive dust to ensure that it is still appropriate for minimizing CCR from becoming airborne at the facility, verify that the procedures for conditioning CCR prior to landfilling and the procedure for logging complaints are sufficient, and evaluate other operations changes at the facility to determine whether additional dust control measures should be added.

- END -

Annual Inspection Report

Annual CCR Landfill Inspection, Modules 1-3, Modules 4-6, and Modules 10-11

Columbia Dry Ash Disposal Facility

Prepared for:

Wisconsin Power and Light Company
W8375 Murray Road
Pardeeville, Wisconsin 53954

SCS ENGINEERS

25224067.00 | December 19, 2024

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

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PE CERTIFICATION

12/19/2024

I, Phillip E. Gearing, hereby certify that this Annual CCR Landfill Inspection Report meets the requirements of 40 CFR 257.84(b)(2), was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

12/19/2024

(signature) (date)

Phillip Gearing

(printed or typed name)

License number E-45115

My license renewal date is July 31, 2026.

Pages or sheets covered by this seal:

All – Annual CCR Landfill Inspection – Columbia Dry Ash Disposal Facility

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1.0 INTRODUCTION

1.1 PURPOSE

On July 30, 2024, SCS Engineers (SCS) completed an annual inspection of the Wisconsin Power and Light Company (WPL) Columbia Dry Ash Disposal Facility (COL) in Pardeeville, Wisconsin. The annual inspection was completed in accordance with the U.S. Environmental Protection Agency (U.S. EPA) coal combustion residuals (CCR) rule, 40 Code of Federal Regulations (CFR) 257 Subpart D, in particular 257.84(b)(1). According to 40 CFR 257.84(b)(1), an annual inspection by a qualified professional engineer is required for all existing and new CCR landfills, and any lateral expansion of a CCR landfill. The purpose of the annual inspection is to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:

- A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections); and

- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

This report has been prepared in accordance with 40 CFR 257.84(b)(2) to document the annual inspection.

1.2 BACKGROUND

The COL facility includes an active CCR landfill, which currently consists of the following CCR units:

- Module 1 through Module 3 (existing CCR landfill per 40 CFR 257.53).
- Module 4 through Module 6, Module 10, and Module 11 (new CCR landfill per 40 CFR 257.53).

Modules 1 through 3 were previously described as separate existing CCR landfills, although they are contiguous and are managed as a single landfill by the facility and by the Wisconsin Department of Natural Resources. WPL previously clarified that Modules 1 through 3 are one existing CCR landfill under the federal CCR Rule, and this report reflects WPL's clarification. Modules 4, 5, 6, 10, and 11 are a new CCR landfill that initiated construction after October 19, 2015, and is therefore managed as a separate CCR unit under the CCR Rule, even though it is contiguous to Modules 1 through 3. Modules 10 and 11 were constructed in 2022 and 2023 and became operational in June 2023. Modules 7, 8, 9, 12, and 13 are permitted by the State of Wisconsin, but have not yet been developed. Modules 12 and 13 were under construction at the time of the inspection.

The inspection requirements in 40 CFR 257.84(b)(1) apply to all of the CCR units listed above.

At the time of the inspection, the active CCR landfill units were in various stages of development or use, as described in the table below.

Disposal Phase	Unit	CCR Rule Status	Basis for Status
Phase 1	Modules 1 - 3	Existing CCR Landfill. Currently accepting CCR.	Final or interim grades have been reached. Final cover completed on portions of the CCR unit. Final closure per 257.102 will not be completed until final grades are reached throughout the CCR unit. CCR overlay from Module 10 was occurring onto Module 3. Final cover construction was occurring on a western portion of Modules 2 and 3 during the inspection.
Phase 1/ Phase 2	Modules 4 - 6, Module 10, and Module 11	New CCR Landfill. Currently accepting CCR.	CCR placement began on November 5, 2018, in the unit. CCR placement began in Modules 10 and 11 on June 1, 2023. Intermediate cover has been placed over most of Modules 4 through 6. Final cover construction was occurring on a western portion of Module 4 during the inspection. CCR overlay from Module 11 was occurring onto Module 4.

2.0 SUMMARY OF RESULTS AND RECOMMENDATIONS

SCS identified no deficiencies or releases during the annual inspection of the CCR units at COL. Deficiencies and releases must be remedied by the owner or operator as soon as feasible and the remedy documented.

SCS did identify additional conditions during the annual inspection that are not considered deficiencies but have the potential to become a deficiency if left unaddressed. Each condition and the recommendations provided by SCS to address them are summarized in the table below. These conditions and recommendations are described in further detail in Section 4.0.

Condition	CCR Unit / Area	Recommendation(s) / [STATUS]	Report Section
Vegetation growth in down chute, which could eventually affect final cover	Southwest grouted Down Chute (Module 1 Final Cover)	Remove vegetation. **[COMPLETED]** Continue to observe and remove existing / future vegetation, as necessary. Monitor during 7-day inspections.	4.3.2
Vegetation growth at outlet, which could eventually compromise leachate drainage	Module 1 Leachate Pipe Outlet	Remove vegetation. **[COMPLETED]** Continue to observe and remove vegetation, as necessary to provide outlet operation.	4.3.2

Condition	CCR Unit / Area	Recommendation(s) / [STATUS]	Report Section
		Monitor during 7-day inspections.	
Woody vegetation growth off access road	West of Contact Water/ Leachate Pond and east of Module 2	Remove woody growth or other unwanted vegetation. **[COMPLETED]** Continue to observe and remove vegetation, as necessary. Monitor during 7-day inspections.	4.3.2
Bare areas observed. Future erosion may eventually expose CCR if left unvegetated	East slopes of Modules 2 and 3	Backfill and grade eroded areas. Add seed and erosion mat to bare areas to promote vegetation growth on intermediate cover. **[COMPLETED]** Monitor during 7-day inspections.	4.3.4
Sediment accumulation due to rain event	Storm water swale and culverts Module 2 contact water piping inlets and outlets Contact water / leachate pond east of Module 2 contact water piping outlets	Remove accumulated sediment. **[PARTIALLY COMPLETED, ONGOING MAINTENANCE]** Monitor during 7-day inspections.	4.3.4
Leachate pipe outlet sediment accumulation	Module 2 leachate pipe outlet	Sediment removed and marked during inspection. **[COMPLETED]** Remove future accumulated sediment and debris. Monitor during 7-day inspections.	4.4.2.1
Toe drain outlet sediment accumulation	Module 1 toe drain outlet	Remove additional sediment in the swale adjacent to toe drain. Protect the end of the toe drain with a protector sleeve and add additional aggregate material. **[COMPLETED]** Monitor during 7-day inspections.	4.4.2.1

Condition	CCR Unit / Area	Recommendation(s) / [STATUS]	Report Section
Limited contact water capacity	Module 10 (South CCR Limit)	Grade CCR material to create drainage path around perimeter of the module. Supplement drainage layer sand material at the CCR limit for additional buffer or add intermediate cover on the CCR slope to limit the production of contact water. **[COMPLETED]** Monitor during 7-day inspections.	4.4.2.1
Leachate headwells and pond level sensor communication failure	LH-2, LH-5, LH-6, and Pond level sensors	Replace damaged equipment. **[LH-2 AND POND LEVEL COMPLETED]** Observe leachate headwell and pond levels manually or under other electronic means until repair of the communication signal.	4.4.2.1

3.0 ANNUAL INSPECTION

Mr. Phillip Gearing of SCS completed an annual inspection of active CCR landfill areas at COL, including Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 on July 7, 2023. Mr. Gearing is a licensed professional engineer in Wisconsin and holds a Bachelor of Science degree in Geological Engineering. He has over 18 years of experience in the design, construction, and operation of solid waste disposal facilities. The scope of the annual inspection is described in Sections 3.1 and 3.2. The results of the annual inspection are discussed in Section 4.0.

3.1 OPERATING RECORD REVIEW

SCS reviewed the available information in the operating record for COL. Information reviewed by SCS included operating record materials provided by WPL, and the information posted on Alliant Energy's CCR Rule Compliance Data and Information website for the COL facility.

3.2 VISUAL INSPECTION

SCS completed a visual inspection of Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 to identify signs of distress or malfunction of the CCR units.

The visual inspection included observations of the following:

- CCR placement areas including active filling areas, intermediate cover areas, final cover areas, and exterior non-CCR berms or slopes.
- Leachate collection and removal system components including visible leachate drainage layer materials.
- Leachate and contact water run-off management features including internal contact water drainage features, leachate collection system discharge pipe, and the leachate/surface water pond.

- Non-contact storm water run-on and run-off control features including swales located adjacent to active fill areas, on intermediate/final cover slopes, and outside the landfill limits and the south sedimentation basin.

4.0 INSPECTION RESULTS

The results of the annual inspection, along with a description of any deficiencies or releases identified during the visual inspection, are summarized in the following sections.

4.1 CHANGES IN GEOMETRY

No apparent changes in geometry were noted that would indicate distress or malfunction of the CCR units at the facility since the previous annual inspection at the COL facility completed under 40 CFR 257.84(b)(1). Changes in geometry observed during the annual inspection were the result of planned CCR filling in the current CCR units.

As noted in **Section 1.2**, CCR placement is occurring in Module 10 and Module 11, with overlay into Module 3 and Module 4. Final cover or intermediate cover is established along portions of Modules 1 through 3 and Modules 4 through 6. Final cover construction was occurring on a western portion of Modules 2, 3, and 4; and module construction was occurring in Modules 12 and 13 during the 2024 inspection. Vegetation is established or becoming established on all final and intermediate cover areas.

4.2 CCR VOLUMES

The approximate volume of CCR contained in each of the active units near the time of the inspection is summarized below. Note that the inspection was performed on July 30, 2024, and a survey of CCR was performed on August 7, 2024. A description of how the estimate was developed is summarized below.

Disposal Phase	Unit	Estimated Volume of CCR in Place	Basis for Estimate and Source
Phase 1	Modules 1-3	1,060,400 cubic yards	There was CCR overlay onto Module 3 at the time of the inspection. Estimated volume based on a survey performed on 8/7/2024 compared to documented base grades. Estimated volume excludes final cover or intermediate cover material installed at time of survey. Estimated volume considers a vertical boundary at the Module 3 limit to Module 4 and Module 10.
Phase1/ Phase 2	Modules 4 - 6, Module 10, and Module 11	925,100 cubic yards	CCR continued to be placed in Modules 4 - 6 until intermediate cover placement. CCR placement began in Modules 10 and 11 in June 2023 and has been overlayed onto Modules 3 and 4. CCR volume placed in Modules 4 - 6, 10, and 11 was estimated based on a survey performed on 8/7/2024 compared to documented top of leachate drainage layer grades. Estimated volume considers a vertical boundary at the Module 4 limit to Module 3 and Module 10 limit to Module 3.

4.3 APPEARANCE OF STRUCTURAL WEAKNESS

The inspection included a review of the appearance of an actual or potential structural weakness of the CCR unit. The visual inspection included a review of CCR fill areas including the top slopes, internal side slopes, external side slopes, and internal ramps/haul roads for the presence of the following conditions:

- Signs of surface movement or instability:
  - Sloughing, slumping, or sliding
  - Surface cracking
  - Slopes greater than three horizontal to one vertical (3H:1V)
  - Toe of slope bench movement
  - Evidence of inadequate compaction of exposed CCR
- Inappropriate vegetation growth
- Animal burrows
- Erosion damage
- Unusual surface damage caused by vehicle traffic

4.3.1 Signs of Surface Movement or Instability

No signs of surface movement or instability were noted during the inspection.

4.3.2 Inappropriate Vegetation Growth

No inappropriate vegetation growth impacting the CCR unit was noted during the inspection. The following items have the potential to become a deficiency if left unaddressed:

- Vegetation was observed in the southwest grouted riprap down chutes located on the Module 1 Final Cover. WPL should remove existing vegetation before it becomes established and impacts the final cover. Continued removal of future vegetation as necessary and monitoring during 7-day inspections is recommended.

- Woody vegetation was observed to the west of the contact water/leachate pond, off the edge of the access road. WPL should remove woody vegetation growth before it becomes established. The vegetative growth was not impacting the stability of the CCR landfill at the time of the inspection. Continued vegetation removal and monitoring during 7-day inspections is recommended.

- Vegetation made it difficult to observe the leachate outlet from Module 1. The location was staked so it could be located. Vegetation directly adjacent to the Module 1 outlet was cleared away during the annual inspection. No issues with the current operation of the outlet were observed. WPL should monitor vegetation during 7-day inspections and keep the area maintained to allow for the effective observation of flow from the pipe outlet.

Vegetation growth was discussed with plant staff. Maintenance and removal of vegetation has occurred post the inspection based on observations performed by SCS during ongoing Modules 12 and 13 construction activities.

4.3.3 Animal Burrows

No animal burrows were noted during the inspection.

4.3.4 Erosion Damage

The following erosion damage was noted during the inspection:

- Areas of bare soil were observed on the intermediate cover on the east slopes of Modules 2 and 3. Bare soil may erode, eventually exposing CCR if not addressed. Bare soil areas should have seed and erosion mat or hydromulch added to promote vegetation growth on the intermediate cover. WPL should continue to monitor this during 7-day inspections.

- Sediment accumulation was observed in the following areas due to erosion of intermediate cover materials: storm water swale and culverts; Module 2 contact water piping inlets and outlets; and the contact water/leachate pond east of Module 2 contact water piping outlets. WPL should remove the accumulated sediment and continue to monitor it during 7-day inspections.

The bare soil and sediment accumulation areas were discussed with plant staff after the inspection was performed. Erosion and sediment accumulation areas were actively being addressed with restoration and sediment removal post the inspection based on observations performed by SCS during ongoing Module 12 and 13 construction activities.

The bare soil and sediment accumulation conditions noted are not currently considered an operating deficiency since it is unlikely to have a significant impact on the function of the CCR unit; however, WPL should continue to observe these areas during 7-day inspections to confirm that the conditions observed during the visual inspection, or similar future conditions, are addressed. No additional erosion damage was noted during the inspection.

4.3.5 Unusual Surface Damage Caused by Vehicle Traffic

No unusual surface damage caused by vehicle traffic was noted during the inspection.

4.4 DISRUPTIVE CONDITIONS

4.4.1 Existing Disruptive Conditions

4.4.1.1 Current Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the annual inspection.

4.4.1.2 Previous Inspection

No existing conditions that were disrupting the operation and safety of the CCR units were noted during the previous inspection.

4.4.2 Potentially Disruptive Conditions

4.4.2.1 Current Inspection

Module 2 Leachate Pipe Outlet. The Module 2 leachate pipe outlet could not be immediately located during the inspection due to accumulated sediment and debris from a rain event. Once the pipe outlet was found, it was observed that the pipe was flowing and not impeded. Sediment and debris was removed from the outlet during the inspection and the pipe location was marked. Although the pipe outlet was not blocked at the time of the inspection, a blocked pipe could cause storage of leachate into Module 2. Monitoring of the leachate pipe outlet and the removal of future accumulated sediment and debris during 7-day inspections is recommended.

Module 1 Toe Drain Outlet. The Module 1 toe drain outlet was covered with sediment from a rain event. A blocked toe drain could cause issues with final cover drainage and potential slope instability. The sediment over the toe drain was removed, and the toe drain was marked during the inspection. Toe drain maintenance was discussed with WPL. The observed sediment accumulation at the outlet was addressed by removing sediment in the swale adjacent to the toe drain. A protector sleeve and additional aggregate material was added at the toe drain outlet. WPL should continue to monitor the toe drain outlets during 7-day inspections.

Module 10 (South CCR Limit) Limited Contact Water Capacity. Limited capacity for contact water was observed along the southern limit of Module 10. No CCR was observed to have migrated outside the liner limits; however, if the contact water pathway becomes severely blocked, CCR may migrate beyond the limits of the liner. It was discussed with WPL that CCR material should be graded to create a defined drainage path around the perimeter of the module when close to the CCR limit. For an additional buffer, drainage layer sand material should be supplemented at the CCR limit.

Alternatively, it was discussed that intermediate cover placement would limit the amount of contact water generated. Post inspection, additional drainage layer sand material was added to the perimeter of Modules 10 and 11. Intermediate cover material was also added to the south slope of Module 10 to limit contact water generation. The drainage in Modules 10 and 11 should continue to be monitored during 7-day inspections.

Leachate Headwell and Pond Level Sensor Communications. The LH-2, LH-5, LH-6, and contact water/leachate pond level sensor communications were not operational due to a damaged solar panel affecting the signal repeater. A discussion about replacing the damaged equipment was had with WPL. The damaged solar panel was fixed post inspection and the pond level sensor and LH-2 are operational based on observation of measurement readouts at the control panel. LH-5 and LH-6 have been monitored manually due to tie-in construction between Modules 12 and 13 and Modules 5 and 6, which included removal of the transducers and readout equipment.

No other potentially disruptive conditions were noted during the inspection.

4.4.2.2 Previous Inspection

The tracking of CCR onto the landfill haul road was noted as a potentially disruptive condition during the previous inspection. Tracking of CCR onto the landfill entrance and access roads was not observed during the current inspection.

4.5 OTHER CHANGES SINCE PREVIOUS ANNUAL INSPECTION

No changes to site conditions that appear to have the potential to affect the stability or operation of the facility were noted during the inspection.

5.0 FUTURE INSPECTIONS

5.1 EXISTING CCR LANDFILL

As stated in 40 CFR 257.84(b)(4), the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the inspection report is the basis for establishing the deadline to complete the next subsequent inspection. Any required inspection may be conducted prior to the required deadline, provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. The owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record.

The next annual inspection of CCR units Modules 1 through 3, Modules 4 through 6, and Modules 10 and 11 must be completed within 1 year of the placement of this inspection report in the operating record for the COL facility.

5.2 NEW CCR LANDFILLS AND LATERAL EXPANSIONS

The initial annual inspection for modules constructed in the future must be completed within 14 months of the initial receipt of CCR in the module per 40 CFR 257.84(b)(4).

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Annual Groundwater Monitoring and Corrective Action Report

2024 Annual Groundwater Monitoring and Corrective Action Report, Covering 2023-2024 Biennium

Columbia Energy Center
Dry Ash Disposal Facility, License #3025
Ash Ponds Facility, License #2325
Pardeeville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25224067.00 | January 31, 2025

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

OVERVIEW OF CURRENT STATUS: DRY ASH DISPOSAL FACILITY

Columbia Energy Center, Dry Ash Disposal Facility
2024 Annual Report

In accordance with Wisconsin Administrative Code NR 507.15(3)(m)(5), this section at the beginning of the annual report provides an overview of the current status of groundwater monitoring and corrective action programs for the coal combustion residuals (CCR) landfill. This overview applies only to the Dry Ash Disposal Facility (License #3025) and not to the Ash Ponds Facility (License #2325). Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
Monitoring Status – Start of Year	(a) At the start of the current annual reporting period, whether the CCR unit was operating under detection monitoring or assessment monitoring	Detection
Monitoring Status – End of Year	(b) At the end of the current annual reporting period, whether the CCR unit was operating under detection monitoring or assessment monitoring	Detection
Groundwater Quality Exceedances at CCR Monitoring Wells	(c) If it was determined that there was a groundwater quality exceedance under ch. NR 140 for one or more constituents listed under the ch. NR 507 Appendix I for CCR wells:	
	A listing of those constituents, the names of the monitoring wells associated with the exceedances, and;	April 2024: No confirmed exceedances at CCR monitoring wells October 2024 exceedances confirmed by resampling: Calcium: MW-310 Chloride: MW-310 Sulfate: MW-309 & MW-310 TDS: MW-310 Resampling proposed to confirm additional results at MW-33AR
	The date when the assessment monitoring was initiated for the CCR landfill.	Not applicable. Assessment monitoring not initiated in 2024.

Category	Rule Requirement	Site Status
Corrective Action	(d) If corrective action measures were required,	Not applicable – Corrective action measures were not required during 2024
	The date when the assessment of corrective measures was initiated for the CCR landfill;	
	The date when the public informational hearing under s. NR 508.06(3)(e) was held for the discussion of the results of the remedial action options report, and;	
	The date when the assessment of corrective measures was completed.	
Selection of Remedy	(e) If a remedy was required under ch. NR 508 during the annual reporting period, the date of remedy selection, and whether remedial activities were initiated or are ongoing during the annual reporting period.	Not applicable – Remedy was not required during 2024

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1.0 INTRODUCTION

This 2024 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the NR 507.15(3). Specifically, this report was prepared to fulfill the requirements of NR 507.15(3)(m). Sections of this report that fulfill specific requirements of NR 207.15(3)(m) are indicated within the text by providing sections of the Rule in *italics,* followed by applicable information relative to the 2024 Annual Groundwater Monitoring and Corrective Action Report.

As discussed below, the coal combustion residuals (CCR) monitoring plan was approved during the 2024 reporting period in the May 3, 2024 Conditional Plan of Operations Approval Modification (Conditional Approval). In anticipation of Wisconsin Department of Natural Resources' (DNR's) approval of the Plan Modification, CCR monitoring parameters required by the Plan Modification were collected during the April 2024 monitoring event. Because the CCR monitoring program approval occurred during the reporting period covered by this report, some wells are classified in this report as both non-CCR wells prior to the initiation of detection monitoring under NR 507.15(3) and as CCR wells following the initiation of the detection monitoring program.

This report was also prepared to support compliance with additional sampling and reporting requirements of the landfill permit for the Columbia Dry Ash Disposal Facility (ADF) (License #3025) and the Columbia Ash Ponds Facility (License #2325). These additional sampling and reporting requirements are related to environmental monitoring data collected at points not designated as CCR monitoring wells. Non-CCR monitoring at the ADF was conducted in accordance with the May 3, 2024, Conditional Approval. Non-CCR monitoring for the Ash Ponds Facility was conducted in accordance with Conditional Plan Modification Approval letters dated March 11, 1996, and January 19, 2000, and May 17, 2022.

REPORTING PERIOD

For ADF CCR monitoring wells, this report covers the period of groundwater monitoring from January 1, 2024, through December 31, 2024. For the Ash Ponds Facility and non-CCR monitoring wells at the ADF, this report covers the two-year period from January 1, 2023, through December 31, 2024.

This report covers a 2-year period for the non-CCR monitoring wells at the ADF because biennial reporting was required for the ADF prior to the May 3, 2024 Conditional Approval. The previous biennial report covered 2021-2022. In order to support a more holistic approach to reporting at the site, the May 3, 2024, Conditional Approval included a transition to annual reporting for non-CCR monitoring data.

This report covers a 2-year period for the Ash Ponds Facility because that facility's permit still requires reporting on a biennial basis and the most recent biennial report covered the 2021-2022 period. WPL anticipates proposing an update to annual reporting for License #02325 in a future Plan Modification Request in order to support a more holistic approach to groundwater monitoring and reporting at the site.

The ADF and the Ash Ponds Facility are both located at the Columbia Energy Center, therefore biennial reporting for the two facilities has historically been combined to support a more holistic view of groundwater quality and flow conditions at the site.

2.0 BACKGROUND

To provide context for the required annual report information, the following background information is provided in this section of the report, prior to the required information:

- Site Description
- Geologic and Hydrogeologic Setting
- Monitoring Systems

2.1 SITE DESCRIPTION

The Columbia Energy Center (COL) has been burning coal and disposing of CCR on site since the mid-1970s. The site location is shown on **Figure 1** and site plan is shown on **Figure 2**. The Ash Ponds site includes a closed ash landfill, a bottom ash settling pond (Primary Pond), and an inactive settling pond (Secondary Pond). Closure of the settling ponds, including excavation of CCR material, was completed in 2024. The Dry Ash site includes an active CCR landfill and a landfill surface water runoff/leachate collection pond located to the east. A Wisconsin Pollutant Discharge Elimination System (WPDES) pond is located to the west of the ADF; this pond formerly accepted discharge water from the bottom ash settling ponds but has not received any ash transport water since the mid-2000s.

Ash Ponds

The Ash Ponds Disposal Facility (DNR License No. 2325) was active between 1975 and the early 1980s. The unlined bottom ash settling ponds are located to the northeast of the closed ash landfill. Bottom ash has historically been sluiced to the western settling pond (Primary Pond) and was recirculated from this pond back to the plant. In addition to the bottom ash sluicing, other low-volume wastewater from the plant was also discharged to this pond. At the end of 2022, the Primary Pond was no longer receiving low-volume wastewater and was only receiving bottom ash transport water if the new bottom ash conveyor system required maintenance during commissioning activities. Sluicing and discharge of water to the Primary Pond was permanently ended on March 31, 2023.

Historically, water flowed from the Primary Pond into the eastern settling basin (Secondary Pond), before discharging to the WPDES basin and eventually through Outfall 002 near the coal pile; however, no water has been discharged through Outfall 002 since 2004.

WPL began closure of the Secondary Ash Pond in 2022 and all material was removed by the end of 2022. WPL completed full closure of both the Primary and Secondary Ash Ponds as of the end of 2023. The pond closure plan included excavating CCR from the ponds and placing it in the ADF.

Dry Ash

The ADF (DNR License No. 3025) is an active CCR landfill that was opened in 1985 and accepts both bottom ash and fly ash. Beginning in 2014, the site also began accepting spray dryer absorber (SDA) by-product that is generated by the on-site Air Quality Control System. Most of the fly ash and bottom ash generated by the Columbia plant is sold for beneficial use, and WPL has beneficially used some SDA byproduct in agricultural applications. Modules 1-3 existed prior to October 19, 2015. Module 4 of the new unit became operational in 2018 and Modules 5 and 6 became active in 2021. Modules 10 and 11 became operational in 2023. Construction of Modules 12 and 13 began in 2024. The

lined pond located to the east of the ADF collects surface water runoff and leachate from the dry ash landfill.

2.2 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.2.1 Regional Information

For the purposes of groundwater monitoring under NR 507.15(3), the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer. A summary of the regional hydrogeologic stratigraphy is presented in **Appendix A**.

The sand and gravel aquifer is capable of producing sufficient water for industrial or municipal use in some parts of Columbia County and is capable of producing sufficient water for domestic use in many areas, including along the Wisconsin River near COL (Harr et. al, 1978). A map showing expected well yields within the sand and gravel aquifer in Columbia County is included in **Appendix A**.

Regional groundwater flow in the site vicinity is generally west toward the Wisconsin River. A map showing the regional water table elevations is included with the regional hydrogeologic information in **Appendix A**.

2.2.2 Site Information

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn, 1978). CCR monitoring wells are screened within the unconsolidated sand unit.

Shallow groundwater at the site generally flows to the north and west across the existing landfill area. The April 2024 water levels appear to return to a normal flow direction of southeast to northwest in the Mod 4-6 area, following temporary changes to groundwater caused by a dewatering system for pond closure activities in 2022 through 2023. The water table elevations and groundwater flow directions for the April 2024 monitoring event are shown on **Figure 3**. A supplemental groundwater elevation sampling event was completed in August 2024, with groundwater elevations and flow shown in **Figure 4.** The water table elevations and groundwater flow directions for the October 2024 monitoring event are shown on **Figure 5**.

Vertical hydraulic gradients were calculated at eight monitoring well nests for the sampling events conducted in 2023 and 2024. These gradients are summarized in **Table 1**. Vertical gradients at most site well nests were near zero or slightly downward.

2.3 CCR MONITORING SYSTEM

The CCR groundwater monitoring system for the ADF was approved in the May 3, 2024 Conditional Approval. The CCR monitoring system consists of two upgradient (background) monitoring wells and nine downgradient monitoring wells (**Table 2** and **Figure 2**).

The background wells are MW-301 and MW-84A. The active downgradient wells as of the end of the 2024 monitoring period are MW-302, MW-309, MW-310, MW-311, MW-317, MW-318, and MW-319. MW-313, MW-314, and MW-315 were utilized as downgradient wells in April 2024 but were decommissioned during 2024 as described below. MW-317, MW-318, and MW-319 were installed

during 2024. Baseline sampling at MW-317, MW-318, and MW-319 was begun in 2024 and will be completed in 2025. WPL anticipates submitting exemption requests and calculated preventive action limits (PALs) and alternative concentration limits (ACLs), where appropriate, for these wells following the completion of baseline sampling.

2.4 NON-CCR MONITORING SYSTEM

Updates to the non-CCR monitoring system for the ADF were approved in the May 3, 2024 Conditional Approval. Non-CCR monitoring well MW-93A was installed in 2022 to replace MW-1R and was analyzed for additional baseline parameters during 2023-2024.

Monitoring of the Ash Ponds Facility is performed in accordance with the requirements of the May 17, 2022 Conditional Ash Ponds Closure Plan of Operation Approval Modification.

Monitoring points, including both CCR and non-CCR monitoring wells, are listed in **Table 2,** and shown on **Figure 2**.

2.5 MONITORING WELL NETWORK EVALUATION

The integrity of the monitoring well network is assessed during each semi-annual groundwater monitoring event. Monitoring point conditions as of October 2024 are summarized in **Appendix B**. In general, the monitoring wells are in good condition and are functioning as intended with the exception of Ash Pond Facility monitoring wells W-217 and MW-220RR. The casings of these wells are bent and dedicated bailers can no longer fit down the wells. Dedicated Waterra pumps are used to purge and sample these two wells, as discussed in previous data submittals and biennial reports. These wells will continue to be assessed during future sampling events and will be repaired or replaced if necessary.

The following deviations from the sampling plan occurred during the reporting period.

- ADF:
  - Non-CCR monitoring well MW-83 was dry during the October 2023 monitoring event and was therefore not sampled.
  - Non-CCR monitoring well MW-83 did not contain sufficient volume for sample collection during the April 2024 monitoring event and was not sampled.
  - Lysimeter LS-3R was dry during all monitoring events and therefore was not sampled.
- Ash Ponds Facility:
  - Monitoring well M-4R did not contain sufficient volume to collect a sample in April 2023, October 2023, or April 2024 and was not sampled.
  - Monitoring well MW-57 was inaccessible in April 2023 due to flooding.

3.0 DRY ASH FACILITY: NR 507.15(3)(m) ANNUAL REPORT REQUIREMENTS

Section 3.0 specifically addresses requirements of NR 507.15(3)(m) for the CCR well monitoring network of the ADF. Non-CCR well monitoring for the ADF and Ash Ponds Facility are discussed elsewhere in the report.

The owner or operator of a CCR landfill shall prepare an annual groundwater monitoring and corrective action report for submittal to the department. The annual groundwater monitoring and corrective action report shall be placed in the written operating record and posted on a publicly accessible internet site under s. NR 506.17 (2) and (3) no later than January 31 of the year following the calendar year a groundwater monitoring system has been approved by the department, and annually thereafter. For the preceding calendar year, the annual report shall document the status of the groundwater monitoring and any corrective action implemented at the CCR landfill, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the annual groundwater monitoring and corrective action report shall contain all of the following information, to the extent available:

3.1 NR 507.15(3)(m)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all upgradient and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR landfill;

A map of the site location is provided on **Figure 1.** A map showing the ADF and Ash Ponds Facility and all monitoring points, including well identification numbers, is shown on **Figure 2**. CCR monitoring wells are differentiated from non-CCR wells on **Figure 2**.

3.2 NR 507.15(3)(m)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

Monitoring wells MW-317, MW-318, and MW-319 wells were installed and MW-313, MW-314, and MW-315 were decommissioned as part of the groundwater monitoring program for the ADF in 2024.

MW-317, MW-318, and MW-319 were installed in April 2024 at the north edge of Modules 12 and 13 of the ADF. Construction of Modules 12 and 13 began in 2024 and was still in progress at the end of 2024. Monitoring wells MW-313, MW-314, and MW-315 were installed in 2023 at the northern edge of waste in Modules 10-11, but were abandoned in 2024 because they were located within the approved footprint of Module 12. The monitoring well locations are shown on **Figure 2**.

3.3 NR 507.15(3)(m)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under par. (L), a summary including the number of groundwater samples that were collected for analysis for each upgradient and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring;

Groundwater sampling events were completed at CCR Monitoring wells in April, July, October, and November 2024 at the ADF as part of detection monitoring in accordance with the DNR approved Groundwater Sampling and Analysis Plan. Samples collected in July and November 2024 were collected for limited parameters at select wells during resampling events following the April and October 2024 sampling events, respectively. As noted earlier in this report, CCR monitoring

parameters were included in the April 2024 monitoring event in anticipation of the May 3, 2024 Conditional Approval.

Groundwater samples collected during the semiannual events in April and October 2024 were analyzed for the required constituents. The retest sampling events in July and November 2024 were limited to a subset of constituents. The July retesting was performed for boron at MW-33AR, which was detected at a concentration above the well-specific preventive action limit (PAL) in April 2024. The resample result did not confirm the exceedance. The November retesting was also performed for select parameters at MW-309 and MW-310 following individual results above applicable standards during the October 2024 monitoring event. A summary including the number of groundwater samples that were collected for analysis for each monitoring well, the dates the samples were collected, and whether the sample was required by the detection or assessment monitoring program is included in **Table 3**.

Sampling results for the April 2024 monitoring event were submitted to DNR on June 30, 2024. Sampling results for the October 2024 monitoring event were submitted to DNR on December 30, 2024, for the ADF and December 31, 2024, for the Ash Ponds Facility. July 2024 resampling data for the ADF were included in the December submittal. November 2024 resampling results for select parameters at MW-309 and MW-310 were submitted to DNR in a Demonstration of False Groundwater Exceedance dated January 21, 2025 (**Appendix C**). The Department response to the January 2025 Demonstration of False Groundwater Exceedance will be included in the 2025 Annual Groundwater Monitoring and Corrective Action Report. Resampling of MW-33AR following the October 2024 monitoring event was not yet completed as of the end of the 2024 reporting period.

The April through October 2024 detection monitoring results for the CCR monitoring wells and non-CCR monitoring wells at the ADF are summarized in **Appendix D**.

3.4 NR 507.15(3)(m)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs including the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected above ch. NR 140 standards;

There were no transitions from detection to assessment monitoring programs during 2024. Detection monitoring of ADF CCR monitoring wells under NR 507.15(3) was begun during 2024. The ADF remained in the detection monitoring program at the end of 2024.

Following the May 3, 2024, Conditional Approval the monitoring results for the April 2024 and October 2024 monitoring events were compared to standards listed in NR 140 or to applicable well-specific PALs and/or alternative concentration limits (ACLs) listed in the Conditional Approval.

Section 4.1 presents a summary of constituents detected above ch. NR 140 standards, including results at CCR monitoring wells.

3.5 NR 507.15(3)(m)(5) OVERVIEW SECTION

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action for the CCR landfill.

This overview is provided at the beginning of this report, before the Table of Contents.

3.5.1 NR 507.15(3) General Requirements

For the preceding calendar year, the annual report shall document the status of the groundwater monitoring and any corrective action implemented at the CCR landfill, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program was in detection monitoring as of DNR's issuance of the May 3, 2024 Conditional Approval. Monitoring parameters required by the CCR monitoring program were collected during the April 2024 monitoring event in anticipation of this approval. The ADF remained in detection monitoring at the end of 2024.

Summary of Key Actions Completed.

- Receipt of Conditional Approval dated May 3, 2024.
- Two semiannual groundwater sampling and analysis events (April and October 2024).
- Evaluation of data from the April 2024 and October 2024 monitoring events.
- Two resampling events in July and November 2024.
- Installation of MW-317, MW-318, and MW-319.
- Decommissioning of MW-314, MW-315, and MW-316.
- Initiation of baseline sampling at new wells MW-317, MW-318, and MW-319.

Description of Any Problems Encountered. No problems were encountered during groundwater monitoring of CCR wells in 2024.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2025).

- Evaluation of November 2024 resample results (completed in January 2025 and discussed in this report).
- Two semiannual groundwater sampling and analysis events (April and October 2025).
- Evaluation of April and October 2025 groundwater sampling results.
- Completion of baseline monitoring at MW-317, MW-318, and MW-319 and submittal of NR 140 exemption requests and calculated PALs and ACLs, as appropriate.
- If an exceedance at a CCR monitoring well is confirmed by resampling, then proceed in accordance with NR 508.06.

4.0 MONITORING RESULTS SUMMARY: ADF

4.1 MONITORING WELLS

This section discusses monitoring results for both CCR monitoring wells and non-CCR monitoring wells at the ADF. Wells are identified in each section below as either CCR or non-CCR monitoring wells. As discussed above, some wells reclassified as CCR monitoring wells following the May 3, 2024, Conditional Approval were previously sampled under the non-CCR monitoring program, and samples under both programs were collected at these wells in April 2024 in anticipation of the Conditional Approval. Exceedance Summaries are presented in **Tables 4** through **6**, and full monitoring results are summarized in **Appendix D**. Relevant historical data graphs are provided for reference in **Appendix E**. Exceedances detected during the most recent semiannual monitoring event (October 2024) are shown on **Figure 6**.

4.1.1 Arsenic

Non-CCR Monitoring Wells

Arsenic concentrations exceeded the NR 140 PAL at non-CCR well monitoring well MW-92B during the April 2023 monitoring event. Arsenic concentrations at all site wells were within the historical range for each well. MW-92B is located upgradient of the ADF. Arsenic concentrations at MW-92B appear to reflect natural variability, and a PAL exemption for arsenic at MW-92B was approved in the May 3, 2024 Conditional Approval.

CCR Monitoring Wells

Arsenic was detected at a concentration above the NR 140 ES at MW-317 during October 2024. MW-317 is in baseline monitoring, and WPL anticipates submitting a proposed ACL for this well following the completion of baseline monitoring.

4.1.2 Boron

Boron concentrations exceeded the NR 140 PAL at monitoring wells MW-33AR, MW-33BR, MW-34A, and MW-91B during the 2023 - 2024 monitoring period. Boron concentrations at all site wells were within the historical range of results.

The May 3, 2024, Conditional Approval included classification of MW-33AR and MW-34A as CCR wells and granted PAL exemptions for boron at MW-33AR, MW-34A, MW-33BR, MW-34B, and MW-302. Monitoring results from 2024 at these wells were compared to approved ACLs.

Non-CCR Monitoring Wells

Boron concentrations at non-CCR monitoring wells MW-33AR, MW-33BR, MW-34A, and MW-91B exceeded the NR 140 PAL in April and October 2023 (as noted above, MW-33AR and MW-34A were reclassified as CCR monitoring wells in 2024). April and October 2024 concentrations at MW-91B also exceeded the NR 140 PAL.

Boron concentrations at MW-33AR and MW-33BR appear to have stabilized after decreasing trends were observed starting in the mid-2000s. Boron concentrations at MW-34A appear to be stable and are typically slightly above or slightly below the PAL. Boron concentrations at MW-91B increased from

1994 to 2008 but have since decreased. WPL anticipates submitting a proposed ACL for boron at MW-91B in a future Plan Modification Request.

Boron PAL exceedances at the site appear to reflect impacts from historical ash management activities prior to construction of the active landfill.

CCR Monitoring Wells

The April 2024 total boron results at MW-34A was greater than the well-specific ACL. This well was resampled in July 2024 and the resample did not confirm the exceedance.

4.1.3 Chloride

The May 3, 2024, Conditional Approval granted PAL or enforcement standards (ES) exemptions for chloride at MW-33AR, MW-37A, MW-86, MW-309, and MW-310. At these wells, 2023 monitoring results were compared to standards listed in NR 140 and results from 2024 were compared to ACLs.

Non-CCR Monitoring Wells

Chloride concentrations exceeded the NR 140 PAL at MW-86 during April and October 2023. Chloride concentrations at this well did not exceed the ACL in 2024.

CCR Monitoring Wells

Chloride was detected at a concentration above the NR 140 ES at MW-319 during October 2024. MW-319 is in baseline monitoring, and WPL anticipates submitting a proposed ACL for this well following the completion of baseline monitoring. MW-319 is located near Murray Rd. Elevated chloride concentrations are routinely detected at several other site monitoring wells in the vicinity of Murray Rd and these concentrations have been attributed to road salt application.

Chloride was detected at concentrations above the applicable ACLs at MW-309 and MW-310 during the October 2024 monitoring event. Historical data for MW-309 and MW-310 indicate that chloride concentrations at these wells are variable. These wells are located near Murray Rd, and wells in the vicinity of Murray Rd have historically demonstrated variable chloride concentrations attributed to road salt application. Resampling of these wells was completed in November 2024, and the exceedances were confirmed. A demonstration of false groundwater standard exceedance in accordance with NR 508.06(1)(c) was submitted on January 21, 2025 (**Appendix C**).

4.1.4 Molybdenum

Non-CCR Monitoring Wells

Molybdenum concentrations exceeded the NR 140 PAL at monitoring well MW-33BR in April 2023 and at MW-91AR and MW-91B during all sampling events in 2023-2024.

MW-33BR, MW-91AR, and MW-91B have exhibited generally decreasing concentrations since molybdenum monitoring began in 2011. WPL anticipates submitting proposed ACLs for molybdenum at MW-91AR and MW-91B in a future Plan Modification Request. Molybdenum concentrations in groundwater at these wells appear to reflect impacts from historical ash management activities.

CCR Monitoring Wells

The molybdenum concentration detected at MW-317 in October 2024 is greater than the NR 140 PAL. Baseline sampling at MW-317 is ongoing. WPL anticipates submitting an NR 140 exemption request and a calculated well-specific ACL for this well after baseline sampling is complete.

4.1.5 Nitrate + Nitrite as Nitrogen

Removal of Nitrate + Nitrite as Nitrogen (nitrate + nitrite) from the list of parameters required at site monitoring wells was approved in the May 3, 2024 Conditional Approval. The Conditional Approval also included PAL or ES exemptions for nitrate + nitrite at MW-33BR, MW-34A, MW-34B, MW-83, MW-92A, MW-301, and MW-302.

Nitrate + nitrite concentrations in groundwater at the site appear to be associated with agricultural land use. Nitrate concentrations in groundwater in Columbia County are variable, and PAL or ES exceedances in supply wells are fairly common (DNR, 2019). Detected nitrate + nitrite concentrations in some monitoring wells at the site are higher than concentrations detected in recent CCR material leach testing and at LP-1, indicating that the landfill is not the primary source of nitrate + nitrite in groundwater at the site.

Prior to approval of nitrate + nitrite ACLs and removal of nitrate + nitrite from the sampling program for monitoring wells, nitrate + nitrite concentrations exceeded the NR 140 PAL in April and/or October 2023 at monitoring wells for MW-33BR, MW-34A, MW-34B, MW-37A, MW-83, MW-91AR, MW-91B, and MW-92A.

During the April 2024 monitoring event, no nitrate + nitrite concentrations above applicable ACLs were detected. Nitrate + nitrite concentrations at MW-37A, MW-91AR, and MW-91B, which do not have approved ACLs, were detected above the NR 140 PAL. While nitrate + nitrite has been removed from the monitoring program for the reasons discussed above, WPL anticipates submitting exemptions requests and calculated ACLs for these wells.

4.1.6 Sulfate

The May 3, 2024, Conditional Approval granted PAL or ES exemptions for sulfate at MW-33AR and MW-34A. At these wells, 2023 monitoring results were compared to standards listed in NR 140 and results from 2024 were compared to approved ACLs.

Non-CCR Monitoring Wells

Sulfate was detected at MW-33AR at a concentration above the NR 140 PAL in October 2023. This was prior to this well's reclassification as a CCR monitoring well and the approval of an ACL for sulfate at this well. The detected concentration was within the historical range at this well.

CCR Monitoring Wells

Sulfate concentrations detected in October 2024 were above the NR 140 PAL at MW-309, MW-310, and MW-318, and above the well-specific ACL at MW-33AR.

The sulfate result at MW-33AR in October 2024 is within the historical data range for this well but is above the calculated ACL. Well-specific ACLs have not been applied to MW-309 or MW-310 based on baseline data. MW-309 and MW-310 were resampled in November 2024. The resample confirmed the sulfate exceedances, and a demonstration of false groundwater standard exceedance in

accordance with NR 508.06(1)(c) was submitted on January 21, 2025 (**Appendix C**). WPL intends to resample MW-33AR, and if the resample confirms an exceedance at this well WPL anticipates submitting an additional demonstration of false groundwater exceedance.

Baseline sampling at MW-318 is ongoing. WPL anticipates submitting an NR 140 exemption request and a calculated well-specific ACL for MW-318 after baseline sampling is complete.

4.1.7 Specific Conductance

Field-measured specific conductance exceeded the site-specific PAL (1,400 µmhos/cm) at non-CCR monitoring well MW-86 during the April 2023 and April 2024 sampling events (**Table 5**). This site-specific PAL was replaced by well-specific PALs approved in the May 3, 2024 Conditional Approval. Specific conductance at MW-86 did not exceed the well-specific PAL in October 2024.

4.1.8 Individual Concentrations Above Well-Specific PALs

Well-specific PALs for indicator parameters were included in the May 3, 2024 Conditional Approval. Concentrations above the following well-specific PALs were detected during the October 2024 monitoring event.

- Calcium at CCR monitoring well MW-310
- Hardness at CCR monitoring well MW-33AR
- Total dissolved solids (TDS) at CCR monitoring wells MW-309 and MW-310

MW-309 and MW-310 were resampled in November 2024. The resample confirmed the exceedances for calcium and TDS at MW-310, and a demonstration of false groundwater exceedance was submitted on January 21, 2025 (**Appendix C**). WPL anticipates also resampling MW-33AR. If the resample confirms an exceedance, WPL anticipates submitting an additional demonstration of false groundwater standard exceedance in accordance with NR 508.06(1)(c).

4.1.9 Additional Baseline Monitoring

Monitoring well MW-93A was installed in April 2022 to replace abandoned well MW-1AR. CCR monitoring wells MW-317, MW-318, and MW-319 were installed in April 2024. In addition to the required semiannual monitoring program parameter list, the 2023 – 2024 samples at MW-93A and the October 2024 samples from MW-317, MW-318, and MW-319 were analyzed for additional baseline parameters. Sample results for these additional parameters are summarized in **Appendix D**.

4.2 WATER SUPPLY WELLS

The site water supply wells (HC-1, HC-2, and HC-3) draw water from the sandstone aquifer underlying the sand and gravel aquifer material at the site.

Water supply wells HC-1, HC-2, and HC-3 were sampled during each sampling event during the 2023 - 2024 reporting period. Field parameters at each well (pH, temperature, and specific conductance) were generally consistent with historic data. Specific conductance did not exceed the site-specific PAL (1,400 µmhos/cm) in any supply well during the 2023 - 2024 reporting period. No aluminum, barium, cadmium, chromium, mercury, selenium, or sulfate concentrations exceeded NR 140 PALs at any supply well in 2023 and 2024. Analytical results for samples collected from the supply wells are summarized in **Appendix D**. Results for parameters for which the NR 140 PAL was

exceeded in any supply well during 2023 and 2024 are summarized in **Table 4** and are discussed below.

4.2.1 Arsenic

The detected arsenic concentration exceeded the NR 140 PAL at HC-1 in April 2023. Arsenic concentrations at HC-1, HC-2, and HC-3 during 2023 and 2024 were within the historical range for each well, and the April 2023 PAL exceedance at HC-1 appears to be attributable to natural sources.

4.2.2 Boron

Boron concentrations exceeded the NR 140 PAL at HC-1, HC-2, and HC-3 during all sampling events in 2023 and 2024. Boron concentrations at HC-1, HC-2, and HC-3 during 2023 and 2024 were within the historical range for each well, with the exception of an historic low at HC-2 in October 2024. Boron concentrations in 2023-2024 are consistent with long-term stable or decreasing concentrations, and boron concentrations in the supply wells appear to reflect impacts from historical ash management activities prior to construction of the active landfill.

4.2.3 Chloride

Chloride concentrations exceeded the NR 140 PAL at HC-1 during all 2023 and 2024 monitoring events. These chloride concentrations are consistent with generally increasing concentrations at this well since chloride was added back into the sampling program in 2015. Elevated and increasing chloride concentrations at HC-1 are likely attributable to road salt application in the plant area.

4.2.4 Molybdenum

Molybdenum concentrations exceeded the NR 140 PAL at HC-2 and HC-3 during all sampling events in 2023 and 2024. Molybdenum has been included in the sampling program since April 2011. Molybdenum concentrations at the supply wells during 2023 and 2024 were within the historical range for each well and are consistent with stable or decreasing concentrations.

4.2.5 Nitrate + Nitrite as Nitrogen

Nitrate + nitrite concentrations exceeded the NR 140 PAL at HC-3 during all sampling events in 2024. Concentrations at HC-1, HC-2, and HC-3 during 2023 and 2024 were within the historical range for each well, with the exception of an historic high at HC-3 in October 2023.

Nitrate + nitrite was added to the monitoring program in December 2014 and has shown generally consistent results at each supply well. Removal of nitrate + nitrite from the list of parameters required at monitoring wells was approved in the May 3, 2024, Conditional Approval; however, nitrate + nitrite is retained as a required parameter at supply wells HC-1, HC-2, and HC-3. Nitrate + nitrite detections at the site are attributed to historical agricultural land use.

4.3 LYSIMETERS

Lysimeters LS-1 and LS-3R are located within the dry ash landfill limits. Lysimeter LS-1 was sampled during all sampling events in 2023 and 2024. Lysimeter LS-3R was dry during all sampling events in 2023 and 2024. Analytical results for samples collected from LS-1 are summarized in **Appendix D**.

Analytical results at LS-1 during the 2023 - 2024 reporting period were consistent with historical results, with the exception of historic high chloride and nitrate plus nitrite concentrations in April 2023 and chloride and specific conductance levels in October 2023.

4.4 SURFACE WATER/LEACHATE COLLECTION POND MONITORING POINT

Samples were collected from the surface water/leachate collection pond (LP-1), located to the east of the dry ash landfill, during all sampling events in 2023 and 2024. The LP-1 sampling location is located near the leachate collection line outlet. Analytical results for samples collected from LP-1 are summarized in Appendix D.

The LP-1 nitrate + nitrite concentration from April 2023 represents a historic high. The LP-1 specific conductance and chloride from October 2023 represent historic highs. All other results from 2023 and 2024 were within historic ranges for this monitoring point.

5.0 MONITORING RESULTS SUMMARY: ASH PONDS FACILITY

The Ash Ponds Disposal Facility does not have a CCR monitoring program under NR 507.15(3) and well-specific PALs and ACLs have not been established for this facility. Therefore, results from 2023-2024 monitoring are compared only to PALs and ESs listed in NR 140. Exceedances of these standards detected in 2023-2024 are summarized below and in Table 7. Full monitoring results are summarized in Appendix D. Relevant historical data graphs are provided for reference in Appendix E. Exceedances detected during the most recent semiannual monitoring event (October 2024) are shown on Figure 6.

5.1 ARSENIC

Arsenic concentrations exceeded the NR 140 PAL in monitoring wells MW-57, W-217, and MW-220RR during the 2023 - 2024 monitoring period. Monitoring wells MW-57, W-217, and MW-220RR are all within the DMZ.

Arsenic concentrations detected at all monitoring wells during 2023 and 2024 were within the historical ranges for each well.

Arsenic PAL exceedances at the site may be attributable to the ash pond facility; however, arsenic is also typically detected at concentrations up to 2.8 µg/L in MW-92B, located upgradient at the ADF, indicating that arsenic concentrations at the site may be at least partially attributable to natural background conditions. Arsenic PAL exceedances at monitoring well MW-57 may also be attributable to reducing conditions at this well, which is located in a wetland area.

5.2 BORON

Boron concentrations exceeded the NR 140 PAL in monitoring wells M-3, M-4R, MW-48A, MW-57, MW-59, MW-216R, W-217, and MW-220RR during the 2023 and 2024 monitoring period. The concentration at M-3 also exceeded the NR 140 ES during October 2023.

Boron concentrations at all site wells were within the historical range for each well with the following exceptions.

The October 2023 boron concentration at MW-220R represents an historic high but is consistent with historically variable concentrations at this well which are typically higher in October than in April. The April 2024 boron concentration at MW-217 represents an historic high, consistent with an increasing trend observed at this well since the mid-1990's. The October 2024 boron concentration at MW-57 represents an historic low.

Boron PAL exceedances at the site have been attributed to sluice water in the ash settling ponds and/or to the closed ash landfill located in the ash pond area.

5.3 SULFATE

Sulfate concentrations exceeded the NR 140 PAL in monitoring wells M-3, M-4R, MW-57, MW-59, and MW-217 during the 2023 and 2024 monitoring period. Concentrations at these wells were within historic ranges with the exception of an historic high at MW-59 in October 2024. This concentration was, however, within the range of historical concentrations at nearby wells. Sulfate concentrations at MW-217 during 2023-2024 were consistent with a general decrease observed at this well since 2019.

6.0 RECOMMENDATIONS

Continued sampling in 2025 under the approved monitoring programs for the ADF and Ash Ponds Facility is recommended. Monitoring at the ADF will continue under the detection monitoring program pending Department concurrence with the demonstration of false groundwater exceedance submitted on January 21, 2025. Additional demonstrations of false groundwater exceedance will be submitted, as appropriate, or assessment monitoring will be initiated if a demonstration is not submitted and approved for a confirmed exceedance.

Detection monitoring under the Federal CCR Rule 40 CFR 257.50-107 continues at the ADF. Different standards are used for comparison under that program, therefore criteria for continuing detection monitoring may differ between Federal and State CCR Rules.

Baseline groundwater data collection will be completed at MW-317, 318, 319 during 2025. Exemption requests and proposed PALs and ACLs will be submitted for these wells following completion of baseline sampling, and for select additional well/parameter pairs as discussed in this report.

7.0 REFERENCES

Harr, C.A., L.C. Trotta, and R.G. Borman, 1978, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.

U.S. Environmental Protection Agency (U.S. EPA), 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

Tables

Table 1. Summary of Calculated Vertical Hydraulic Gradients
Wisconsin Power and Light - Columbia Ash Ponds and Dry Ash Disposal Facilities
Licenses #2325 and 3025
2023 - 2024

	Ash Ponds				Dry Ash Diposal Facility			
Date	**MW-92A/MW-92B**	**W-39A/W-39B**	**MW-48A/MW-48B**	**MW-220RR/W-217**	**MW-33AR/MW-33BR**	**MW-34A/MW-34B**	**MW-84A/MW-84B**	**MW-91AR/MW-91B**
April 24-27, 2023	-0.017	-0.004	-0.002	-0.066	-0.016	-0.0037	-0.007	-0.007
October 9-11, 2023	-0.023	-0.005	-0.010	-0.026	-0.007	-0.006	-0.006	-0.012
April 15-17, 2024	-0.019	-0.002	-0.003	-0.088	-0.003	-0.001	-0.004	-0.002
October 1-3, 2024	-0.019	-0.003	-0.005	-0.084	-0.024	-0.001	-0.005	-0.012

Note:
A positive vertical gradient indicates upward flow potential, and a negative vertical gradient indicates downward flow potential.
NM = Groundwater elevation at one or both wells was not measured during this sampling event.

Created by:	MDB	Date:	1/7/2015
Last revision by:	EMS	Date:	12/16/2024
Checked by:	KMV	Date:	12/23/2024

Table 2. Groundwater Monitoring Program^
Wisconsin Power and Light - Columbia Ash Ponds and Dry Ash Disposal Facilities
Licenses #2325 and 3025

Columbia Ash Ponds Disposal Facility - License No. 2325 (1)		
Monitoring Point	**Parameters**	**Frequency**
Groundwater		
M-3 M-4R W-39A W-39B MW-48A MW-48B MW-57 W-59 MW-216R W-217 MW-220RR	Groundwater elevation Field temperature Field conductivity Field pH Metals, dissolved (Arsenic, Barium, Boron, Chromium) Sulfate, dissolved	Semiannual (April and October)
Staff Gauges		
SG-1	Surface Water Elevation	Semiannual (April and October)

Table 2. Groundwater Monitoring Program^
Wisconsin Power and Light - Columbia Ash Ponds and Dry Ash Disposal Facilities
Licenses #2325 and 3025

Columbia Dry Ash Disposal Facility - License No. 3025 [2]		
Monitoring Points	**Parameters**	**Frequency**
Groundwater (non-CCR)		
MW-33AR[9]	Groundwater elevation	Semiannual (April and October)
MW-33BR	Field odor, color, and turbidity	
MW-34A[9]	Field temperature, conductivity at 25° C, and pH	
MW-34B	Nitrate + Nitrite as N, total	
MW-37A	Metals, dissolved (Arsenic, Boron, Molybdenum)	
MW-83	Sulfate, dissolved	
MW-84A[9]	Total Hardness, dissolved (mg/L as CaCO3)	
MW-84B	Alkalinity, dissolved	
MW-86		
MW-91AR		
MW-91B		
MW-92A		
MW-92B		
MW-93A[3]		
Groundwater (CCR wells - detection monitoring)		
MW-33AR[9]	Groundwater elevation	Semiannual (April and October)
MW-34A[9]	Field odor, color, and turbidity	
MW-84A[8][9]	Field temperature, conductivity at 25° C, and pH	
MW-301[8]	Metals, total (Boron, calcium)	
MW-302	Chloride, total	
MW-309	Fluoride, total	
MW-310	Sulfate, total	
MW-311	Total Hardness, dissolved (mg/L as CaCO3)	
MW-313 (abandoned in 2024)	Alkalinity, total	
MW-314 (abandoned in 2024)		
MW-315 (abandoned in 2024)		
MW-317		
MW-318		
MW-319		
Water Supply Wells		
HC-1	Field odor, color, and turbidity	Semiannual (April and October)
HC-2	Field temperature, conductivity at 25° C, and pH	
HC-3	Nitrate + Nitrite as N, total	
	Metals, total (Arsenic, Boron, molybdenum)	
	Sulfate, total	
	Chloride, total	
	Total Hardness (mg/L as $CaCO_3$)	
	Alkalinity, total	

Table 2. Groundwater Monitoring Program^
Wisconsin Power and Light - Columbia Ash Ponds and Dry Ash Disposal Facilities
Licenses #2325 and 3025

Columbia Dry Ash Disposal Facility - License No. 3025 [(2)]		
Monitoring Point	**Parameters**	**Frequency**
Leachate Head Wells		
LH-2, LH-3[(5)], LH-4[(5)] LH-5, LH-6 LH-10A, LH-10B LH-11A, LH-11B	Leachate head elevation Leachate depth	Monthly
Other Monitoring Points		
LS-1 LS-3R	Field odor, color, and turbidity Field temperature, conductivity at 25° C, and pH Nitrogen, Kheldahl, total (mg/L as N) Metals, total (Aluminum, Arsenic, Boron, Chromium, Molybdenum) Selenium) Sulfate, total Chloride, total Total Hardness (mg/L as $CaCO_3$) Alkalinity	Semiannual (April and October)
LP-1	Field pH and conductivity TSS BOD Alkalinity Hardness Chloride Fluoride and Sulfate, total Metals, total (Antimony, Beryllium, Boron, Cadmium, Cobalt, Iron, Lead, Lithium, Manganese, Mercury, Molybdenum, Selenium, Thallium) Radium 226 + 228	Semiannual (April and October)
	SVOCs	Annual (October)
	Leachate Volume Pumped	Monthly

Notes:

(1) The Columbia Ash Pond Facility monitoring program is based on the Conditional Ash Ponds Closure Plan of Operation Approval dated May 17, 2022.

(2) The Columbia Dry Ash Disposal Facility monitoring program is based on the WDNR Plan of Operation Modification Conditional Approval Letter dated May 3, 2024.

(3) MW-1AR was abandoned and replaced by new water table well MW-93A in April 2022. MW-93A was analyzed for additional baseline monitoring parameters during all 2023 - 2024 monitoring events.

(5) LH-3 and LH-4 were last monitored and abandoned in May 2023.

(6) Aluminum, Barium, Cadmium, Chromium, Mercury, and Selenium were removed from the non-CCR sampling program starting with the October 2024 event based on the DNR correspondence dated May 3, 2024 (Appendix A). (Except for in the case of background well monitoring)

(7) MW-317, MW-318, and MW-319 were installed in June 2024 and were sampled for additional baseline parameters during 2024.

(8) MW-84A and MW-301 are background monitoring wells that supports the Federal CCR Rule sampling program at the Dry Ash Facility. They are sampled for additional parameters not required by the Dry Ash Facility program.

(9) MW-33AR, MW-34A, and MW-84A are sampled for CCR parameters only starting in October 2024.

^: This table summarizes the monitoring programs in place at the end of 2024. Additional parameters were required at non-CCR monitoring wells at the Ash Disposal Facility earlier in the reporting period, and the CCR monitoring program came into effect during 2024.

Created by: MDB Date: 1/8/2015
Last revision by: EMS Date: 12/18/2024
Checked by: MDB Date: 1/20/2025

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Table 3. 2024 CCR Monitoring Well Groundwater Samples Summary
Columbia Energy Center Dry Ash Disposal Facility
SCS Engineers Project #25224067.00

Sample Dates		April 15-17, 2024	July 29, 2024	October 1-2, 2024	November 5, 2024	Total Samples
Background Wells	MW-84A	D	--	D	--	2
	MW-301	D	--	D	--	2
Downgradient Wells	MW-302	D	--	D	--	2
	MW-309	D	--	D	D-R	3
	MW-310	D	--	D	D-R	3
	MW-311	D	--	D	--	2
	MW-313	D	--	--	--	1
	MW-314	D	--	--	--	1
	MW-315	D	--	--	--	1
	MW-317	--	--	B-D	--	1
	MW-318	--	--	B-D	--	1
	MW-319	--	--	B-D	--	1
	MW-33AR	D	--	D	--	2
	MW-34A	D	D-R	D	--	3

Abbreviations:
D = Required by Detection Monitoring Program
D-R = Detection Monitoring Retest Sample
B-D = Baseline Sample Also Reported as Detection Monitoring Data
-- = Not sampled

Created by: MDB Date: 1/8/2024
Last revision by: MDB Date: 1/8/2024
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Table 4. 2023-2024 NR 140 Groundwater Quality Standard Exceedance Summary for Non-CCR Monitoring Wells - Dry Ash Facility
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025
2023-2024

Parameter	Units	NR 140 PAL	NR 140 ES	Sample ID	Collected Date	Result	Data Flags	Exceedance	Notes	In DMZ*
Arsenic, Dissolved	µg/L	1	10	MW-92B	4/24/2023	2.2		PAL		Y
Arsenic, Total	µg/L	1	10	HC-1	4/25/2023	1.0		PAL		N
				MW-317**	10/1/2024	1.3		PAL		N/A
Boron, Dissolved	µg/L	200	1000	MW-33AR	4/27/2023	534		PAL		Y
				MW-33AR	10/11/2023	495		PAL		Y
				MW-33BR	4/26/2023	474		PAL		Y
				MW33BR	10/11/2023	309		PAL		Y
				MW-34A	4/26/2023	227		PAL		Y
				MW-34A	10/11/2023	240		PAL		Y
				MW-91B	4/25/2023	1,110		PAL		Y
				MW-91B	10/11/2023	800		PAL		Y
				MW-91B	4/16/2024	976		PAL		Y
				MW-91B	10/2/2024	733		PAL		Y
Boron, Total	µg/L	200	1000	HC-1	4/25/2023	215		PAL		N
				HC-1	10/11/2023	222		PAL		N
				HC-1	10/2/2024	233		PAL		N
				HC-1	4/17/2024	225		PAL		N
				HC-2	4/25/2023	370		PAL		N
				HC-2	10/11/2023	390		PAL		N
				HC-2	4/17/2024	350		PAL		N
				HC-2	10/2/2024	342		PAL		N
				HC-3	4/25/2023	394		PAL		N
				HC-3	10/11/2023	406		PAL		N
				HC-3	4/17/2024	396		PAL		N
				HC-3	10/2/2024	356		PAL		N
Chloride, Dissolved	mg/L	125	250	MW-86	4/24/2023	323		PAL		Y
				MW-86	10/9/2023	236		PAL		Y
Chloride, Total	mg/L	125	250	HC-1	4/25/2023	139		PAL		N
				HC-1	10/11/2023	145		PAL		N
				HC-1	4/17/2024	147	M0	PAL		N
				HC-1	10/2/2024	151		PAL		N
				MW-319**	10/1/2024	649		ES		N/A
Molybdenum, Dissolved	µg/L	8	40	MW-33BR	4/17/2024	15		PAL		Y
				MW-91AR	4/25/2023	18.5		PAL		Y
				MW-91AR	10/10/2023	17.8		PAL		Y
				MW-91AR	4/17/2024	15.7		PAL		Y
				MW-91AR	10/2/2024	16.2		PAL		Y
				MW-91B	4/25/2023	114		PAL		Y
				MW-91B	10/10/2023	87		PAL		Y
				MW-91B	4/17/2024	101		PAL		Y
				MW-91B	10/2/2024	65		PAL		Y

Table 4. 2023-2024 NR 140 Groundwater Quality Standard Exceedance Summary for Non-CCR Monitoring Wells - Dry Ash Facility
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025
2023-2024

Parameter	Units	NR 140 PAL	NR 140 ES	Sample ID	Collected Date	Result	Data Flags	Exceedance	Notes	In DMZ*
Molybdenum, Total	µg/L	8	40	HC-2	4/25/2023	16.6		PAL		N
				HC-2	10/11/2023	15.1		PAL		N
				HC-2	4/17/2024	15.6		PAL		N
				HC-2	10/2/2024	16.3		PAL		N
				HC-3	4/25/2023	18.8		PAL		N
				HC-3	10/11/2023	16.9		PAL		N
				HC-3	4/17/2024	18.7		PAL		N
				HC-3	10/2/2024	17.0		PAL		N
				MW-317**	10/1/2024	24.6		PAL		N/A
Nitrogen, NO2+NO3 as N	mg/L	2	10	MW-33BR	4/26/2023	3.7		PAL		Y
				MW-33BR	10/10/2023	4.0		PAL		Y
				MW-34A	4/26/2023	4.5		PAL		Y
				MW-34A	10/11/2023	4.0		PAL		Y
				MW-34B	4/26/2023	4.7		PAL		Y
				MW-34B	10/10/2023	5.4		PAL		Y
				MW-37A	4/16/2024	10.4		PAL		Y
				MW-37A	10/9/2023	5.9		PAL		Y
				MW-83	4/27/2023	3.1		PAL		N
				MW-91AR	4/25/2023	4.4		PAL		Y
				MW-91AR	4/16/2024	6.9		PAL		Y
				MW-91AR	10/10/2023	5.1		PAL		Y
				MW-91B	4/25/2023	9.2		PAL		Y
				MW-91B	10/10/2023	9.1		PAL		Y
				MW-91B	4/16/2024	10.4		PAL		Y
				MW-92A	10/9/2023	2.9		PAL		Y
				HC-3	4/25/2023	2.0		PAL		N
				HC-3	10/11/2023	2.4		PAL		N
				HC-3	4/17/2024	2.3		PAL		N
				HC-3	10/9/2024	2.4		PAL		N
Sulfate, Total	mg/L	125	250	MW-33AR	10/11/2023	143		PAL		Y
				MW-309	10/1/2024	142		PAL		N/A
				MW-309	11/5/2024	131		PAL	Resample	N/A
				MW-310	10/1/2024	179		PAL		N/A
				MW-310	11/5/2024	194		PAL	Resample	N/A
				MW-318**	10/1/2024	231		PAL		N/A

Notes/Abbreviations:
PAL: NR 140 Preventive Action Limit
ES: NR 140 Enforcement Standard
µg/L: microgram per liter
mg/L: milligram per liter

*: Enforcement Standards (ESs) do not apply to non-CCR monitoring wells within the design management zone (DMZ)
**: Baseline sampling is ongoing at MW-317, MW-318, and MW-319.
M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Created By:	NAS	12/21/2018
Last Modified:	MDB	1/8/2025
Checked By:	RM	1/9/2024

\\Mad-fs01\data\Projects\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Tables\working files\[Table_4_2023-2024_Exceedances_Dry_Ash_03025.xls]Exceedances

Table 5. 2023-2024 Monitoring Results - Site Specific Preventive Action Limit Exceedance Summary - Dry Ash Facility
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025
2023 - 2024

Point Name	Report Period Date	Field Specific Conductance (µmhos/cm)
MW-86	4/24/2023	1,742
	4/16/2024	1,454

Note: The Site-specific PAL for field specific conductance was 1,400 µmhos/cm. This PAL was replaced by well-specific PALs in the May 3, 2024 Conditional Approval.

µmhos/cm: micromhos per centimeter
PAL: Preventive Action Limit

Created by:	NAS	Date:	12/20/2018
Last revision by:	EMS	Date:	12/18/2024
Checked by:	KMV	Date:	12/23/2024

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Table 6. 2024 Well-Specific Preventive Action Limit and Alternative Concentration Limit Exceedance Summary - Dry Ash Facility
WPL-Columbia Dry Ash Disposal Facility / SCS Engineers Project #25224067.00
License #03025
2023 - 2024

Parameter	Units	Sample ID	CCR Monitoring Well?	PAL	ACL	Collected Date	Result	Data Flags	Note
Boron, Total	µg/L	MW-34A	Y	--	250	4/17/2024	265		Not confirmed by resample
Calcium, Total	mg/L	MW-310	Y	80	--	10/1/2024	108		
						11/5/2024	99.7		Resample
Chloride, Total	mg/L	MW-309	Y	--	820	10/1/2024	971		Not confirmed by resample
		MW-310	Y	--	330	10/1/2024	420		
						11/5/2024	435		Resample
Hardness, Total	mg/L	MW-33AR	Y	390	--	10/2/2024	415		Resampling planned
Sulfate, Total	mg/L	MW-33AR	Y	--	200	10/2/2024	224		Resampling planned
Total Dissolved Solids	mg/L	MW-309	Y	2,100	--	10/1/2024	2,180		Not confirmed by resample
		MW-310	Y	990	--	10/1/2024	1,210		
						11/5/2024	1,190		Resample

Notes/Abbreviations:
µg/L = micrograms per liter
mg/L = milligrams per liter
ACL = Alternative Concentration Limit
PAL = Preventative Action Limit

Created By: MDB Date: 6/1/2023
Last Modified: MDB Date: 1/8/2025
Checked By: RM Date: 1/9/2025

Table 7. 2023-2024 NR 140 Groundwater Quality Standard Exceedances for Non-CCR Monitoring Wells - Ash Ponds
Wisconsin Power and Light - Columbia Ash Ponds Disposal Facility
License #2325
2023-2024

Parameter	Units	NR 140 PAL	NR 140 ES	Sample ID	Collected Date	Result	Data Flags	Exceedance	In DMZ*
Arsenic, Dissolved	µg/L	1	10	MW-57	10/10/2023	15.3		PAL	Y
				MW-57	4/16/2024	11.9		PAL	Y
				MW-57	10/3/2024	18.8		PAL	Y
				W-217	4/25/2023	3.4		PAL	Y
				W-217	10/10/2023	2.6		PAL	Y
				W-217	4/16/2024	3.2		PAL	Y
				W-217	10/3/2024	3.7		PAL	Y
				MW-220RR	4/25/2023	1.1		PAL	Y
				MW-220RR	10/10/2023	5.7		PAL	Y
				MW-220RR	4/17/2024	1.5		PAL	Y
				MW-220RR	10/3/2024	1.5		PAL	Y
Boron, Dissolved	µg/L	200	1000	M-3	4/25/2023	244		PAL	N
				M-3	10/10/2023	1,140		ES	N
				M-3	4/17/2024	369		PAL	N
				M-3	10/3/2024	369		PAL	N
				M-4R	10/4/2024	977		PAL	Y
				MW-48A	10/10/2023	300		PAL	N
				MW-48A	4/16/2024	228		PAL	N
				MW-57	10/10/2023	609		PAL	Y
				MW-57	4/16/2024	625		PAL	Y
				MW-57	10/3/2024	586		PAL	Y
				W-59	4/25/2023	292		PAL	Y
				W-59	10/10/2023	324		PAL	Y
				W-59	4/17/2024	313		PAL	Y
				MW-216R	4/24/2023	697		PAL	Y
				MW-216R	10/10/2023	733		PAL	Y
				MW-216R	4/16/2024	770		PAL	Y
				MW-216R	10/3/2024	381		PAL	Y

Table 7. 2023-2024 NR 140 Groundwater Quality Standard Exceedances for Non-CCR Monitoring Wells - Ash Ponds
Wisconsin Power and Light - Columbia Ash Ponds Disposal Facility
License #2325
2023-2024

Parameter	Units	NR 140 PAL	NR 140 ES	Sample ID	Collected Date	Result	Data Flags	Exceedance	In DMZ*
Boron, Dissolved (continued)	µg/L	200	1000	W-217	4/25/2023	2,710		PAL	Y
				W-217	10/10/2023	2,680		PAL	Y
				W-217	4/16/2024	2,870		PAL	Y
				W-217	10/3/2024	2,210		PAL	Y
				MW-220RR	10/10/2023	1,360		PAL	Y
				MW-220RR	4/17/2024	488		PAL	Y
				MW-220RR	10/3/2024	170		PAL	Y
Sulfate, Dissolved	mg/L	125	250	M-3	10/10/2023	165		PAL	N
				M-4R	10/4/2024	144		PAL	Y
				MW-57	4/16/2024	153		PAL	Y
				W-59	10/3/2024	170		PAL	Y
				W-217	4/25/2023	236		PAL	Y
				W-217	10/10/2023	215		PAL	Y
				W-217	4/16/2024	204		PAL	Y

Notes/Abbreviations:
µg/L = micrograms per liter mg/L = milligrams per liter
PAL = NR 140 Preventive Action Limit ES = NR 140 Enforcement Standard
* = Enforcement Standards (ESs) do not apply to wells within the design management zone (DMZ)

Created By: MDB Date: 7/5/2020
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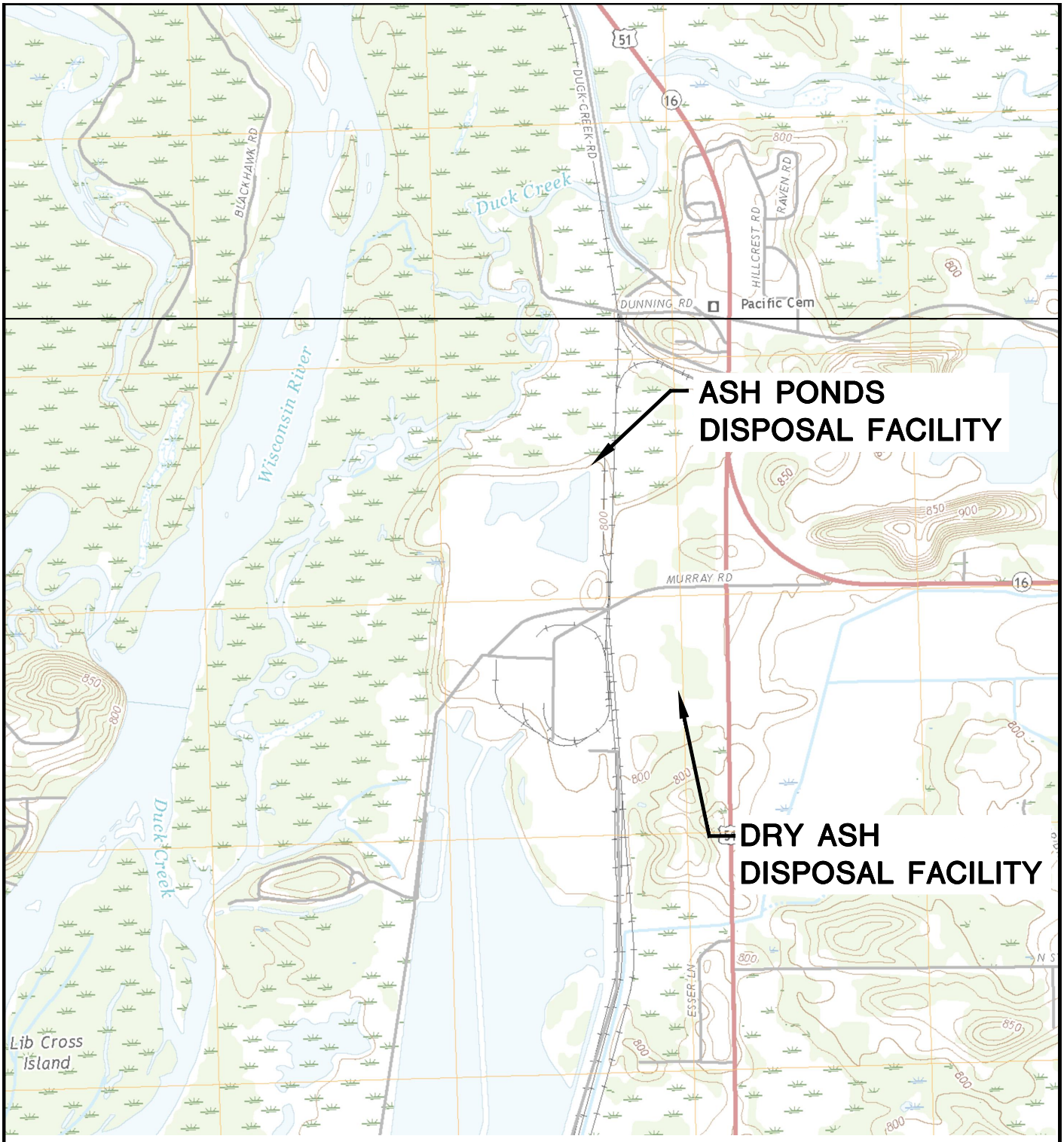
Figures



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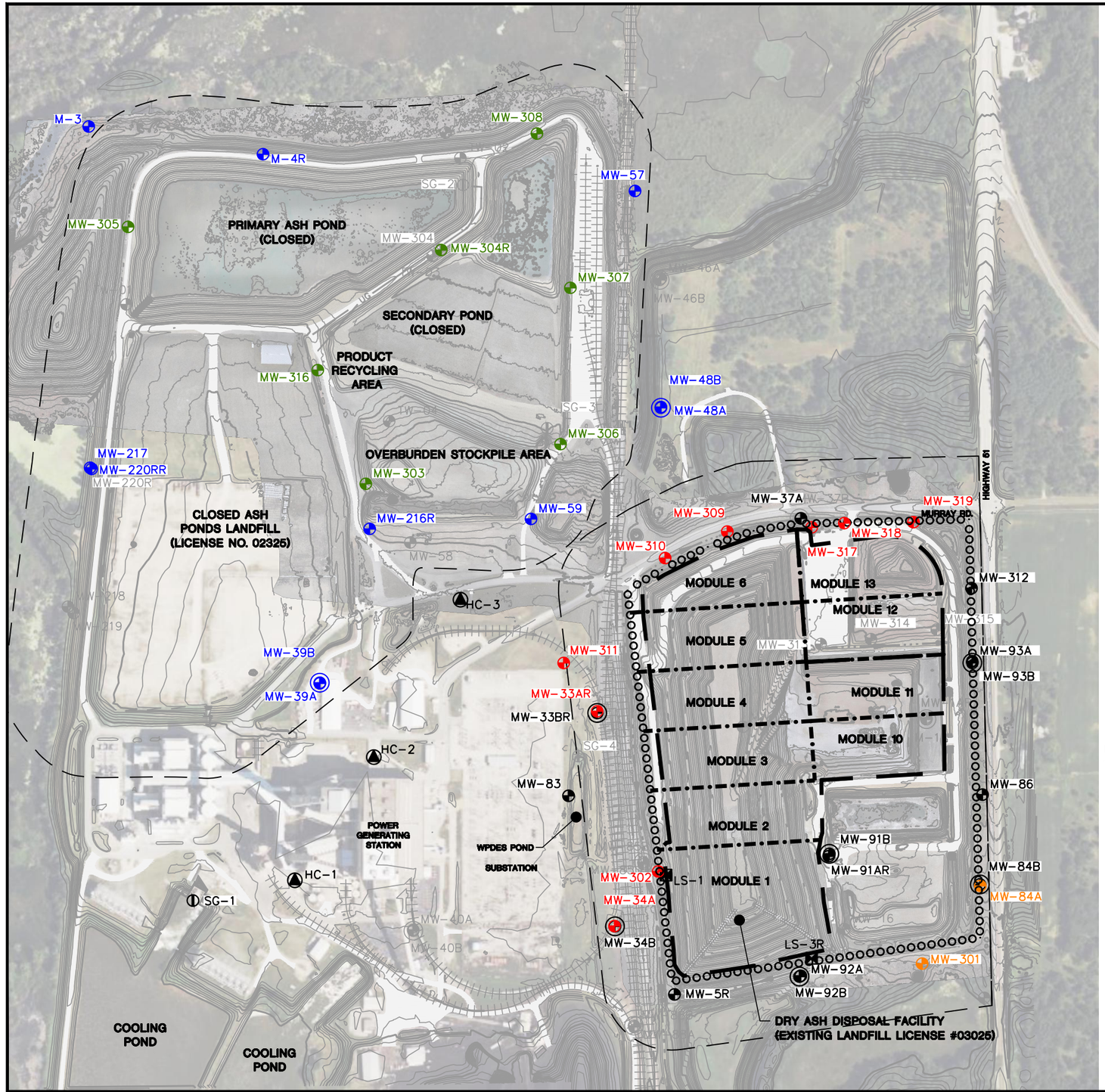
POYNETTE QUADRANGLE
WISCONSIN–COLUMBIA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT: ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE: ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	SITE LOCATION MAP	
PROJECT NO. 25219067.00	DRAWN BY: BSS	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 1
DRAWN: 12/02/2019	CHECKED BY: MDB		
REVISED: 01/10/2020	APPROVED BY: TK 01/30/2020		

I:\25219067.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/30/2020 3:38:21 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GAUGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- ADF NON-CCR MONITORING WELL
- ADF CCR MONITORING WELL
- UPGRADIENT MONITORING WELL
- ASH PONDS STATE PROGRAM MONITORING WELL
- ASH PONDS CCR MONITORING WELL (FEDERAL CCR RULE PROGRAM ONLY)
- DESIGN MANAGEMENT ZONE
- APPROVED LIMITS OF WASTE (ADF ONLY)

N

500 0 500

SCALE: 1" = 500'

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
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PROJECT NO.	25224067.00	DRAWN BY:	SB/RVG
DRAWN:	01/14/2025	CHECKED BY:	MDB
REVISED:	01/21/2025	APPROVED BY:	MDB 1/21/2025

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

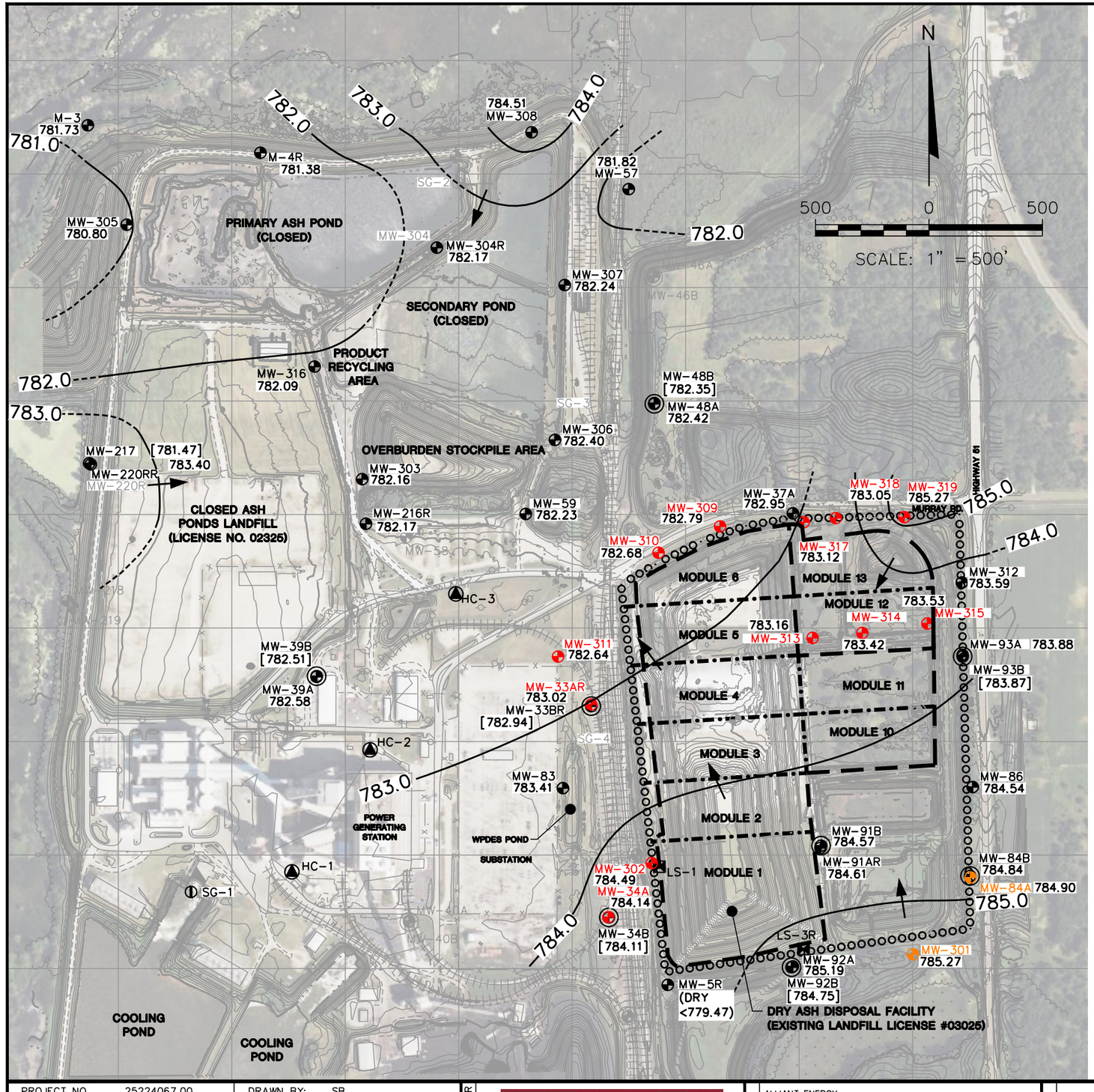
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS
COLUMBIA DRY ASH DISPOSAL FACILITY

FIGURE 2

I:\25224067.00\Drawings\Biennial Report Figure\02_Site Plan.dwg, 1/21/2025 4:36:12 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- NON-CCR WATER TABLE WELL
- NON-CCR PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 783.88 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (DRY) — SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
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8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.
11. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.
12. WELLS SHOWN AS CCR MONITORING WELLS ARE ONLY THOSE IN THE CCR MONITORING PROGRAM FOR THE ADF.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	01/14/2025	CHECKED BY:	MDB
REVISED:		APPROVED BY:	MDB 1/21/2025

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

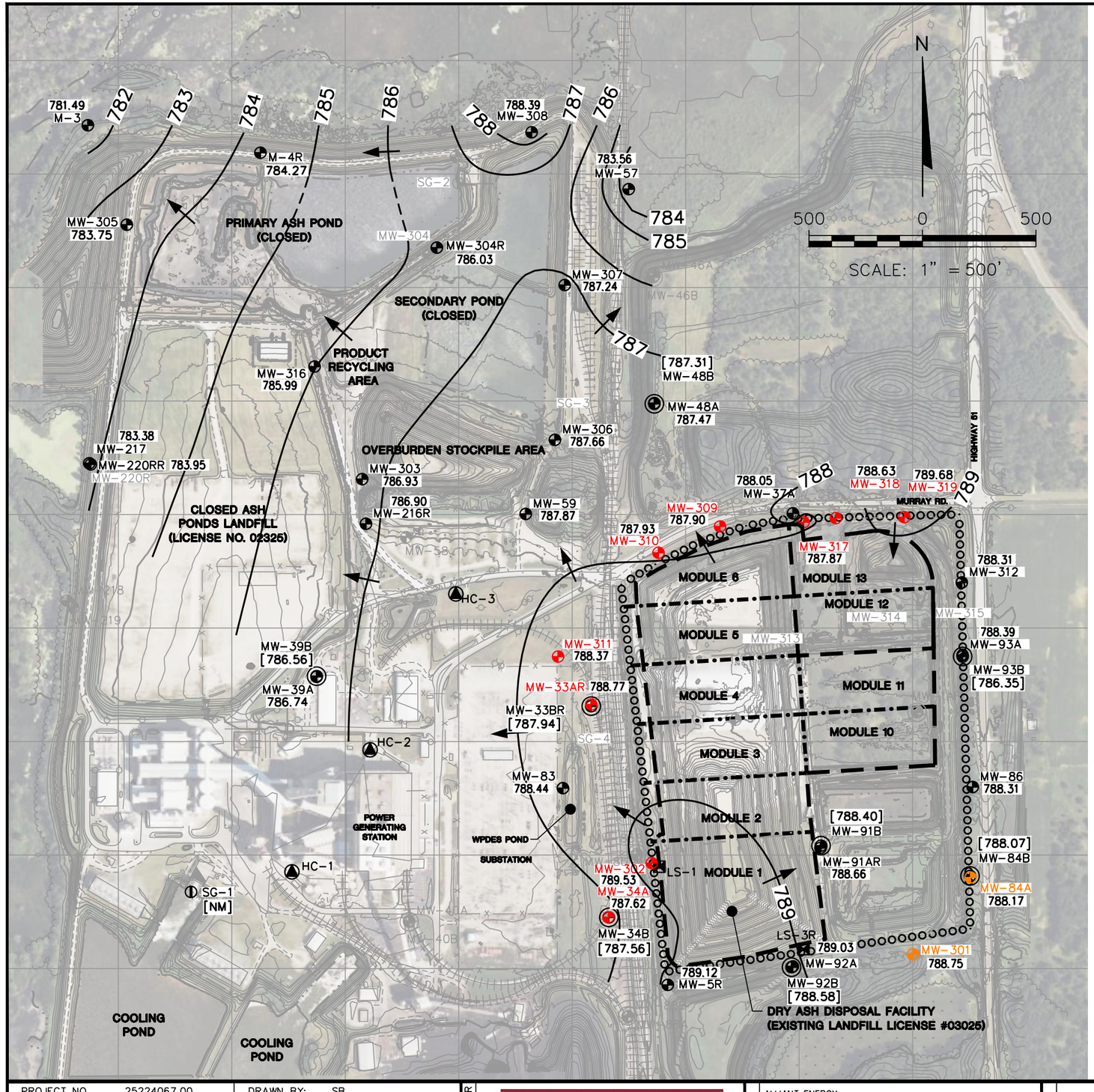
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
APRIL 15-17, 2024

FIGURE
3

I:\25224067.00\Drawings\Biennial Report Figure\03_April 2024 WTBL.dwg, 1/14/2025 1:26:58 PM



LEGEND

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- EXISTING MINOR CONTOUR (2' CONTOUR)
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- EXISTING PAVED ROAD
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- EDGE OF WATER
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- STAFF GAUGE
- NON-CCR WATER TABLE WELL
- NON-CCR PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 788.75 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- [NM] — NOT MEASURED
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

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DRAWN:	01/14/2025	CHECKED BY:	MDB
REVISED:		APPROVED BY:	MDB 1/21/2025

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
AUGUST 15, 2024

FIGURE
4

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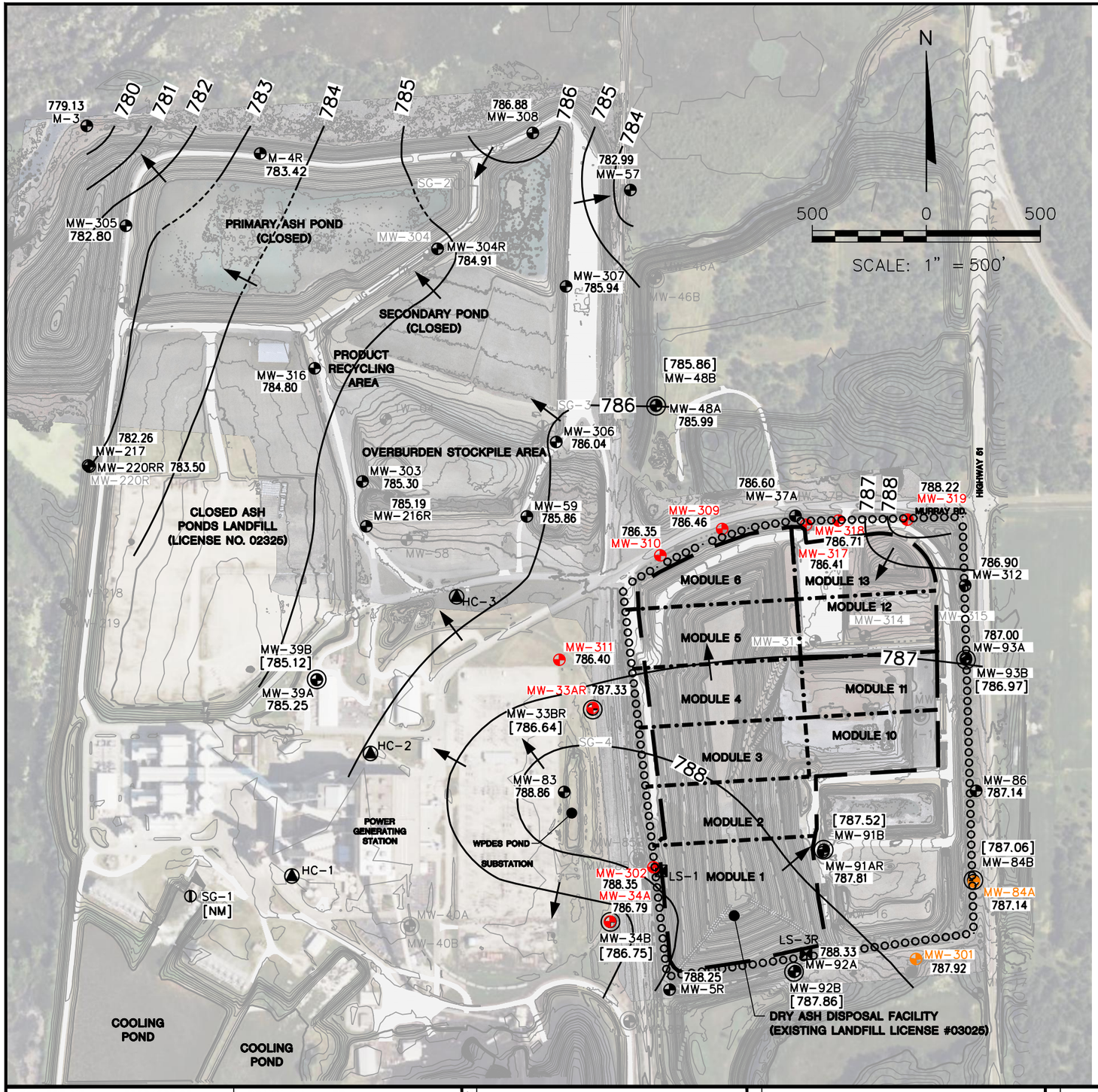

LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
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DRAWN:	01/14/2025	CHECKED BY:	MDB
REVISED:		APPROVED BY:	MDB 1/21/2025

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
OCTOBER 1-3, 2024

FIGURE 5

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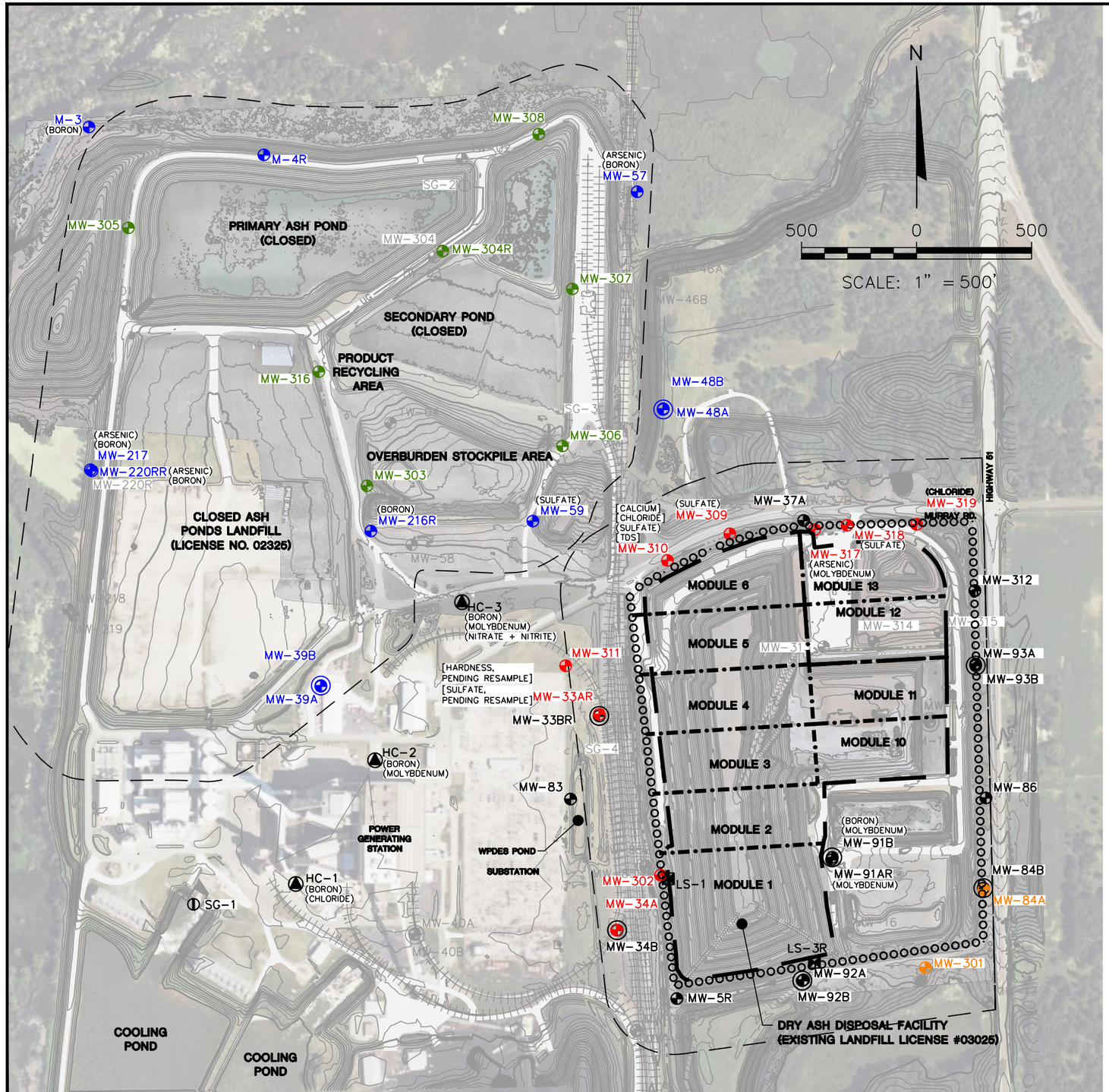

LEGEND

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- EXISTING MINOR CONTOUR (2' CONTOUR)
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- EXISTING TRACKS
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GAUGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- ADF NON-CCR MONITORING WELL
- ADF CCR MONITORING WELL
- UPGRADIENT MONITORING WELL
- ASH PONDS STATE PROGRAM MONITORING WELL
- ASH PONDS CCR MONITORING WELL (FEDERAL CCR RULE PROGRAM ONLY)
- (BORON) NR 140 PAL EXCEEDANCE
- **(CHLORIDE)** NR 140 ES EXCEEDANCE
- [CALCIUM] WELL-SPECIFIC PAL OR ACL EXCEEDANCE
- DESIGN MANAGEMENT ZONE
- APPROVED LIMITS OF WASTE (ADF ONLY)

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
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ENGINEER: SCS ENGINEERS, 2830 DAIRY DRIVE MADISON, WI 53718-6751, PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY, COLUMBIA ENERGY CENTER, W8375 MURRAY ROAD, PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY, COLUMBIA ENERGY CENTER, PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS EXCEEDANCE SUMMARY - OCTOBER 2024

FIGURE 6

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Appendix A

Summary of Regional Hydrogeologic Stratigraphy

Table COL-3. Regional Hydrogeologic Stratigraphy
Columbia Energy Center / SCS Engineers Project #25215053

Approximate Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary (0-1 million years old)	Surficial Aquifer	0 to 300+	Holocene & Pleistocene Deposits	• Unconsolidated clay, silt, sand, gravel, cobbles, boulders, and organic matter
Ordovician (460 to 490 million years old)	Sandstone Aquifer	0 to 800+	Galena Decorah Platteville St. Peter Prairie du Chien	• Dolomite and shaley dolomite • Sandstone
Cambrian (490 to 500 million years old)			Trempeleau Franconia Galesville Eau Claire Mt. Simon	• Sandstone
Precambrian (more than 1 billion years old)	Used for domestic supply in some areas	--	Precambrian	• Igneous and metamorphic rocks

*This nomenclature and classification of rock units in this report are those of the Wisconsin Geological and Natural History Survey and do not necessarily coincide with those accepted by the U.S. Geological Survey.

Sources:

Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.

Wisconsin Geological and Natural History Survey, Bedrock Stratigraphic Units in Wisconsin, UW Extension Educational Series 51, ISSN: 1052-2115, 2011.

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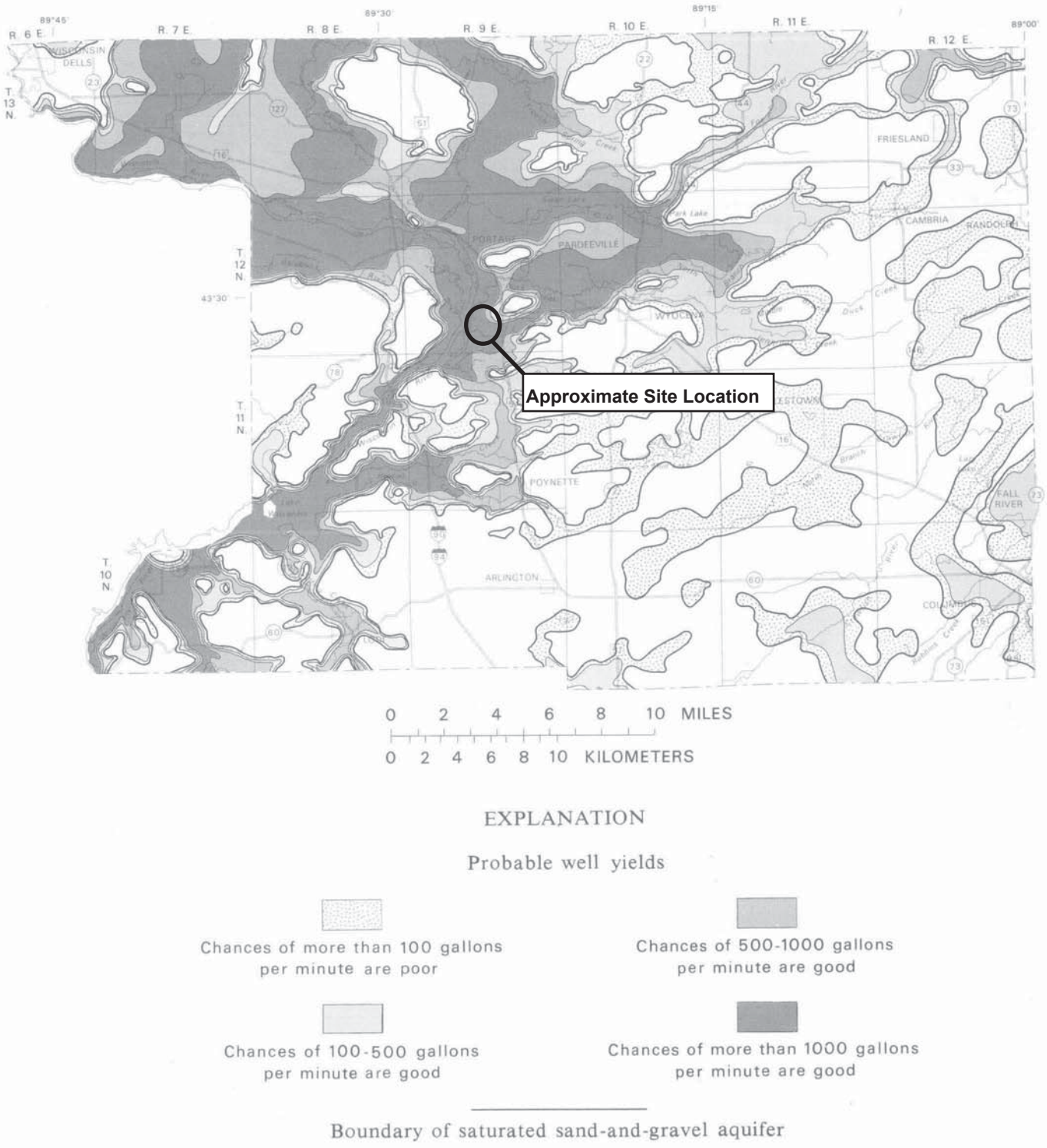
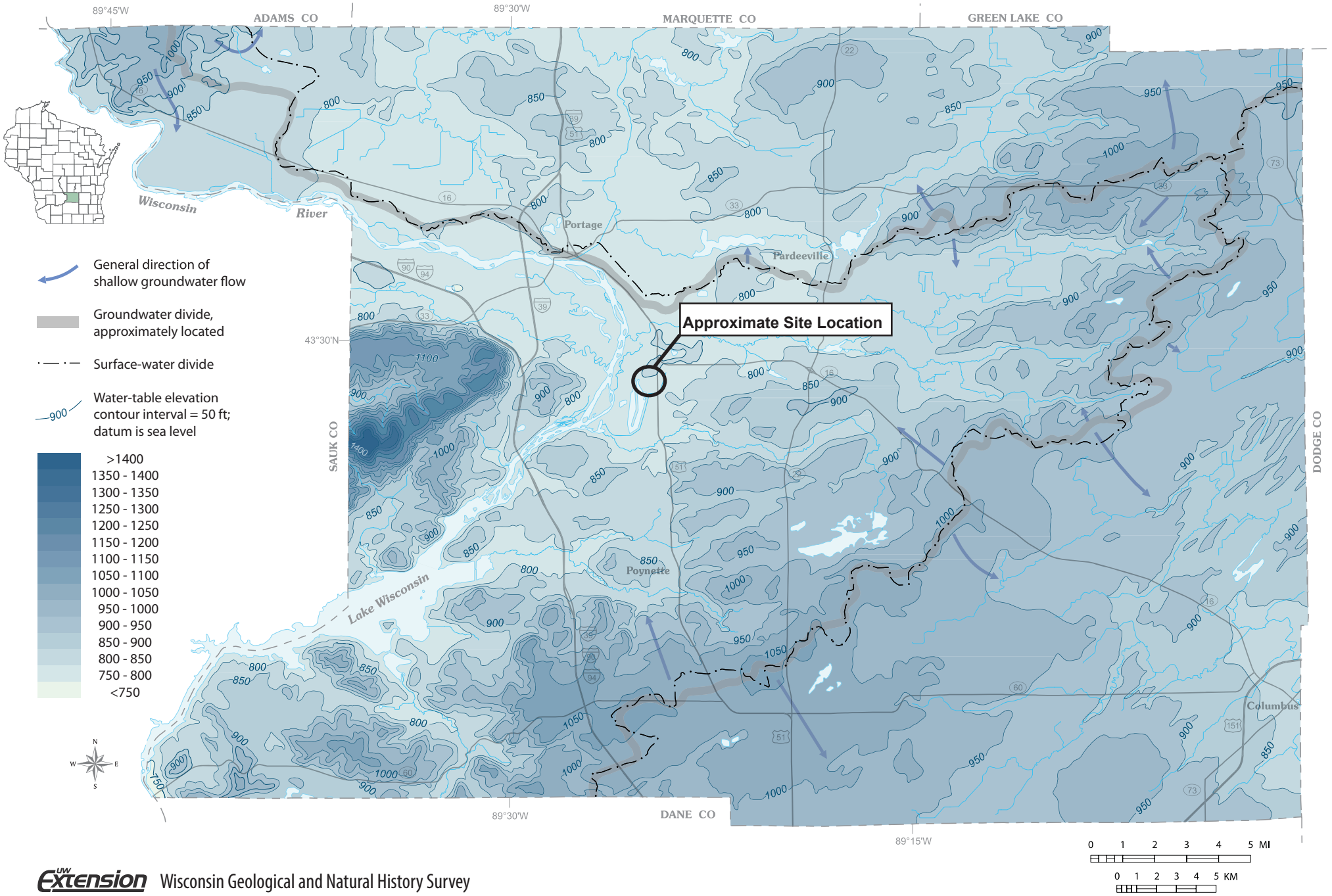


Figure 9. Probably well yields from the sand-and-gravel aquifer.

Source: Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconisn-Extension Geological and Natural History Surevy Information Circular Number 37, 1978.

Generalized water-table elevation in Columbia County, Wisconsin



Wisconsin Geological and Natural History Survey

02/26/2025 Classification: Internal FOIA 2462195

Source: Selkwood, Stephen R., Wisconsin Geologic and Natural History Survey, Water Table Elevation, Groundwater Resources of Columbia County Wisconsin,

Appendix B

Well Conditions Summary

Well Conditions Summary
WPL - Columbia Ash Ponds and Dry Ash Disposal Facilities
October 2024

Columbia Ash Ponds Disposal Facility - License No. 2325	
Monitoring Point	**Condition/Comments**
Groundwater	
M-3	Good
M-4R	Good
W-39A	Good
W-39B	Good
MW-48A	Good
MW-48B	Good
MW-57	Good
W-59 (W-2)	Good
MW-216R	Good
W-217	Casing bent, cannot fit bailer down well. Dedicated Waterra pump has been used to purge and sample the well since 2021.
MW-220RR	Casing bent and leaning towards the west, cannot fit bailer down well. Dedicated Waterra pump has been used to purge and sample well since October 2019.
Staff Gauges	
SG-1	Good: elevations provided by WPL from meter at plant intake

Well Conditions Summary
WPL - Columbia Ash Ponds and Dry Ash Disposal Facilities
October 2024

Columbia Dry Ash Disposal Facility - License No. 3025	
Monitoring Point	**Condition/Comments**
Groundwater, non-CCR	
MW-33AR	Good
MW-33BR	Good
MW-34A	Good
MW-34B	Good
MW-37A	Good
MW-83	Good
MW-84A	Good
MW-84B	Good
MW-86	Good
MW-91AR	Good
MW-91B	Good
MW-92A	Good
MW-92B	Good
MW-93A	Good
MW-301	Good
MW-302	Good
MW-309	Good
MW-310	Good
MW-311	Good
MW-313	Abandoned in June 2024
MW-314	Abandoned in June 2024
MW-315	Abandoned in June 2024
MW-317	Good
MW-318	Good
MW-319	Good

Well Conditions Summary
WPL - Columbia Ash Ponds and Dry Ash Disposal Facilities
October 2024

Water Supply Wells	
HC-1	Good
HC-2	Good
HC-3	Good
Leachate Head Wells	
LH-2	Good
LH-3	Abandoned in May 2023
LH-4	Abandoned in May 2023
LH-5	Good
LH-6	Good
LH-10A	Good
LH-10B	Good
LH-11A	Good
LH-11B	Good
Other Monitoring Points	
LS-1	Good
LS-3R	Good
LP-1	Good

Notes:

Created by:	MDB	Date:	1/2/2019
Last revision by:	EMS	Date:	1/2/2025
Checked by:	MDB	Date:	1/21/2025

I:\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Appendix B_Well Conditions\[Appendix_B_Well Conditions.

Appendix C

Demonstration of False Groundwater Exceedance

Alliant Energy
4902 North Biltmore Lane
P.O. Box 77007
Madison, WI 53707-1007

1-800-ALLIANT (800-255-4268)
alliantenergy.com

January 21, 2025

Mr. Tyler Sullivan
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711-5367

Subject: **November 2024 Resampling Event - Environmental Monitoring Data Submittal and Demonstration of False Groundwater Exceedance**
Wisconsin Power and Light Company – Columbia Ash Disposal Facility
Portage, Wisconsin
License #3025

Dear Mr. Sullivan:

On behalf of Wisconsin Power and Light Company (WPL), Alliant Energy is providing the enclosed summary and data submittal for the groundwater sampling performed at the WPL Columbia Ash Disposal Facility during November 2024. The work was performed by SCS Engineers (SCS). The work was performed in accordance with the Department's May 3, 2024, Conditional Plan of Operation Approval Modification, Initial Permitting of Coal Combustion Residuals (CCR) Landfill for the ADF.

The November 2024 resampling event confirmed a subset of the results previously reported to the Department, and in response, WPL has prepared a Demonstration of False Groundwater Exceedance. WPL respectfully requests Department concurrence with this Demonstration in accordance with NR 508.06(1)(c).

Please call me at (608) 458-3197 with any questions regarding this information.

Sincerely,

Matt Bizjack
Senior Environmental Specialist
Alliant Energy Corporate Services, Inc.

Enclosures

Cc: Brian Clepper – WPL Columbia Energy Center
Jeff Maxted – Alliant Energy Corporate Services, Inc.
Meghan Blodgett, Thomas Karwoski – SCS Engineers

January 21, 2025
File No. 25224067.00

GEMS Data Submittal Contact – WA/5
Wisconsin Department of Natural Resources
Bureau of Waste Management
P.O. Box 7921
Madison, WI 53707-7921

Subject: November 2024 Resampling Event – Environmental Monitoring Data Submittal and Demonstration of False Groundwater Exceedance
Wisconsin Power and Light Company
Columbia Dry Ash Disposal Facility
Portage, Wisconsin
License No. 03025

Dear GEMS Submittal Contact:

This letter summarizes the monitoring results for a groundwater resampling event performed at the Columbia Dry Ash Disposal Facility (ADF) in November 2024. This resampling was performed in response to detection of groundwater constituents above applicable standards at some CCR monitoring wells during the October 2024 semiannual event.

The November 2024 resampling confirmed some of the exceedances observed in the October 2024 results. For these confirmed exceedances, this letter presents a demonstration of false groundwater exceedance in accordance with NR 508.06(1)(c).

Monitoring was performed in accordance with the site-specific monitoring program approved by the Wisconsin Department of Natural Resources (DNR) in the May 3, 2024, Conditional Plan of Operation Approval Modification, Initial Permitting of Coal Combustion Residuals (CCR) Landfill for the ADF. Where applicable, groundwater analytical results are compared to well-specific Preventive Action Limits (PALs) or Alternative Concentration Limits (ACLs) approved in the May 3, 2024, Approval.

The data submittal includes this letter and the following attachments:

- Groundwater Quality Standard Exceedances (**Table 1**).
- Site Location Map, Site Plan, and October 2024 Groundwater Flow Map (**Figures 1-3**).
- Environmental Monitoring Data Certification Form (**Attachment A**).
- Information supporting the demonstration of false groundwater exceedance (**Attachments B-F**).
- Compact disc (CD) containing the November results in DNR electronic data submittal format (**Attachment G**, included only with hard copy of report).

1 MONITORING PROGRAM COMMENTS

In the December 30, 2024, data submittal letter for October 2024 semiannual sampling event results, WPL indicated an intention to resample CCR monitoring wells MW-33AR, MW-309, and MW-310 for select parameters detected at concentrations above applicable standards during the October 2024 monitoring event. These well locations are shown on Figure 2.

As described in the approved site Groundwater Sampling and Analysis Plan, WPL may retest potential groundwater exceedances during additional sampling events between the routine semiannual events. The resampling event at MW-309 and MW-310 was performed on November 5, 2024. The laboratory analytical report was issued on November 20, 2024. SCS Engineers (SCS) performed the monitoring. Pace Analytical Services, Inc., of Green Bay, Wisconsin, provided laboratory analysis.

Retesting at MW-33AR is still anticipated prior to the April 2025 routine monitoring event. As of the date of this submittal, the sample collection has been completed but the laboratory analytical report has not been issued. Resample results for MW-33AR will therefore be submitted under separate cover. An additional False Exceedance Demonstration will also be submitted if resampling confirms any potential exceedances previously reported for MW-33AR.

2 OCTOBER 2024 SAMPLING RESULTS

Groundwater quality results for the October 2024 monitoring event were compared to NR 140 PALs and enforcement standards (ESs), or to well-specific PALs and ACLs where applicable. Exceedances detected during the October 2024 monitoring event were previously summarized in the December 30, 2024, GEMS data submittal.

Parameters which were detected at concentrations exceeding applicable standards during October 2024, and for which WPL indicated an intention to resample to confirm exceedances, are summarized in Table 1. November 2024 resample results for MW-309 and MW-310 are included in Table 1.

A summary of resample results is provided below. For exceedances that were confirmed by the resampling, a demonstration of false exceedance is also provided below.

3 NOVEMBER 2024 RESAMPLE RESULTS

Calcium

Calcium was detected above the well-specific PAL (80 mg/L) at CCR monitoring well MW-310 during the October 2024 sampling event. The November 2024 resampling result (100 mg/L) confirmed this exceedance.

Chloride

Chloride was detected above the well-specific ACL (820 mg/L) at CCR monitoring well MW-309 during the October 2024 sampling event. The November 2024 resampling result (743 mg/L) did not confirm this exceedance.

Chloride was detected above the well-specific ACL (330 mg/L) at CCR monitoring well MW-310 during the October 2024 sampling event. The November 2024 resampling result (435 mg/L) confirmed this exceedance.

Sulfate

Sulfate was detected above the NR 140 PAL (125 mg/L) at CCR monitoring wells MW-309 and MW-310 during the October 2024 sampling event. Well-specific ACLs have not been established for these wells. The November 2024 resampling results confirmed the PAL exceedances at MW-309 and MW-310.

Total Dissolved Solids

Total Dissolved Solids (TDS) was detected above the well-specific PAL (2,100 mg/L) at CCR monitoring well MW-309 during the October 2024 sampling event. The November 2024 resample result (1,630 mg/L) did not confirm this exceedance.

TDS was detected above the well-specific PAL (990 mg/L) at CCR monitoring well MW-310 during the October 2024 sampling event. The November 2024 resample result (1,190 mg/L) confirmed this exceedance.

Summary

Based on the October and November monitoring events, parameters and wells with confirmed NR 140 exceedances include:

- Calcium: MW-310
- Chloride: MW-310
- Sulfate: MW-309 and MW-310
- TDS: MW-310

4 DEMONSTRATION OF FALSE EXCEEDANCE REQUIREMENTS

NR 508.06 RESPONSES WHEN A GROUNDWATER STANDARD IS ATTAINED OR EXCEEDED AT A CCR WELL

If a PAL, ACL, or ES is attained or exceeded at a CCR well according to s. NR 140.14 and the value is confirmed, the owner or operator of the CCR landfill shall continue detection monitoring in accordance with s. NR 507.15 (3) (L) and shall respond in accordance with all of the following requirements.

WPL notified the Department of the detection of possible groundwater exceedances in site CCR wells in the October 2024 monitoring event with the GEMS data submittal transmitted to DNR on December 30, 2024. A resampling event in November 2024 confirmed some of those exceedances as described above. This submittal includes a False Exceedance Demonstration for those confirmed exceedances.

NR 508.06(1)(C) DEMONSTRATION OF FALSE EXCEEDANCE SUBMITTAL REQUIREMENTS

The owner or operator may demonstrate that a reported value represents a false exceedance of a groundwater standard in accordance with s. NR 507.28(3) and shall submit the demonstration within 60 days of the groundwater standard attainment or exceedance. If the department does not concur with the written demonstration within 30 days after receipt of the demonstration, the owner or operator shall begin assessment monitoring in accordance with sub. (2). If the department concurs within 30 days after receipt of the demonstration, the owner or operator is not required to begin assessment monitoring. The owner or operator shall include the demonstration in the annual groundwater monitoring and corrective action report.

This submittal serves as a demonstration of false exceedance in accordance with NR 507.28(3). A copy of this demonstration will be included in the annual groundwater monitoring and corrective action report for monitoring performed in 2024.

The November 2024 resampling event laboratory analytical report was issued on November 20, 2024. Sixty days after this date is January 19, 2025, which is a Sunday, and the following Monday is a state holiday. In accordance with Wisconsin Statute 900.001(4) and NR 506.17(4)(a), WPL therefore understands that the deadline for submittal of this demonstration is January 21, 2025.

NR 507.28(3) DEMONSTRATION OF FALSE GROUNDWATER EXCEEDANCE

The owner or operator may demonstrate, by resampling or other means, that a source other than the solid waste disposal facility caused the contamination or that the sample result attaining or exceeding a groundwater standard is due to an error. The owner or operator shall notify the department of the intent to either begin assessment monitoring or determine that a false exceedance has occurred. The owner or operator shall submit the statement of intent with the notification required in s. NR 507.30 (1). The owner or operator shall submit the written demonstration of false exceedance with the results of the next routine monitoring.

This demonstration presents evidence that a source other than the Columbia ADF caused the standards exceedances discussed in this report. In the December 30, 2024, GEMS data submittal for the ADF, WPL indicated an intent to submit a demonstration of false groundwater standards exceedance should resampling confirm an exceedance. While NR 507.28(3) requires submittal of the demonstration with the results of the next routine monitoring, WPL understands that in the case of exceedances at CCR monitoring wells the submittal timeline in NR 508.06(1)(c) applies.

5 DEMONSTRATION OF FALSE EXCEEDANCE

OVERVIEW OF DEMONSTRATION

This Demonstration includes:

- Background information.
- Evaluation of potential that exceedances are due to methodology or analysis.

- Evaluation of potential that exceedances are due to natural sources or man-made sources other than the CCR Units.
- Demonstration conclusions.

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with an exceedance are provided in Table 2. Sampling results through October 2024 have previously been submitted to GEMS. This report includes the submittal of November 2024 resampling results in GEMS format.

ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the confirmed exceedances at downgradient wells MW-309 and MW-310; identifies the most likely alternative source(s); and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed exceedances.

Natural Variation

The groundwater standards to which MW-309 and MW-310 are compared are based on either values listed in NR 140 (sulfate) or well-specific PALs and ACLs based on baseline sampling at each well (calcium, chloride, and TDS). Well-specific ACLs were not established for MW-309 and MW-310 because baseline results collected during 2018 did not exceed the NR 140 PAL. If concentrations of a constituent that is naturally present in the aquifer vary with time, then the potential exists that the compliance sampling concentrations may be higher than baseline concentrations due to natural temporal variation.

Temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Based on comparison to the upgradient wells (MW-301 and MW-84A) and historical data available from before the landfill's construction, it appears likely that calcium concentrations observed at MW-310 may at least partially reflect natural variation. A time series plot showing calcium concentrations at the CCR monitoring wells, including MW-301 and MW-84A, is included in Attachment B. The October and November 2024 concentrations at MW-310 (108 mg/L and 100 mg/L) are within the historical range detected at upgradient well MW-301.

Historical calcium data for non-CCR rule wells at the ADF and select wells associated with the nearby Ash Ponds Facility (License #2525) are included in Attachment C. The earliest available data for wells associated with the ADF are from September 1984. Initial placement of CCR in test plots in Module 1 of the ADF was approved in October 1984, and CCR disposal began sometime after that. Therefore, the initial groundwater monitoring results represent pre-disposal conditions for the ADF. These historical data show fluctuating calcium concentrations. Of the ADF and Ash Ponds wells closest to MW-309 and MW-310, 15 wells show concentrations above 100 mg/L.

Based on comparison to the upgradient wells, it appears likely that chloride, sulfate, and TDS concentrations at MW-309 and MW-310 in October and November 2024 reflect man-made sources. Regardless of the source, natural temporal variations in infiltration and groundwater flow direction may have contributed to the confirmed groundwater standards exceedances at MW-309 and MW-310.

Man-Made Alternative Sources: Sulfate

Based on the historic groundwater flow directions and on previous investigations at the site, the ash ponds and other site conditions present prior to CCR placement in the ADF appear to be the most likely cause of the sulfate standards exceedances at MW-309 and MW-310.

Sulfate concentrations detected at MW-309 and MW-310 during October and November 2024 were similar to concentrations detected in April and June 2023 under the Federal CCR Rule monitoring program, and sulfate concentrations at MW-309 declined during fall 2023 and spring 2024 sampling events.

The following lines of evidence indicate that the standard exceedances for sulfate in wells MW-309 and MW-310 are due to one or more alternative sources:

- Historical sulfate concentrations at nearby non-CCR monitoring wells indicate that elevated and variable sulfate concentrations were present in the same general area of the site prior to the landfill's operation.
- The baseline data set at MW-309 and MW-310 was collected over a short period of time from February through September 2018, and likely does not represent the full range of temporal variability in background concentrations at these monitoring wells.
- The concentration of sulfate at MW-309 increased in April and June 2023, decreased in October 2023 through June 2024, and increased again in October 2024. These short-term fluctuations are not an expected behavior in response to a release from the landfill.
- Because MW-309 and MW-310 are shallow wells located near the plant entrance road, influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a deicing material) may be accentuated.
- Groundwater pumping for dewatering in the ash pond area during 2022-2023 and unusually high precipitation during 2024 likely induced changes in groundwater levels and flow patterns that may have contributed to short-term changes in sulfate concentrations at MW-309 and MW-310.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

Area Background Concentrations for Sulfate

The October and November concentrations at MW-309 were within the range of concentrations detected in the early 1980s at nearby Ash Ponds Facility monitoring wells MW-59 and MW-216R. As noted above, CCR placement in the ADF began sometime after October 1984. Time series plots of historical data at MW-59 and MW-216R are included in **Attachment B**. Sulfate concentrations at these wells have exhibited substantial variability over the life of the monitoring wells, suggesting that a source of sulfate was present on site prior to the early 1980s and sulfate concentrations in the vicinity of MW-309 and MW-310 have been sensitive to short-term changes in groundwater flow conditions as well as operational changes at the Ash Ponds Facility.

Sulfate Concentration Changes with Time

The baseline data set for MW-309 and MW-310 was collected during a relatively short period of time, from February through September 2018. As discussed above, substantial fluctuations in sulfate concentrations have been observed at other site monitoring wells over the course of the decades of sampling performed at the ADF and Ash Ponds Facility.

The concentration of sulfate reported for samples from MW-309 increased in early 2023, decreased in late 2023 through the April and June 2024 sampling events, and increased again during the October and November 2024 sampling events. These short-term increases and decreases are not an expected behavior in response to a release from the landfill. The previous increase was attributed to alternative sources as discussed in Alternative Source Demonstrations (ASDs) prepared for the 2023 monitoring events under the Federal CCR Rule.

The historical sulfate concentrations from MW-309 and MW-310 are shown on the time series plots in Attachment B.

Influence of Groundwater Flow Pattern Changes

Groundwater pumping for dewatering at the Ash Ponds Facility likely induced changes in groundwater levels and flow patterns that may have contributed to short-term changes in sulfate concentrations at MW-309 and MW-310. In 2022, dewatering wells were installed around the Secondary Pond, and groundwater was pumped to lower the water table below the pond to facilitate CCR removal and pond closure. Pumped groundwater was discharged to the Primary Ash Pond. In 2023, groundwater was pumped from dewatering wells installed around the Primary Ash Pond to lower the water table below the pond to facilitate CCR removal and pond closure. The pumped groundwater was discharged to the large cooling pond south of the generating station.

The dewatering activities at the Primary Ash Pond were completed in September 2023, and excavation of CCR material from the Primary Ash Pond was completed in early October 2023. For comparison, the April 2022, October 2022, April 2023, and October 2023 water table maps are provided in Attachment D.

The April 2022 water table map shows radial flow away from the Primary Ash Pond and flow to the northwest in the Mod 4-6 area. The October 2022 water table map shows the influence of dewatering around the Secondary Pond. The April 2023 water table map shows the influence of initial dewatering around the Primary Ash Pond, and potentially some residual effects of the 2022 dewatering around the Secondary Pond. The October 2023 and April 2024 maps both show a westerly flow direction to the west of the Primary Pond. All maps continue to show flow being generally to the north and/or northwest in Mod 4-6, but hydraulic gradients and flow paths likely varied locally as dewatering was started and stopped at different locations.

In addition to influence from dewatering activities conducted in 2022-2023, groundwater flow at the site in summer and fall 2024 was likely influenced by unusually high overall precipitation and several intense rain events. During 2024, Columbia County experienced the highest total precipitation in a May-July three-month period on record (Attachment E). Site-specific rain measurements were recorded as part of landfill construction oversight activities in 2024 and include unusually heavy rain events of 5.5” on June 2, 5.5” on June 21-22, 3.75” over the weekend preceding July 15, and 4.75” on September 22. The overall high precipitation and numerous intense rain events led to substantial

surface runoff and subsequent infiltration. These precipitation events and subsequent infiltration appear to have had a short-term effect on groundwater flow at the site, as evidenced by unusual groundwater flow patterns observed during the August 2024 (**Attachment D**) and October 2024 (**Figure 3**) monitoring events.

Surface Water Infiltration Effects

Because MW-309 and MW-310 are shallow wells located near the plant entrance road and adjacent to a ditch that collects and conveys runoff from the road, influences from surface water infiltration, precipitation, or dissolution of sulfate impurities in rock salt (a deicing material) may be accentuated. These factors contribute to temporal variability. As discussed above, multiple unusually intense precipitation events occurred at the site during summer 2024 that likely led to increased infiltration in the ditch adjacent to MW-309 and MW-310.

The influence of surface water infiltration and road salt impacts is apparent in the chloride monitoring results for MW-309 and MW-310.

While chloride provides the strongest indication of impacts from surface water infiltration, concentrations of other parameters can also vary to the surface water impacts. Sulfate can be present as an impurity in rock salt used for deicing. Surface water infiltration can also affect seasonal water levels and local flow directions. Precipitation was abnormally high at the site during summer 2024, which likely contributed to increased surface water infiltration and variability in groundwater flow patterns.

Man-Made Alternative Sources: Chloride and TDS

Road salt use appears to be the most likely cause of the chloride and TDS standards exceedances at MW-310.

Monitoring well MW-310 is located adjacent to the plant entrance road (Murray Rd), where elevated chloride concentrations due to road salt are likely. In order to be located as close as possible to the waste boundary of the ADF, these wells are located between Murray Rd and the stormwater ditch on the south side of the road. At this location, there is high potential for impacts from road salt to result in increased chloride concentrations in groundwater. October-November 2024 chloride concentrations at MW-310 were lower than baseline concentrations at nearby well MW-309 and within the range of historic concentrations at non-CCR well MW-86 (**Attachment B**). MW-86 is located on the east side of the ADF near US Highway 51. Elevated concentrations at both MW-309 and MW-86 have been attributed to impacts from road salt.

Chloride is a major component of dissolved solids, and historical TDS results at MW-310 are highly correlated with chloride concentrations (R^2 value of 0.91, **Attachment F**). The PAL exceedance for TDS at MW-310 in October-November 2024 is therefore also attributable to impacts from road salt.

6 CONCLUSIONS

The lines of evidence discussed above regarding the standards exceedances for calcium, chloride, sulfate, and/or TDS at MW-309 and MW-310 in October-November 2024 demonstrate that the exceedances were caused by sources other than the Columbia ADF. In accordance with NR 508.06(1)(c), if the Department concurs with this demonstration within 30 days of receipt the owner or operator is not required to begin assessment monitoring.

Sincerely,

Tom Karwoski, PG
Project Manager
SCS Engineers

Sherren Clark, PG, PE
Project Director
SCS Engineers

MDB/AJR_REO/TK

cc: Tyler Sullivan, Wisconsin Department of Natural Resources (e-copy only)
Matt Bizjack, Alliant Energy (e-copy only)
Jeff Maxted, Alliant Energy (e-copy only)
Brian Clepper, WPL-Columbia (e-copy only)

Encl. Table 1 – Groundwater Standards Exceedance Summary
Figure 1 – Site Location Map
Figure 2 – Site Plan and Monitoring Well Locations
Figure 3 – October 2024 Shallow Groundwater Flow Map
Attachment A – Environmental Monitoring Data Certification Form
Attachment B – Time Series Plots
Attachment C – Calcium Historical Data Summary
Attachment D – Historical Groundwater Flow Maps
Attachment E – Columbia County Precipitation Graphs
Attachment F – TDS-Cl Correlation Plot
Attachment G – Compact disc (CD) containing the results in Wisconsin DNR electronic data submittal format – (GEMS Data Submittal Contact copy only)

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Table 1

Groundwater Standards Exceedance Summary

Table 1. Monitoring Results - November 2024 Resample Results and Exceedance Confirmation
WPL-Columbia Dry Ash Disposal Facility / SCS Engineers Project #25224067.00
License #03025

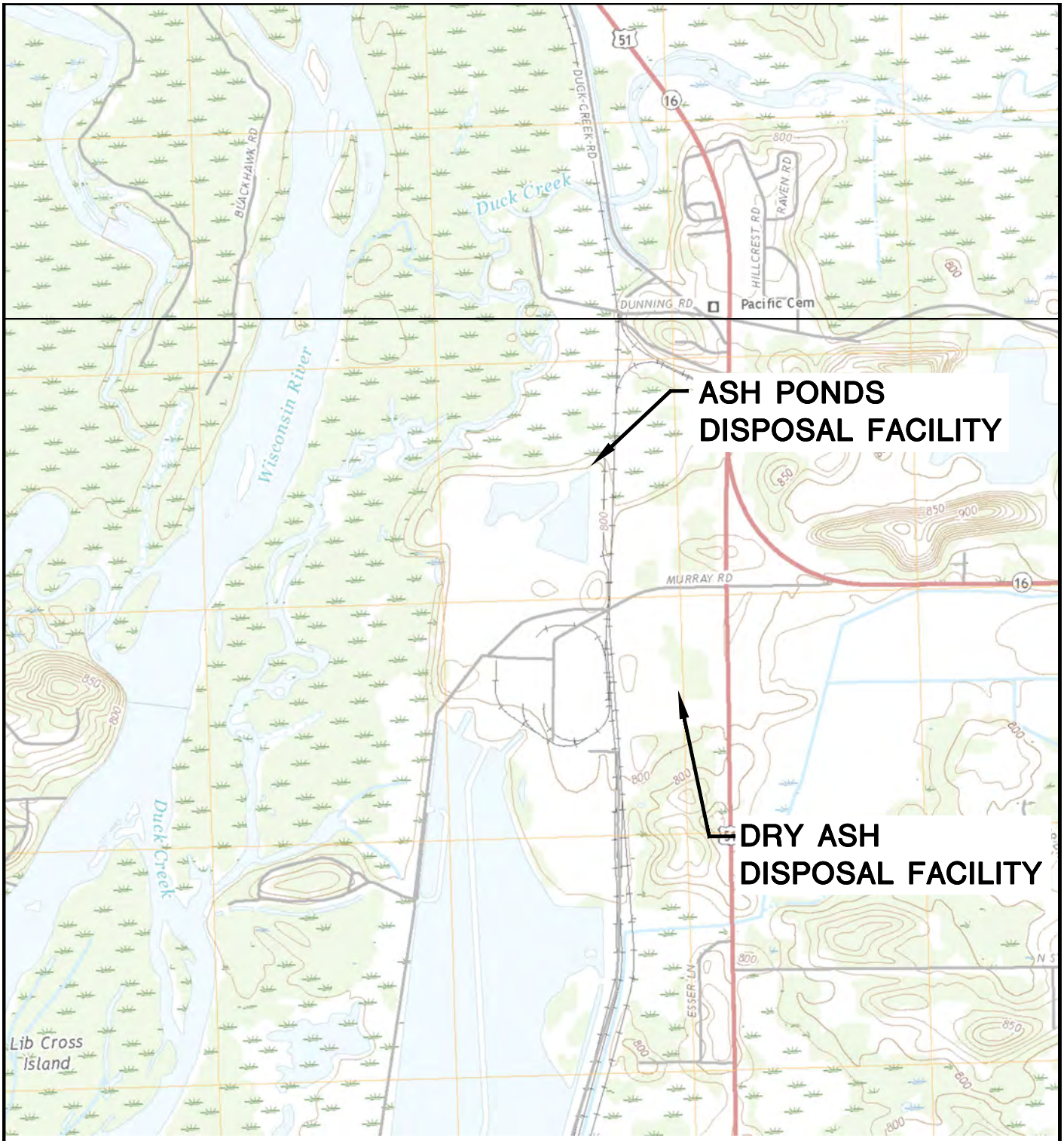
Parameter	Units	Sample ID	Groundwater Standard for Comparison	Standard Type	Collected Date	Result	Resample Confirmed Exceedance?
Calcium, Total	mg/L	MW-310	80	Well-Specific PAL	10/1/2024*	108	Yes
					11/5/2024	100	
Chloride, Total	mg/L	MW-309	820	ACL	10/1/2024*	971	No
					11/5/2024	743	
		MW-310	330	ACL	10/1/2024*	420	Yes
					11/5/2024	435	
Hardness, Total	mg/L	MW-33AR	390	Well-Specific PAL	10/2/2024*	415	TBD, Resampling Planned
Sulfate, Total	mg/L	MW-33AR	200	ACL	10/2/2024*	224	TBD, Resampling Planned
		MW-309	125 / 250	NR 140 PAL / ES	10/1/2024*	142	Yes
					11/5/2024	131	
		MW-310	125 / 250	NR 140 PAL / ES	10/1/2024*	179	Yes
					11/5/2024	194	
Total Dissolved Solids	mg/L	MW-309	2,100	Well-Specific PAL	10/1/2024*	2,180	No
					11/5/2024	1,630	
		MW-310	990	Well-Specific PAL	10/1/2024*	1,210	Yes
					11/5/2024	1,190	

Abbreviations:
mg/L = milligrams per liter
ACL = Alternative Concentration Limit
ES = Enforcement Standard
TBD = To be determined
PAL = Preventive Action Limit

Notes:
*: October 2024 sample results included for reference. These results were previously submitted in the December 30, 2024 GEMS data submittal.

Created By: RM Date: 1/10/2025
Last Modified: RM Date: 1/10/2025
Checked By: MDB Date: 1/10/2025

Figures



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POYNETTE QUADRANGLE
WISCONSIN–COLUMBIA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT: ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE: ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	SITE LOCATION MAP	
PROJECT NO. 25219067.00	DRAWN BY: BSS	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 1
DRAWN: 12/02/2019	CHECKED BY: MDB		
REVISED: 01/10/2020	APPROVED BY: TK 01/30/2020		

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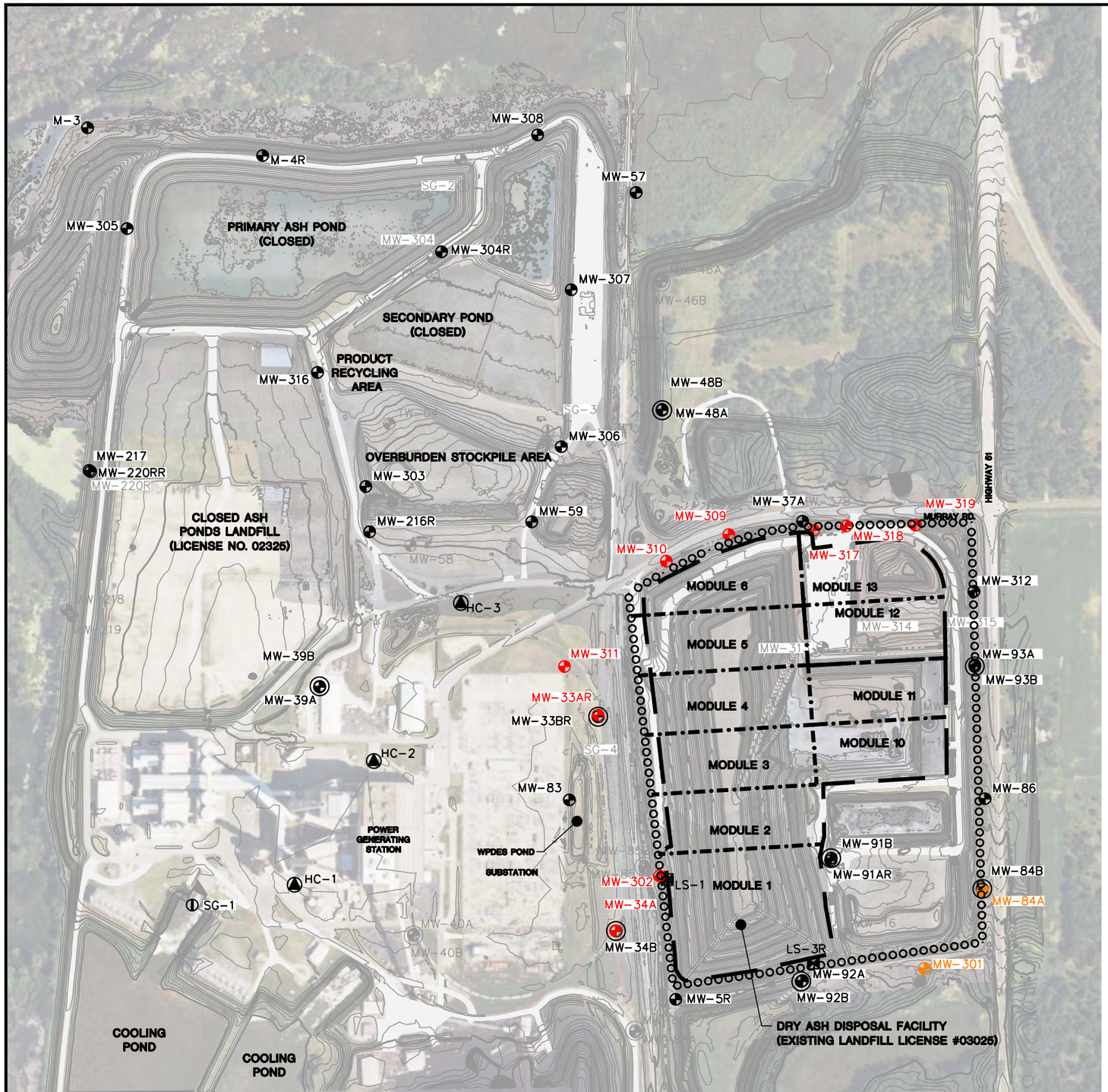

LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GAUGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- NON-CCR MONITORING WELL
- CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

N

500 0 500

SCALE: 1" = 500'

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22-23, 2024.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024.
11. BACKGROUND MONITORING WELLS FOR THE CCR NETWORK ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	01/13/2025	CHECKED BY:	RM
REVISED:	01/13/2025	APPROVED BY:	TK 1/21/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
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CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS
COLUMBIA DRY ASH DISPOSAL FACILITY

FIGURE 2

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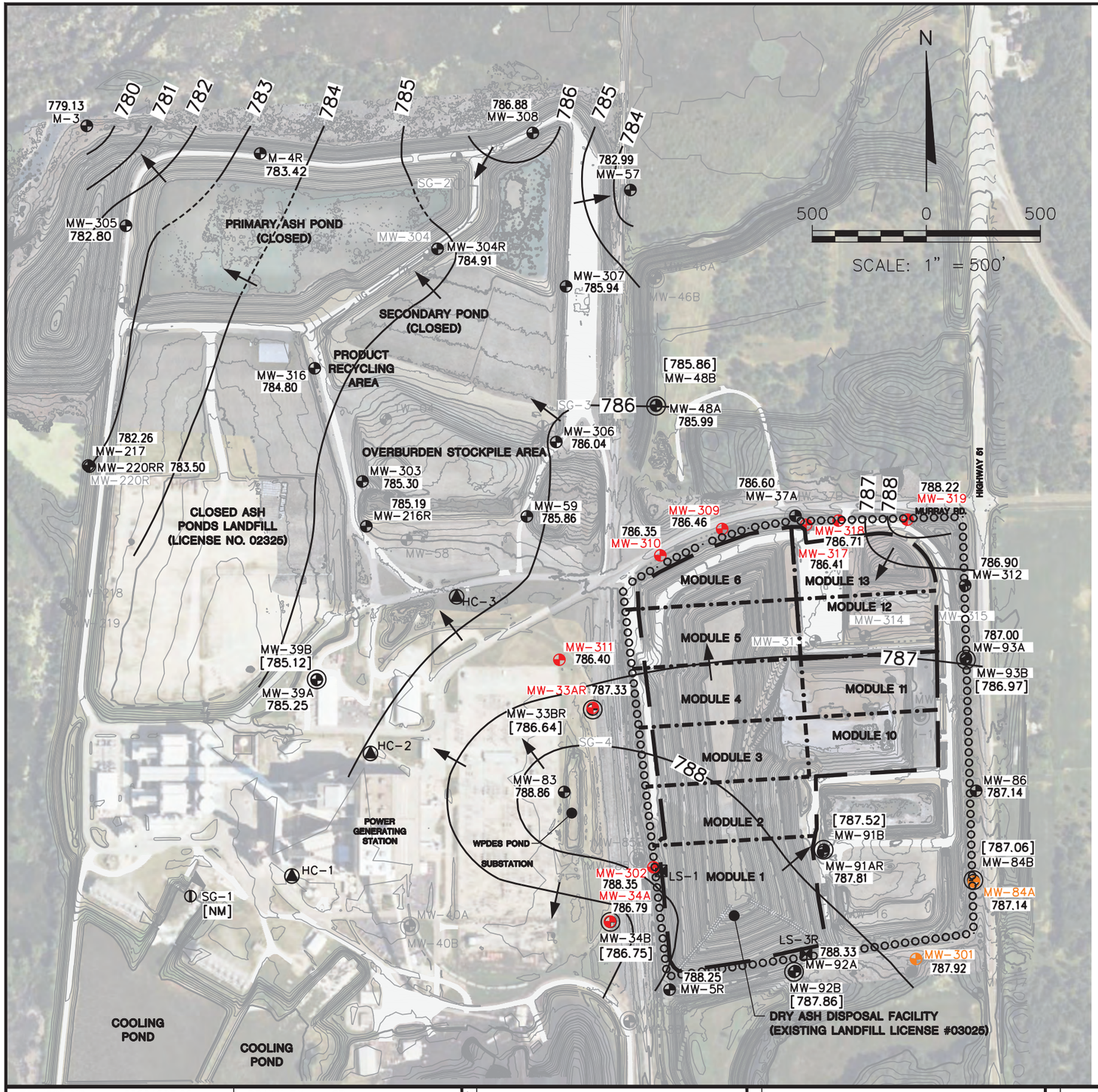

LEGEND

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- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
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- WATER SUPPLY WELL
- STAFF GAUGE
- NON-CCR WATER TABLE WELL
- NON-CCR PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GUAGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 788.75 WATER TABLE ELEVATION
- [781.47] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- [NM] NOT MEASURED
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
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6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
10. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.
11. WELLS SHOWN AS CCR MONITORING WELLS ARE ONLY THOSE IN THE CCR MONITORING PROGRAM FOR THE ADF.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	01/14/2025	CHECKED BY:	MDB
REVISED:		APPROVED BY:	TK 1/21/2025

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
OCTOBER 1-3, 2024

FIGURE 3

I:\25224067.00\Drawings\Biennial Report Figure\05_October 2024 WTBL.dwg, 1/14/2025 1:44:40 PM

Attachment A

Environmental Monitoring Data Certification Form

Save... Print... Clear Data

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Environmental Monitoring Data Certification

Form 4400-231 (R 5/17)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to:

GEMS Data Submittal Contact - WA/5
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner)
SCS Engineers

Contact for questions about data formatting. Include data preparer's name, telephone number and Email address:

Name	Phone No. (include area code)
Meghan Blodgett	(608) 216-7362

Email
mblodgett@scsengineers.com

Facility Name
WPL Columbia Dry Ash

License # / Monitoring ID	Facility ID (FID)
03025	111049180

Actual sampling dates (e.g., July 2-6, 2003)	The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)
November 5, 2024	November 2024

Type of Data Submitted (Check all that apply):

- [x] Groundwater monitoring data from monitoring wells
- [ ] Groundwater monitoring data from private water supply wells
- [ ] Leachate monitoring data
- [ ] Gas monitoring data
- [ ] Air monitoring data
- [ ] Other (specify):

Notification attached?

- [ ] No. No groundwater standards or explosive gas limits were exceeded.
- [x] Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- [ ] Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Facility Representative Name (Print)	Title	Phone No. (include area code)
Meghan Blodgett	Senior Project Professional	(608) 216-7362

Signature

1/20/2024
Date Signed (mm/dd/yyyy)

For DNR Use Only

Check action taken, and record date and your initials. Describe on back side if necessary.

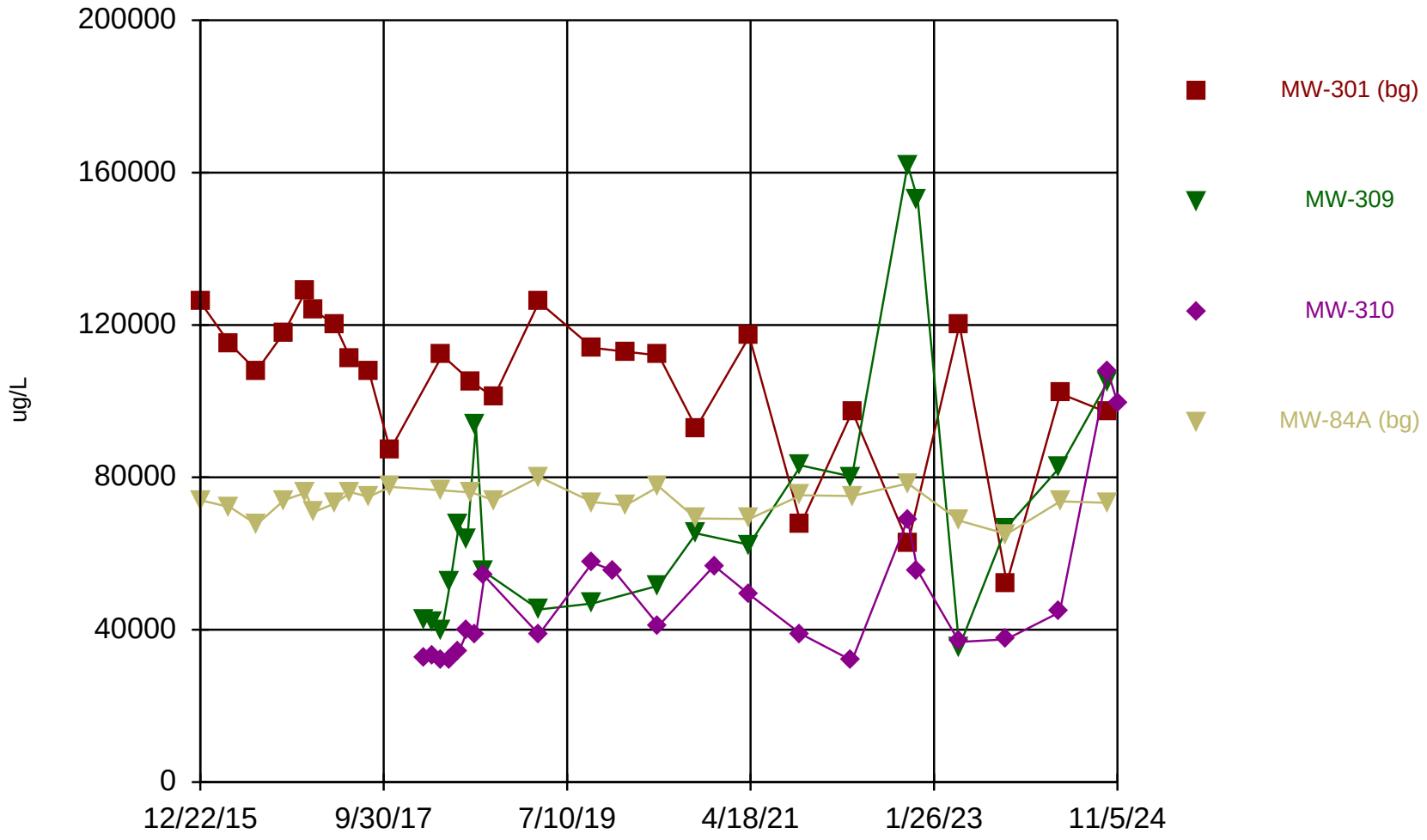
- [ ] Found uploading problems on _____ Initials
- [ ] Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): [ ] Diskette [ ] CD (initial submittal and follow-up) [ ] E-mail (follow-up only) [ ] Other: _____

Attachment B

Time Series Plots

Calcium



Time Series Analysis Run 1/10/2025 2:48 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

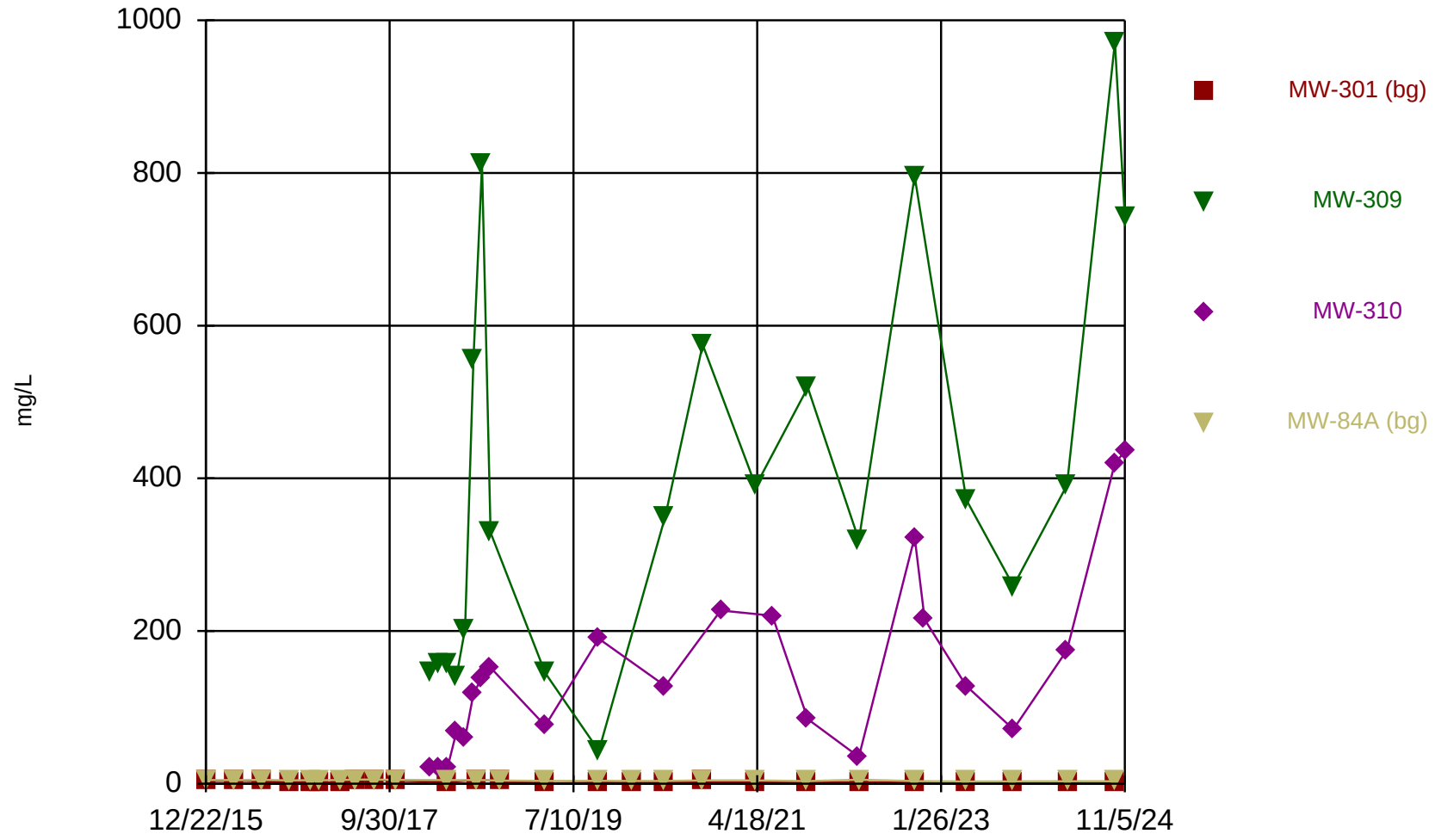
Time Series

Constituent: Calcium (ug/L) Analysis Run 1/10/2025 2:49 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-84A (bg)
12/22/2015	126000			74000
4/5/2016	115000			72200
7/8/2016	108000			67600
10/13/2016	118000			74000
12/29/2016	129000			76000
1/25/2017	124000			70800
4/11/2017	120000			73200
6/6/2017	111000			76100
8/8/2017	108000			74900
10/23/2017	87200			
10/24/2017				77500
2/21/2018		42700	32400	
3/23/2018		41800	33400	
4/23/2018		39600	32100	
4/25/2018	112000			76600
5/24/2018		52700	32100	
6/23/2018		67600	34300	
7/23/2018		63800	39700	
8/8/2018	105000			76000
8/22/2018		93600	38800	
9/21/2018		55200	54100	
10/24/2018	101000			74000
4/2/2019	126000	45300	38800	
4/3/2019				80100
10/8/2019		46900	57600	
10/9/2019	114000			73500
12/23/2019			55400	
2/3/2020	113000			72700
5/29/2020	112000	51600	41100	77600
10/8/2020	93000	65300		69200
12/11/2020			56800 (R)	
4/13/2021		62300	49300	
4/14/2021	117000			69100
10/14/2021	67800	83100	38900	75300
4/12/2022		80200	31900	
4/13/2022	97300			75100
10/26/2022		162000	68900	
10/27/2022	62800			78400
11/30/2022		153000	55500	
4/26/2023		35500	36800	
4/27/2023	120000			68600
10/9/2023		66800	37500	
10/11/2023	52300			65100
4/15/2024		82600	44600	
4/17/2024	102000			73700
10/1/2024		105000	108000	
10/2/2024	97000			73300
11/5/2024			99700	

Chloride



Time Series Analysis Run 1/10/2025 2:48 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

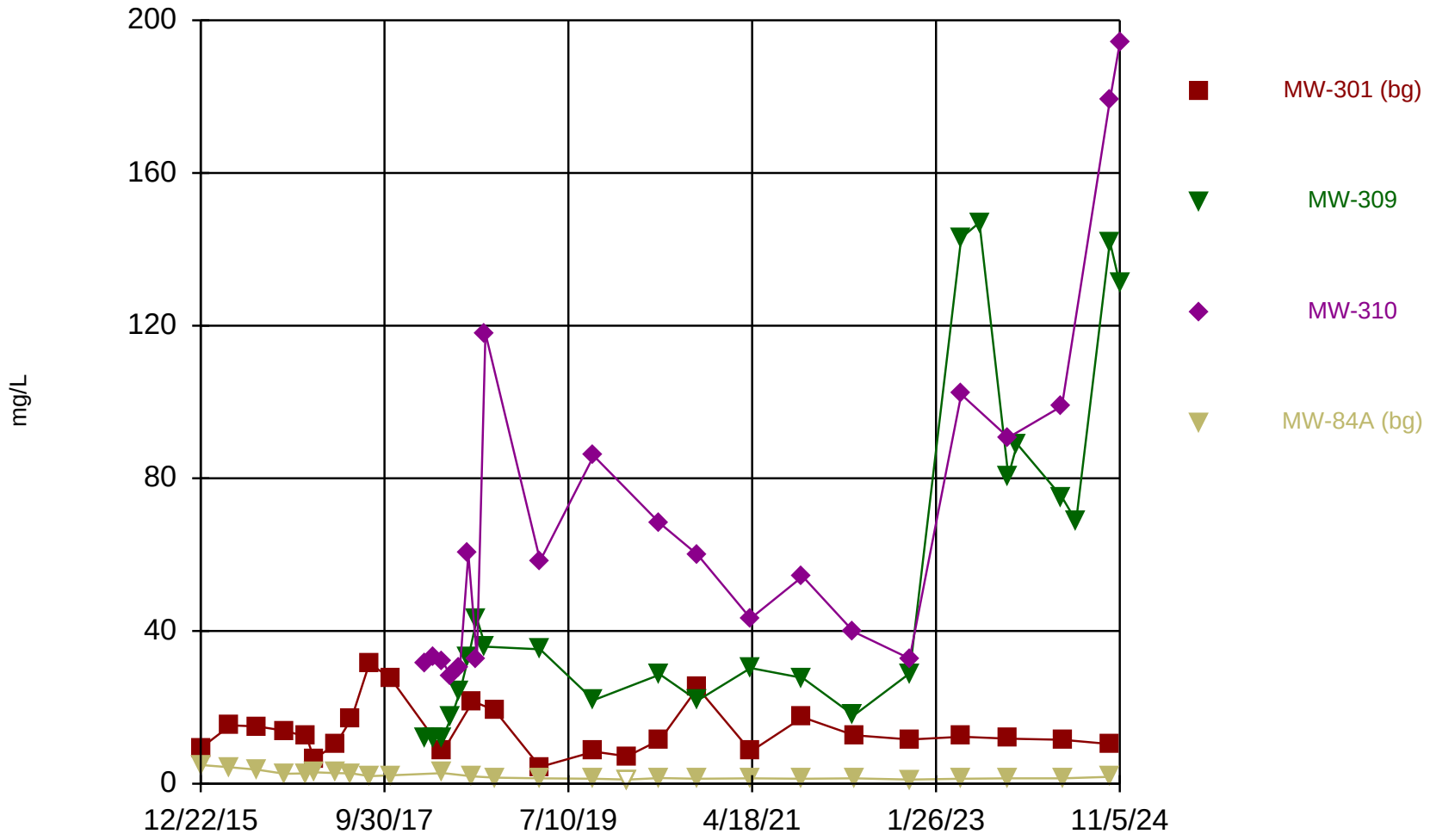
Constituent: Chloride (mg/L) Analysis Run 1/10/2025 2:49 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-84A (bg)
12/22/2015	3.7 (J)			4.9
4/5/2016	4			4.7
7/8/2016	3.5 (J)			5.1
10/13/2016	2.2			4.3
12/29/2016	2 (J)			4.7
1/25/2017	1.5 (J)			4.6
4/11/2017	2			4.9
6/6/2017	3.5			5.5
8/8/2017	5.5			5.5
10/23/2017	4			
10/24/2017				5.1
2/21/2018		147	19.8	
3/23/2018		157	21.7	
4/23/2018		157	22.1	
4/25/2018	2.3			4.8
5/24/2018		141	68.6	
6/23/2018		203	59.8	
7/23/2018		557	118	
8/8/2018	5.2			4.9
8/22/2018		811	139	
9/21/2018		329	152	
10/24/2018	3.2			4.2
4/2/2019	0.79 (J)	145	76	
4/3/2019				3.6
10/8/2019		43.2	190	
10/9/2019	1.7 (J)			3.9
2/3/2020	1.3 (J)			3.7
5/29/2020	2 (J)	350	128	3.7
10/8/2020	3.4	575		4.3
12/11/2020			227 (R)	
4/13/2021		390		
4/14/2021	1.5 (J)			4.4
6/11/2021			220 (R)	
10/14/2021	2.7	519	84.6	3.5
4/12/2022		319	35.2	
4/13/2022	1.9 (J)			5.2
10/26/2022		796	323	
10/27/2022	2.3			3.4
11/30/2022			215	
4/26/2023		372	128	
4/27/2023	1.5 (J)			3
10/9/2023		259	71.3	
10/11/2023	2.1			3.1
4/15/2024		391	175	
4/17/2024	1.6 (J)			3.2
10/1/2024		971	420	
10/2/2024	1.5 (J)			3.3
11/5/2024		743	435	

Hollow symbols indicate censored values.

Sulfate



Time Series Analysis Run 1/10/2025 2:48 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

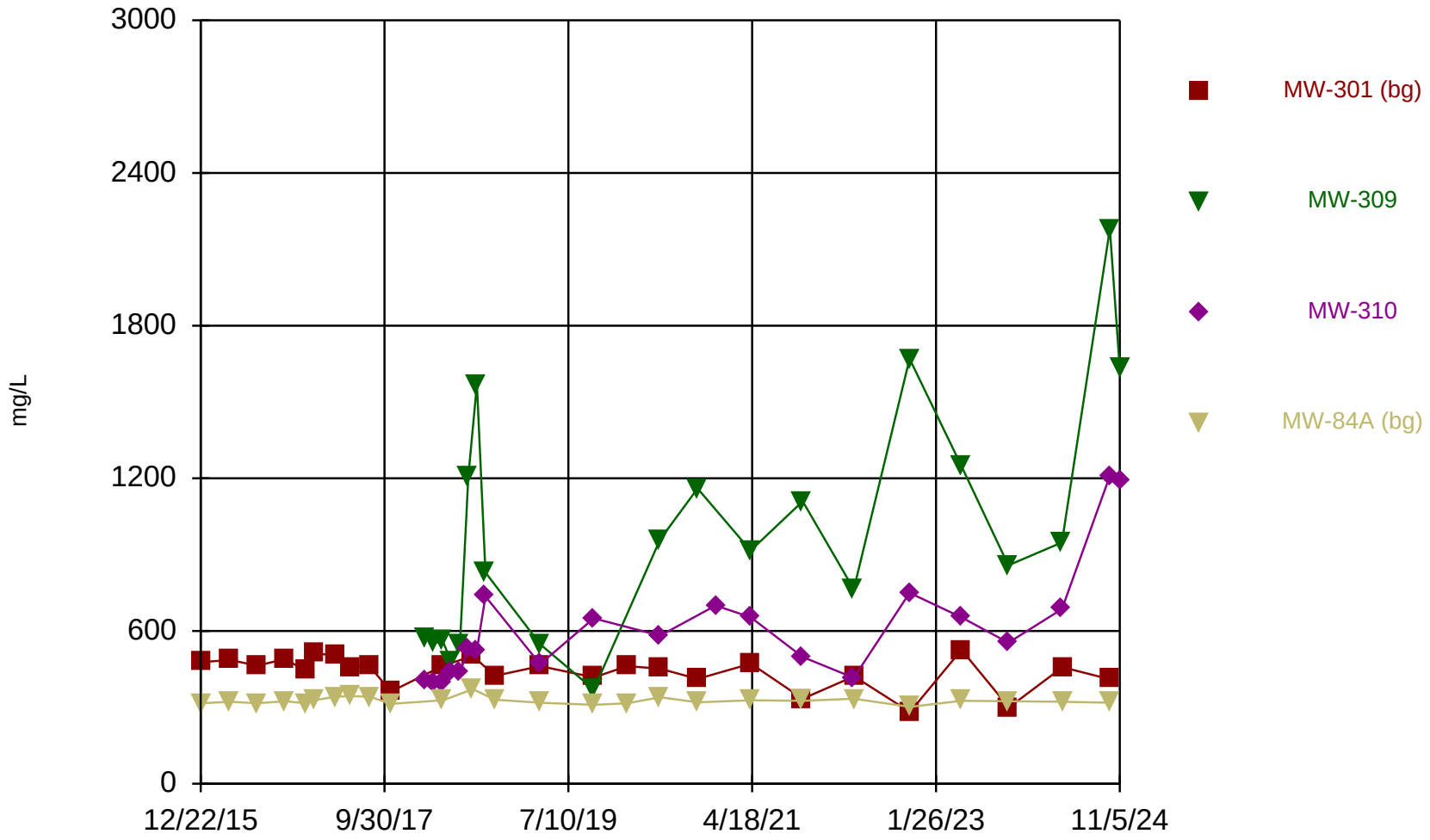
Constituent: Sulfate (mg/L) Analysis Run 1/10/2025 2:49 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-84A (bg)
12/22/2015	9.3			4.9
4/5/2016	15.3			4.3
7/8/2016	15			3.7 (J)
10/13/2016	13.9			2.6 (J)
12/29/2016	12.3 (J)			2.7 (J)
1/25/2017	6.5			3
4/11/2017	10.3			2.8 (J)
6/6/2017	17.1			2.7 (J)
8/8/2017	31.6			2 (J)
10/23/2017	27.5			
10/24/2017				2.2 (J)
2/21/2018		12.2	31.6	
3/23/2018		12.2	33.1	
4/23/2018		12	32	
4/25/2018	8.6			2.8 (J)
5/24/2018		17.5	28	
6/23/2018		24.1	30.4	
7/23/2018		33.1	60.2	
8/8/2018	21.6			1.9 (J)
8/22/2018		43.3	32.8	
9/21/2018		35.9	118	
10/24/2018	19.2			1.6 (J)
4/2/2019	4.4	35.2	58.4	
4/3/2019				1.4 (J)
10/8/2019		21.9	85.9	
10/9/2019	8.4			1.3 (J)
2/3/2020	7.2			<2.2 (U)
5/29/2020	11.5	28.6	68.2	1.5 (J)
10/8/2020	25.1	21.8	60	1.3 (J)
4/13/2021		30.3	43.3	
4/14/2021	8.5			1.4 (J)
10/14/2021	17.4	27.7	54.3	1.3 (J)
4/12/2022		17.9	39.8	
4/13/2022	12.7			1.4 (J)
10/26/2022		28.9	32.8	
10/27/2022	11.6			1.1 (J)
4/26/2023		143 (X)	102	
4/27/2023	12.3			1.3 (J)
6/29/2023		147 (X)		
10/9/2023		80.6	90.7	
10/11/2023	11.8			1.4 (J)
11/9/2023		89		
4/15/2024		75.1	98.9	
4/17/2024	11.5			1.4 (J)
6/4/2024		68.8		
10/1/2024		142	179	
10/2/2024	10.4			1.8 (J)
11/5/2024		131	194	

ND substitution: RL or RL/2 if <15% NDs.

Total Dissolved Solids



Time Series Analysis Run 1/10/2025 2:48 PM

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

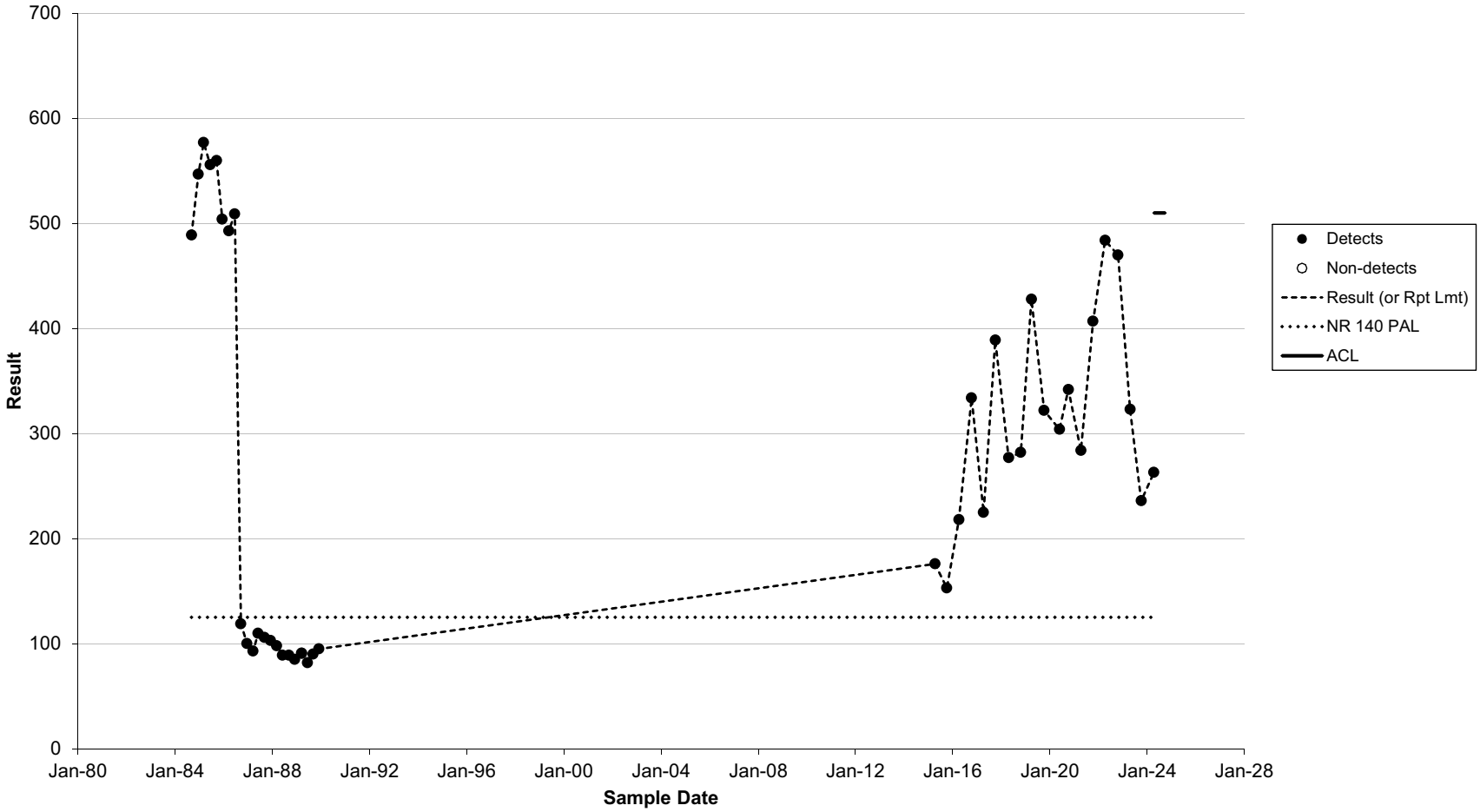
Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/10/2025 2:49 PM

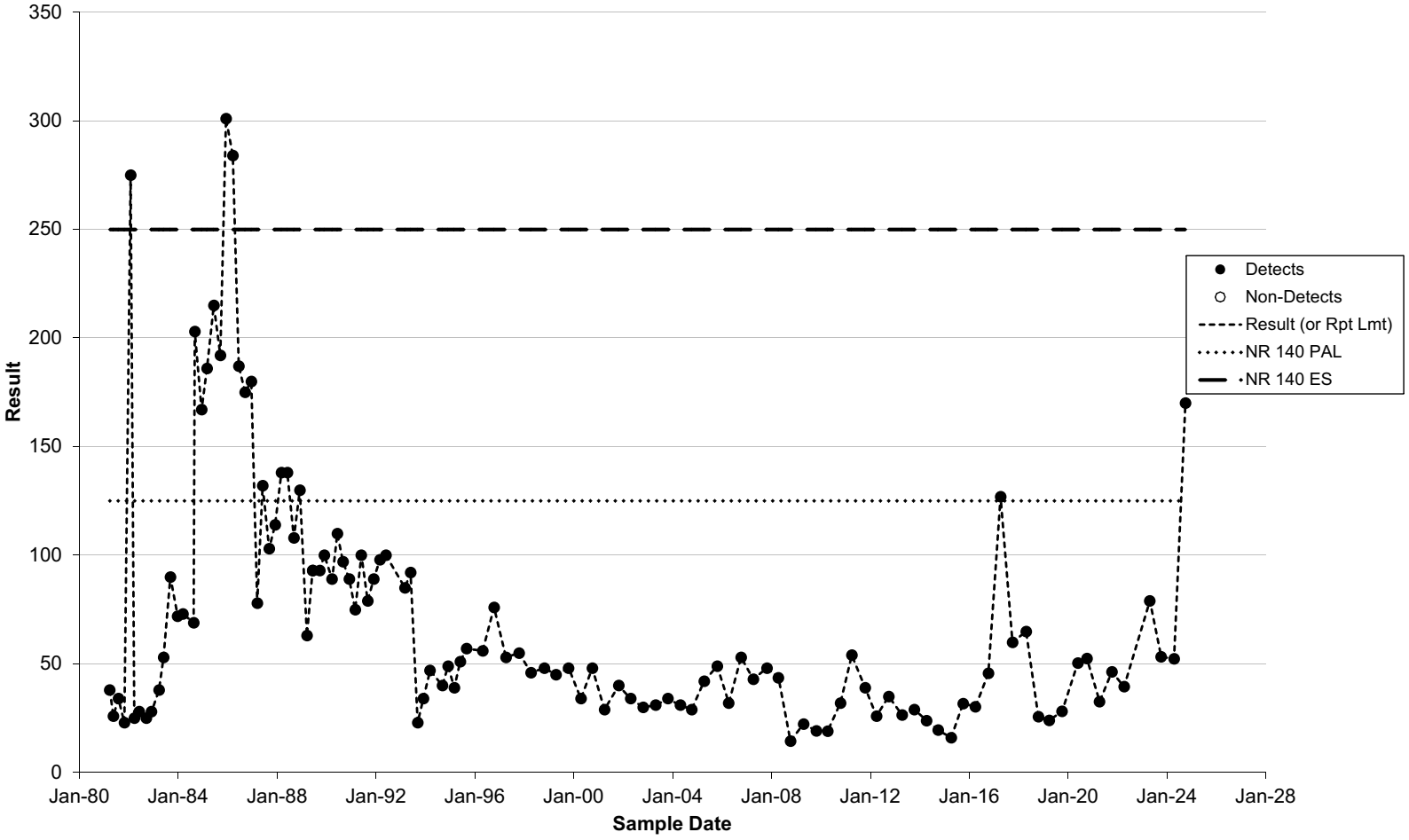
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-309	MW-310	MW-84A (bg)
12/22/2015	478			316
4/5/2016	486			322
7/8/2016	464			316
10/13/2016	490			324
12/29/2016	444			316
1/25/2017	514			328
4/11/2017	502			342
6/6/2017	458			344
8/8/2017	462			342
10/23/2017	362			
10/24/2017				314
2/21/2018		576	406	
3/23/2018		552	398	
4/23/2018		562	396	
4/25/2018	464			328
5/24/2018		478	436	
6/23/2018		548	438	
7/23/2018		1210	532	
8/8/2018	502			372
8/22/2018		1570	526	
9/21/2018		830	736	
10/24/2018	424			330
4/2/2019	462	548	470	
4/3/2019				318
10/8/2019		370	650	
10/9/2019	418			310
2/3/2020	462			316
5/29/2020	452	960	582	340
10/8/2020	412	1160		320
12/11/2020			700 (R)	
4/13/2021		916	654	
4/14/2021	472			328
10/14/2021	334	1110	498	326
4/12/2022		764	416	
4/13/2022	422			334
10/26/2022		1670	750	
10/27/2022	282			302
4/26/2023		1250	654	
4/27/2023	526			326
10/9/2023		858	554	
10/11/2023	300			324
4/15/2024		948	686	
4/17/2024	458			322
10/1/2024		2180	1210	
10/2/2024	410			318
11/5/2024		1630	1190	

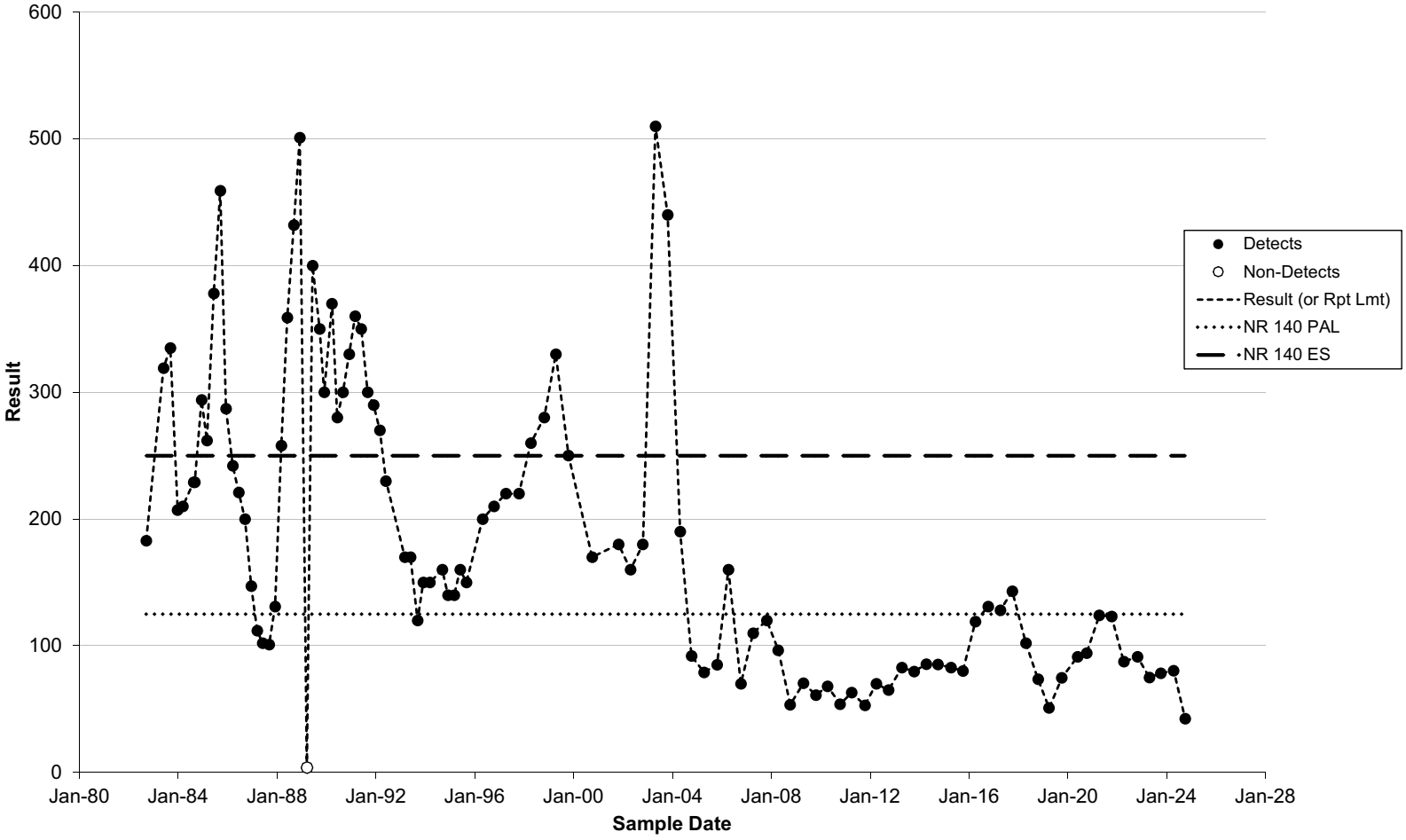
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-86 - Chloride (mg/l as Cl)



Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
W59 (W-2) - Sulfate (mg/L as SO4)

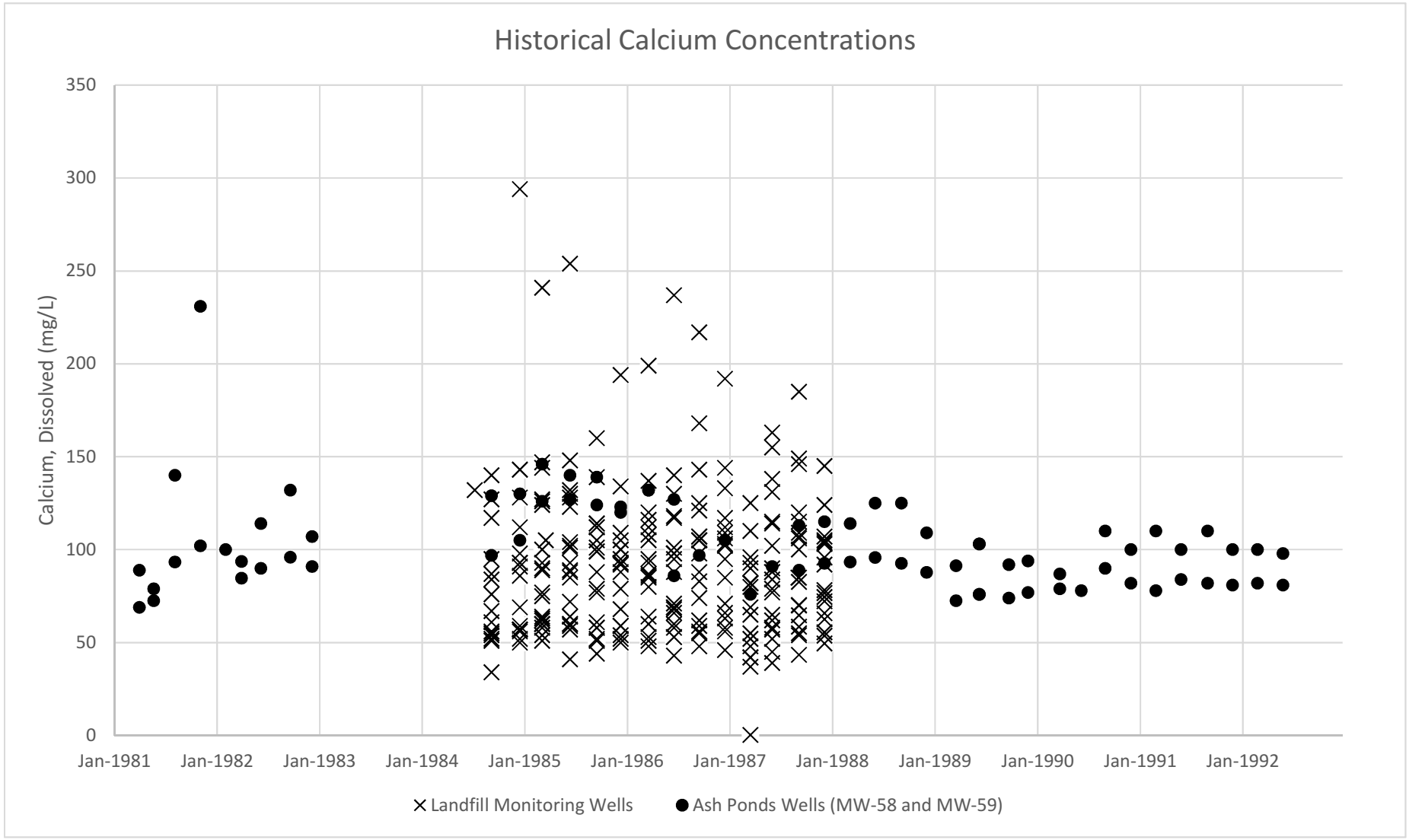


Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
W-216/MW-216R - Sulfate (mg/L as SO4)



Attachment C

Calcium Historical Data Summary


Historical Calcium Concentrations
Calcium, Dissolved (mg/L)
350
300
250
200
150
100
50
0
Jan-1981
Jan-1982
Jan-1983
Jan-1984
Jan-1985
Jan-1986
Jan-1987
Jan-1988
Jan-1989
Jan-1990
Jan-1991
Jan-1992
Landfill Monitoring Wells
Ash Ponds Wells (MW-58 and MW-59)

Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	86	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	75	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	85	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	79	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	88	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	95	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	95	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	98	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	103	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	102	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	106	mg/L
3025	43	MW88B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	124	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	294	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	241	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	254	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	160	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	194	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	199	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	140	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	168	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	133	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	110	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	131	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	149	mg/L
3025	42	MW88A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	105	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	76	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	98	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	127	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	89	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	114	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	105	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	107	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	102	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	80	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	114	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	100	mg/L
3025	41	MW86	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	95.8	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	87	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	89	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	130	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	114	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	87	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	69	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	88	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	85	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	69	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	84	mg/L

Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	82.6	mg/L
3025	40	MW85	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	76.6	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	55	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	58	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	60	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	52	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	54	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	51	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	53	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	55	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	56	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	42	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	58	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	54	mg/L
3025	39	MW84B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	55.6	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	54	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	56	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	60	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	59	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	58	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	68	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	60	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	53	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	56	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	58	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	42	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	57	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	58.6	mg/L
3025	38	MW84A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	62.6	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	67	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	69	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	77	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	88	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	101	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	105	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	120	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	118	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	121	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	117	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	90	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	115	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	85	mg/L
3025	37	MW82B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	92	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	7/9/1984	132	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	128	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	124	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	132	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	112	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	80	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	69	mg/L

Historical Calcium Results
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Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	74	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	71	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	0.32	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	77	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	70.2	mg/L
3025	36	MW82A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	74.5	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	91	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	90	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	93	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	88	mg/L
3025	35	MW81	CALCIUM, DISSOLVED (MG/L CA)	9/7/1987	85	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	56	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	60	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	60	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	58	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	53	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	58	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	59	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	63	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	48	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	62	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	70	mg/L
3025	34	MW80B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	65.8	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	61	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	59	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	63	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	64	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	61	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	64	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	68	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	62	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	66	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	55	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	52	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	55	mg/L
3025	33	MW80A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	53.7	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	84	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	93	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	104	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	105	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	95	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	116	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	117	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	125	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	112	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L

Historical Calcium Results
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Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	88	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	115	mg/L
3025	10	MW5	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	104	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	140	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	144	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	148	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	139	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	134	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	137	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	130	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	143	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	144	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	125	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	138	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	146	mg/L
3025	9	MW4	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	145	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	34	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	50	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	62	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	72	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	60	mg/L
3025	23	MW37B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	39	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	51	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	64	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	64	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	66	mg/L
3025	22	MW37A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	65	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	112	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	51	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	41	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	44	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	79	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	85	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	71	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	83	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	65	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	155	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	64.7	mg/L
3025	21	MW34B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	78.3	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	127	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	147	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	128	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	77	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	50	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	86	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	237	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	217	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	192	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	96	mg/L

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Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	163	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	185	mg/L
3025	20	MW34A	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	72.3	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/20/1985	105	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	102	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	99	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	112	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	101	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	105	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	106	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	52	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	79	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	107	mg/L
3025	15	MW25	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	107	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	117	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	126	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	123	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	112	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	109	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	108	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	105	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	95	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	82	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	90	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	109	mg/L
3025	8	MW1B	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	103	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	95	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	100	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	101	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	99	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	92	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	98	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	107	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	109	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	93	mg/L
3025	7	MW1A	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	120	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	54	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	57	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	51	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	52	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	48	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	43	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	48	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	46	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	37	mg/L

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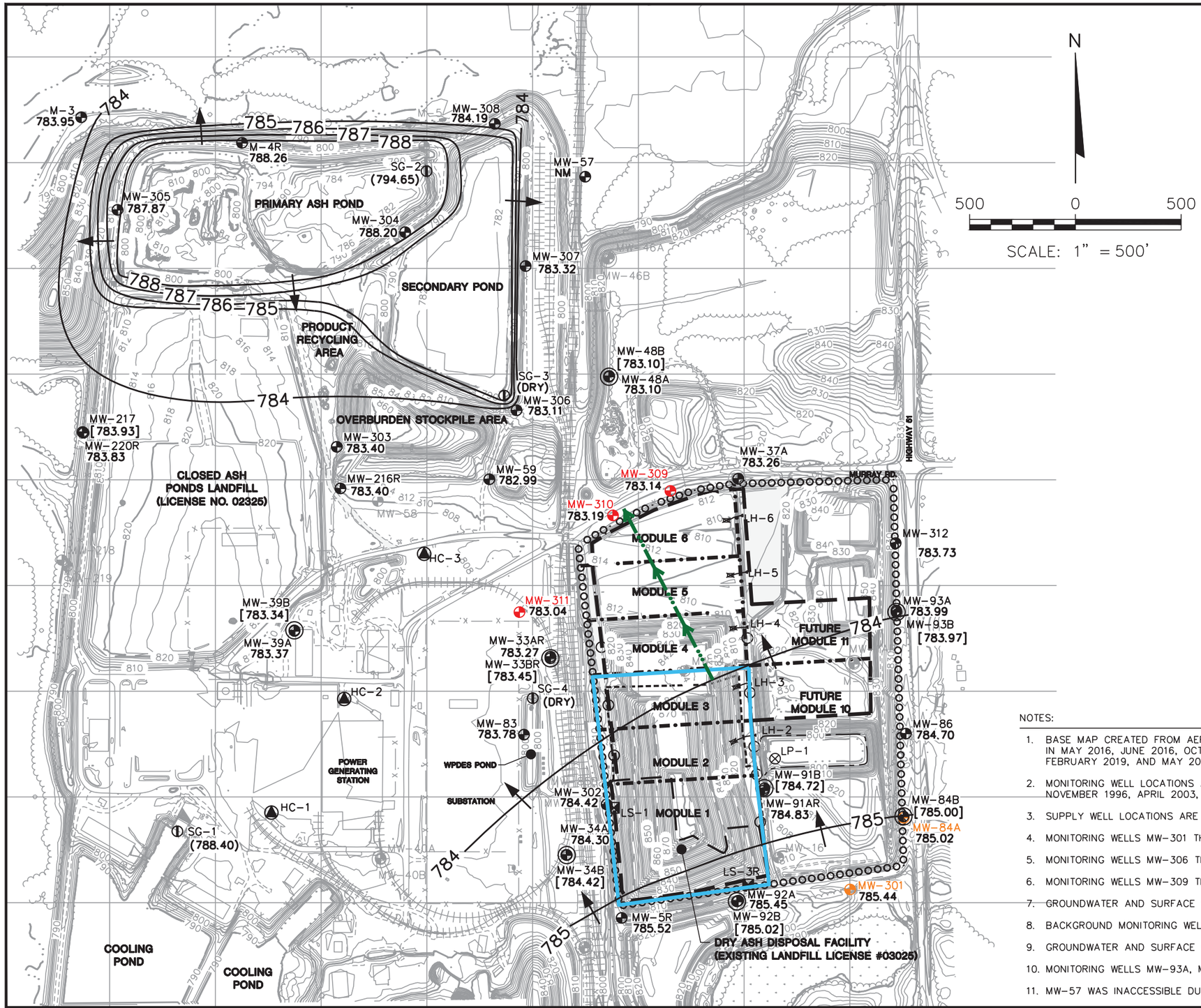
Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	45	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	43.4	mg/L
3025	11	MW16	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	49.5	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	3/30/1981	89	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	5/21/1981	72.5	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	8/4/1981	93.3	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	11/3/1981	102	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	2/1/1982	100	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	3/30/1982	84.6	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	6/7/1982	90	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	9/20/1982	96	mg/L
2325	108	W59 (W-2)	CALCIUM, TOTAL (MG/L CA)	12/7/1982	91	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	97	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	105	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	126	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	127	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	124	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	123	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	132	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	86	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1986	97	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	105	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/20/1987	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/5/1987	91	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	89	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	92.6	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/10/1988	93.4	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/7/1988	95.8	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/8/1988	92.7	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/7/1988	87.8	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/22/1989	91.4	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/13/1989	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1989	76	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/27/1989	74	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1989	77	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/28/1990	79	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/12/1990	78	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/5/1990	90	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/6/1990	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/5/1991	78	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/3/1991	84	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	9/6/1991	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1991	81	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	3/2/1992	82	mg/L
2325	108	W59 (W-2)	CALCIUM, DISSOLVED (MG/L CA)	6/1/1992	81	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	3/30/1981	69	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	5/21/1981	79	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	8/4/1981	140	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	11/3/1981	231	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	3/30/1982	93.6	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	6/7/1982	114	mg/L
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	9/20/1982	132	mg/L

Historical Calcium Results
License #3025 Wells and Select License #2325 Wells

Lic#	Point ID	Point Name	Parameter Description	Sample Date	Result Value	Result Unit
2325	107	W58 (W-1)	CALCIUM, TOTAL (MG/L CA)	12/7/1982	107	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/7/1984	129	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	130	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/7/1985	146	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1985	140	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/18/1985	139	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	120	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/21/1986	132	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/20/1986	127	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/9/1987	113	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/9/1987	115	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/10/1988	114	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/7/1988	125	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/8/1988	125	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/7/1988	109	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/22/1989	72.5	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/13/1989	103	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/14/1989	103	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/27/1989	92	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1989	94	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/28/1990	87	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/5/1990	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/6/1990	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/5/1991	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/3/1991	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	9/6/1991	110	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	12/4/1991	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	3/2/1992	100	mg/L
2325	107	W58 (W-1)	CALCIUM, DISSOLVED (MG/L CA)	6/1/1992	98	mg/L

Attachment D

Historical Groundwater Flow Maps



NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, AND MAY 2019.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 11-13, 2022.
10. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
11. MW-57 WAS INACCESSIBLE DURING THE APRIL 2022 EVENT DUE TO HIGH WATER.

PROJECT NO.	25222067.00	DRAWN BY:	KP
DRAWN:	12/02/2019	CHECKED BY:	MDB
REVISED:	01/16/2023	APPROVED BY:	TK, 1/16/2023

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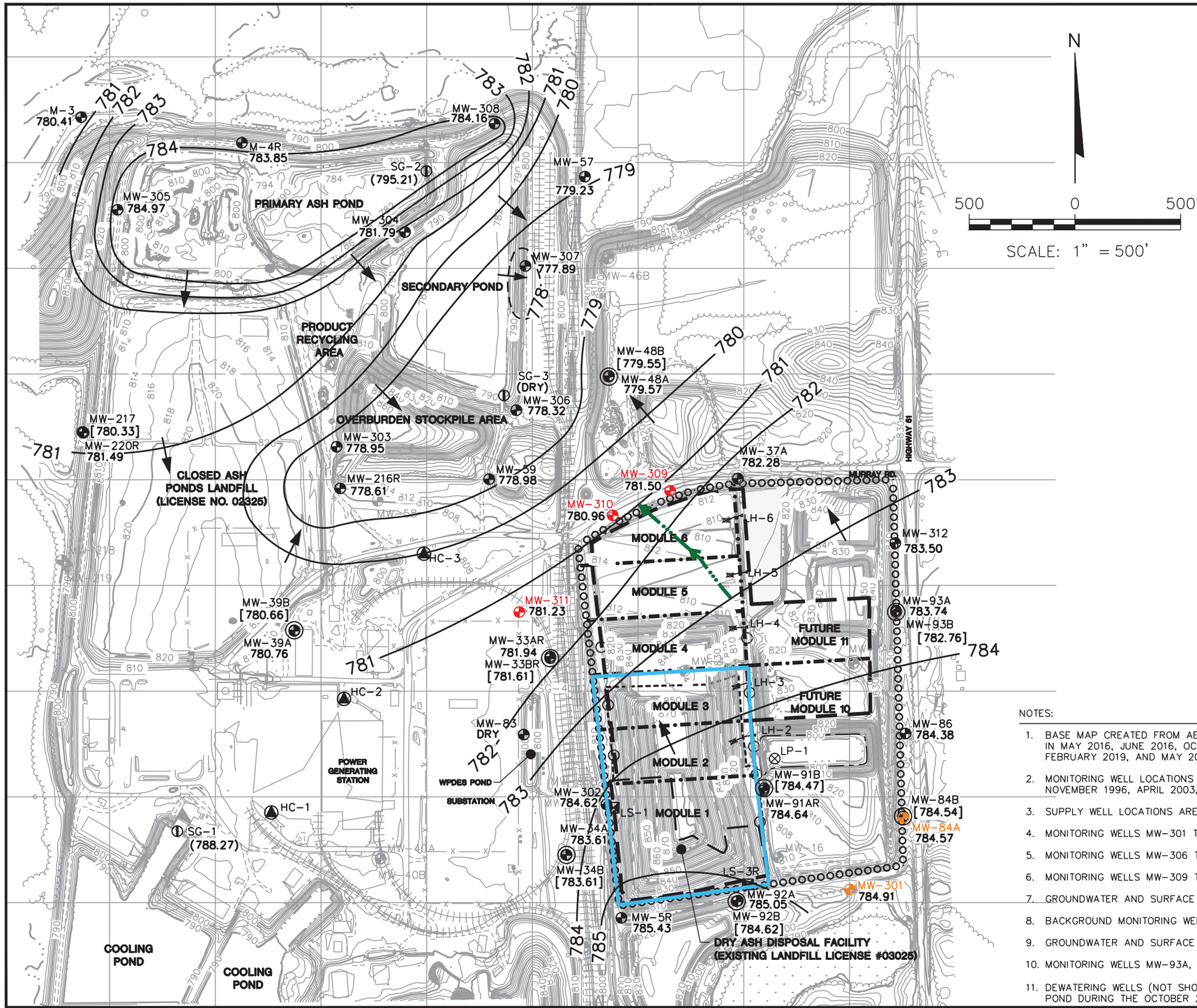
SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
APRIL 2022

FIGURE 3

I:\25222067.00\Drawings\Modules 4-6\Water Table Map-April 2022.dwg, 1/16/2023 2:43:07 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR UNIT
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, AND MAY 2019.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON OCTOBER 25-27, 2022.
10. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
11. DEWATERING WELLS (NOT SHOWN) AROUND THE SECONDARY POND WERE PUMPING AND DISCHARGING TO THE PRIMARY POND DURING THE OCTOBER 2022 SAMPLING EVENT.

PROJECT NO.	25222067.00	DRAWN BY:	KP
DRAWN:	12/15/2022	CHECKED BY:	MDB
REVISED:	12/30/2022	APPROVED BY:	TK, 1/16/2023

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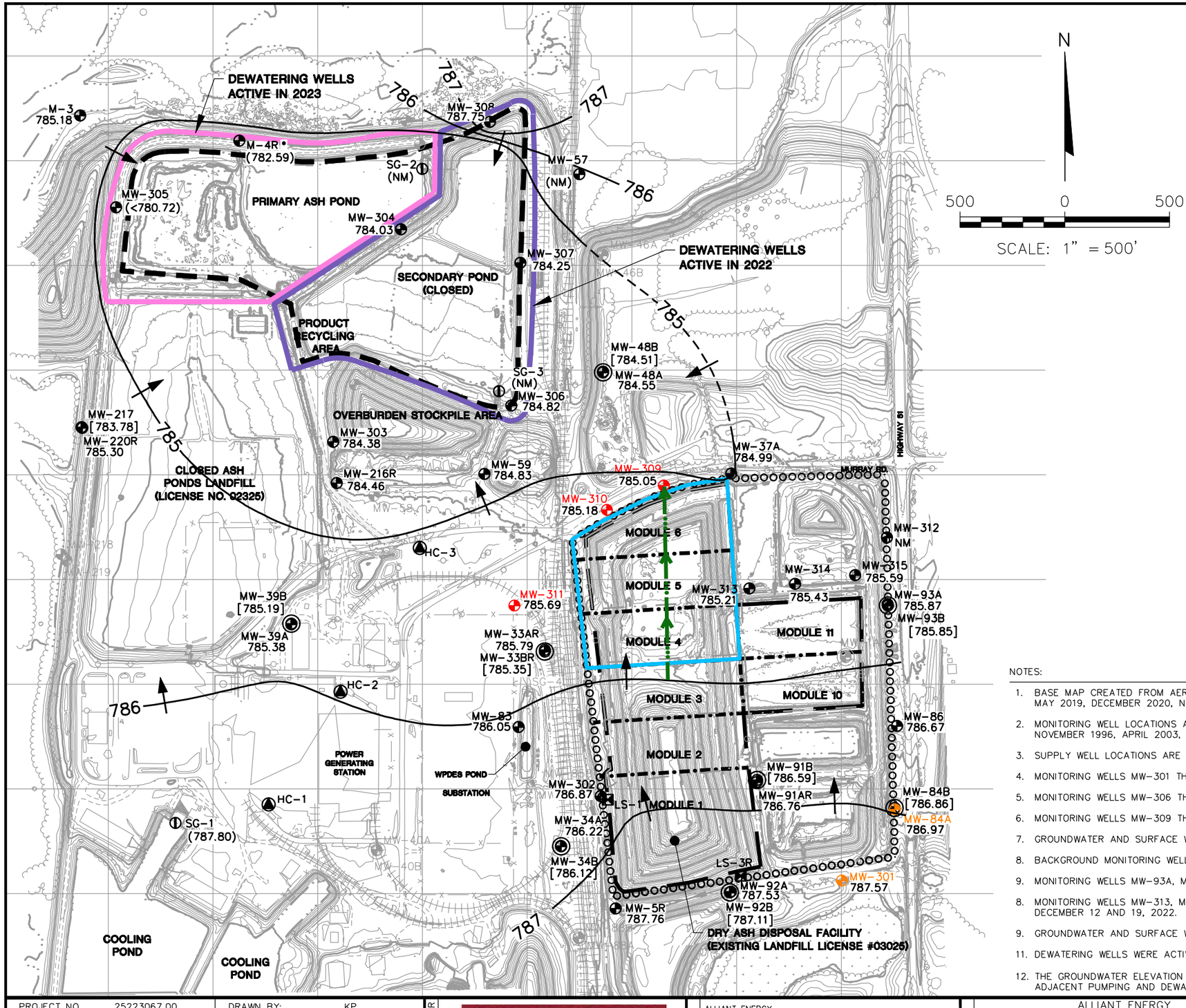
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2022

FIGURE 4

I:\25222067.00\Drawings\Modules 4-6\Water Table Map-October 2022.dwg, 1/16/2023 2:40:42 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR UNIT
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PRIMARY POND DEWATERING WELLS ACTIVE IN 2023
- SECONDARY POND DEWATERING WELLS ACTIVE IN 2022

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 24-27, 2023.
11. DEWATERING WELLS WERE ACTIVE AROUND THE PRIMARY POND DURING THE APRIL 2023 SAMPLING EVENT.
12. THE GROUNDWATER ELEVATION FOR M-4R (*) WAS NOT USED FOR CONTOURING OF THE WATER TABLE (SHALLOW) DUE TO ADJACENT PUMPING AND DEWATERING ACTIVITIES.

PROJECT NO.	25223067.00	DRAWN BY:	KP
DRAWN:	10/12/2023	CHECKED BY:	NLB
REVISED:	01/22/2024	APPROVED BY:	TK 1/29/2024

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SITE: ALLIANT ENERGY
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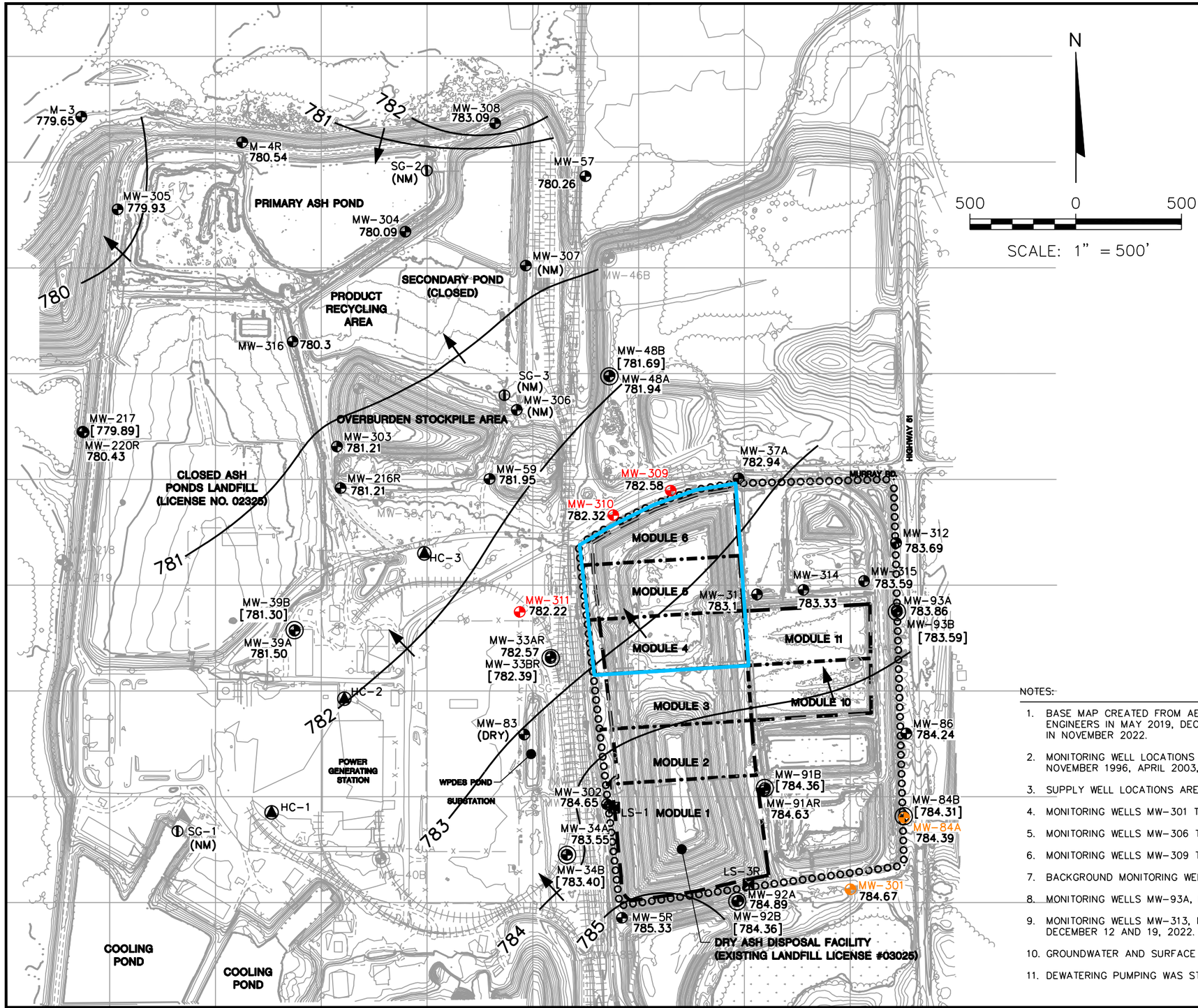
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
APRIL 2023

FIGURE
3

I:\25223067.00\Drawings\Module 4\Water Table Map-April 2023.dwg, 1/22/2024 9:41:17 AM



LEGEND

	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
x x	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LIMITS OF WASTE
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE WELL
	PIEZOMETER
	LYSIMETER
	ABANDONED WATER TABLE WELL
	ABANDONED PIEZOMETER
	CCR UNIT
	CCR MONITORING WELL
	CCR BACKGROUND MONITORING WELL
787.62	WATER TABLE ELEVATION
[788.87]	POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
(NM)	NOT MEASURED
	WATER TABLE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
8. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
9. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
10. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.
11. DEWATERING PUMPING WAS STOPPED BY SEPTEMBER 11, 2023.

PROJECT NO.	25224067.00	DRAWN BY:	KP
DRAWN:	11/13/2023	CHECKED BY:	TK
REVISED:	04/24/2024	APPROVED BY:	TK 05/10/2024

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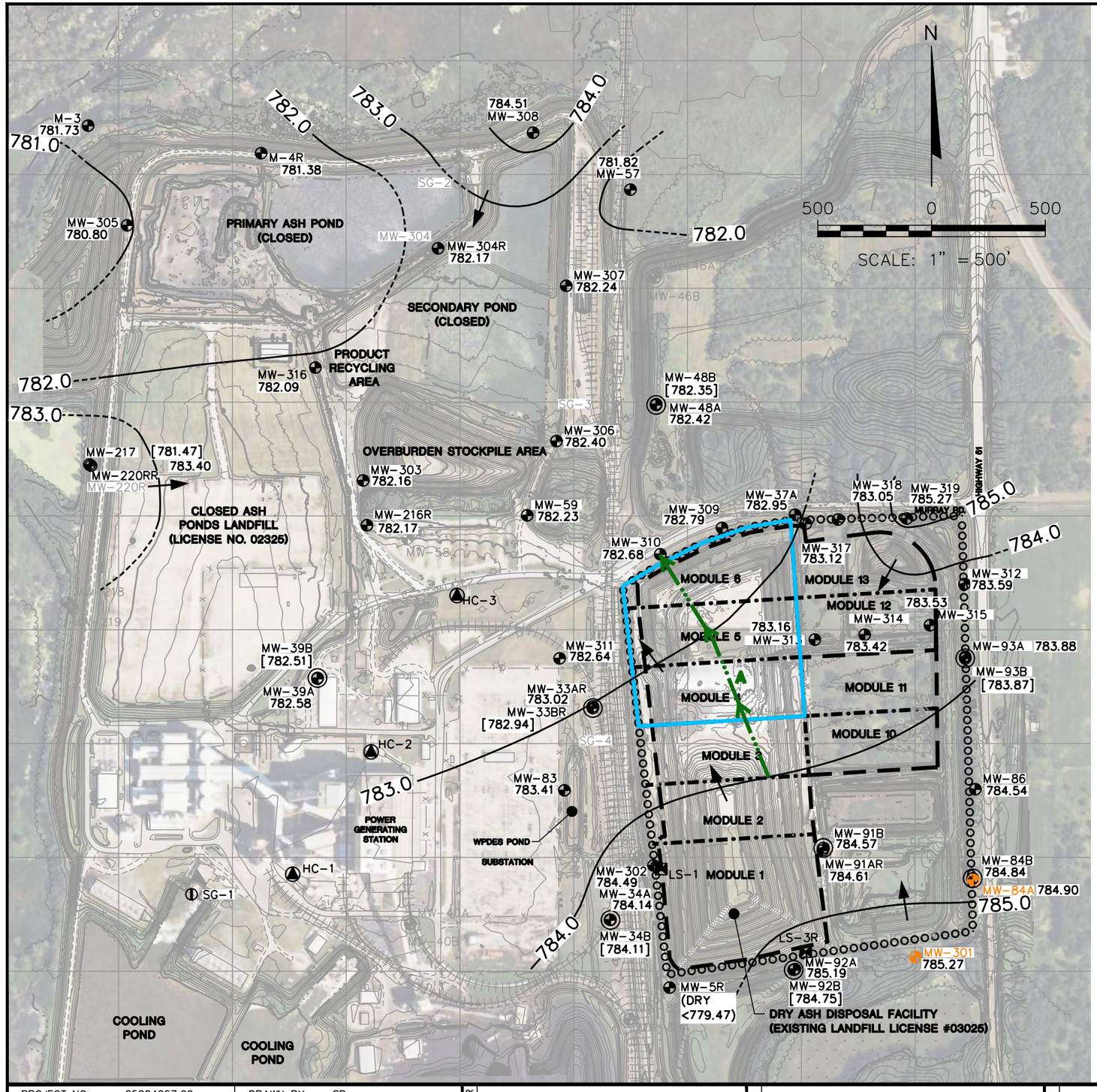
SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2023

FIGURE
3

I:\25224067.00\Drawings\Modules 4-6\Water Table Map-October 2023.dwg, 4/25/2024 7:24:56 AM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 783.88 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (DRY) — SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.
8. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	11/05/2024	CHECKED BY:	NLB/BRK (01/06/2025)
REVISED:	12/06/2024	APPROVED BY:	TK (01/06/2025)

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

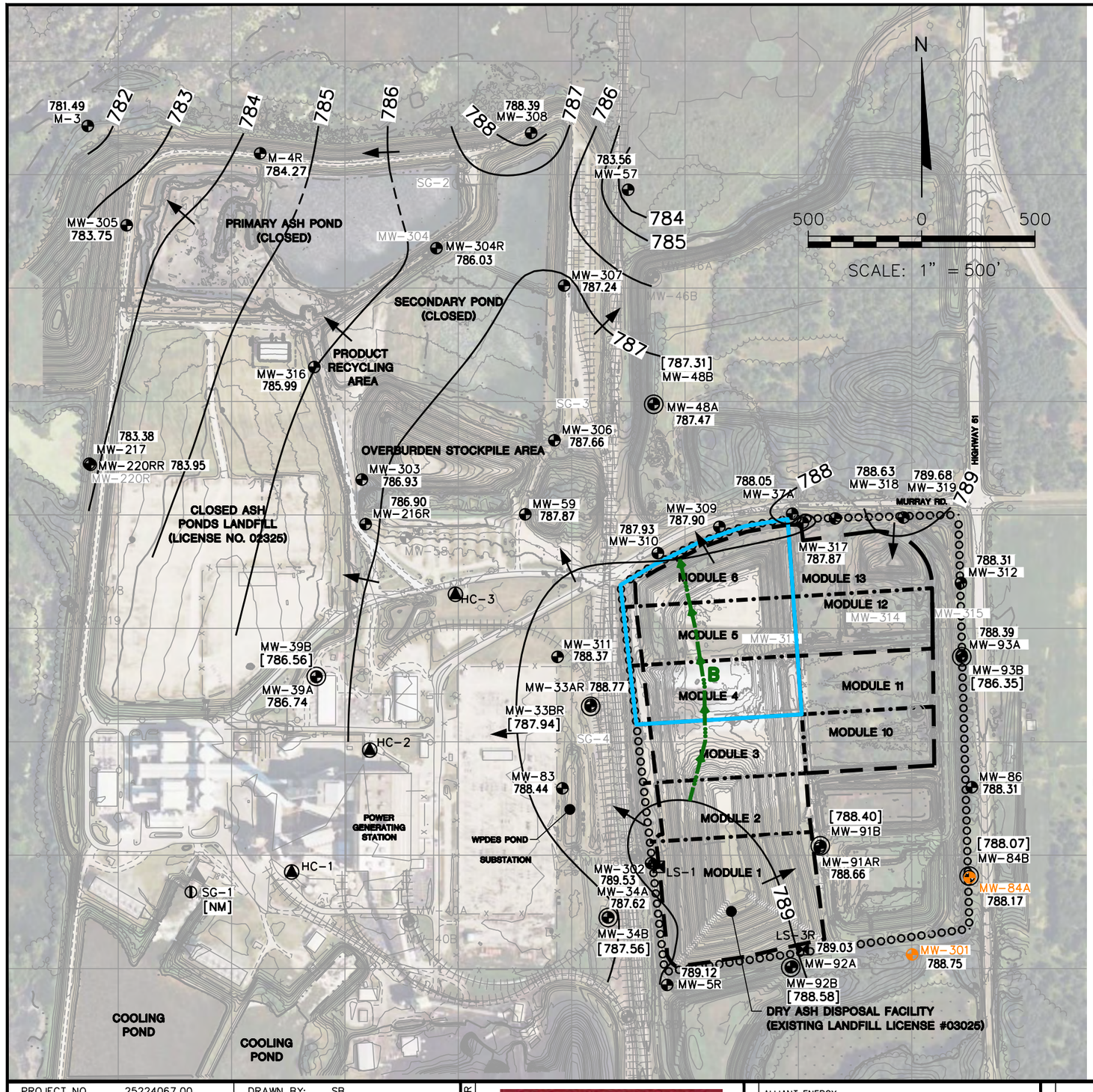
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PRIMARY ASH POND
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
APRIL 15-17, 2024
MODULES 4-6

FIGURE
3

I:\25224067.00\Drawings\COL April 2024 WTBL CCR Units.dwg, 1/6/2025 10:56:17 AM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 788.75 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- [NM] — NOT MEASURED
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
10. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	11/05/2024	CHECKED BY:	NLB/BRK (01/09/2025)
REVISED:	01/09/2025	APPROVED BY:	TK (01/09/2025)

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PRIMARY ASH POND
PARDEEVILLE, WI

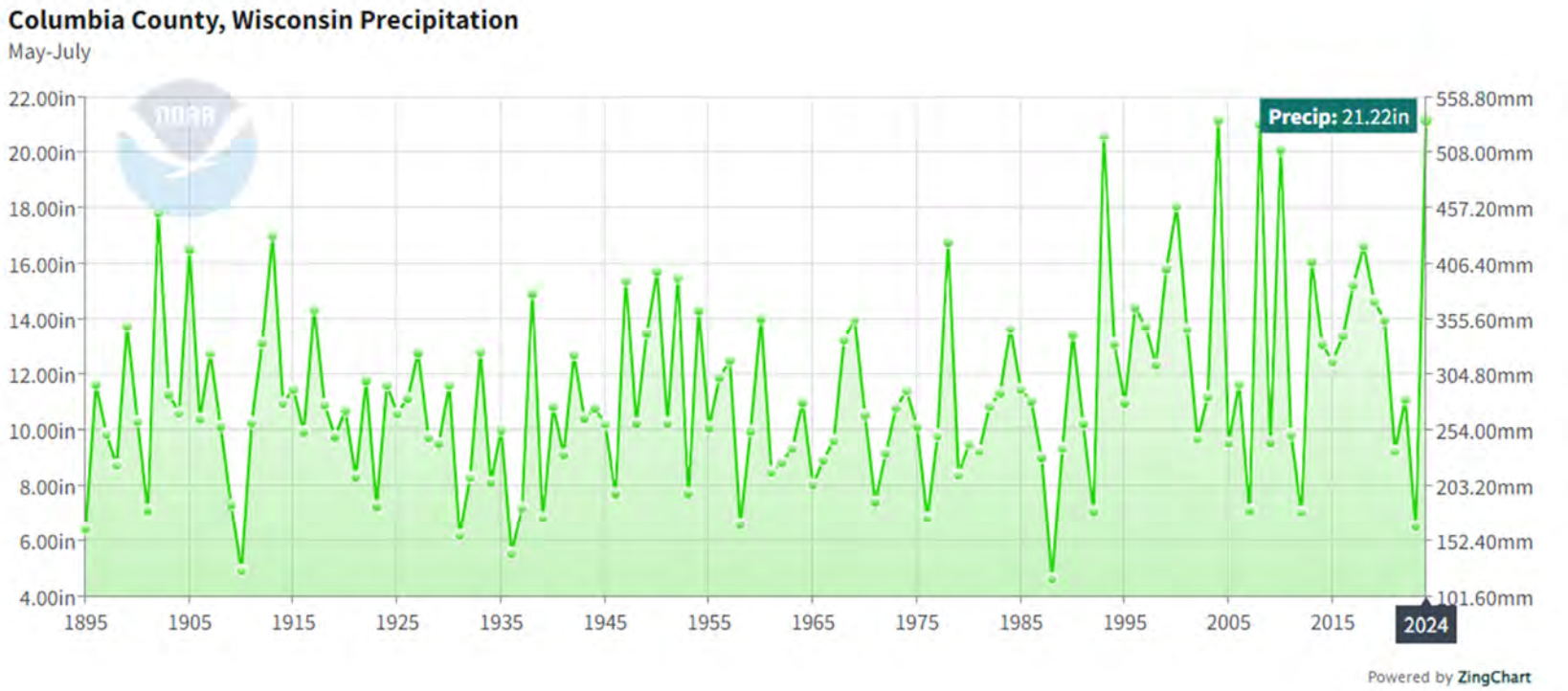
WATER TABLE CONTOUR MAP
AUGUST 15, 2024
MODULES 4-6

FIGURE
4

I:\25224067.00\Drawings\COL August 2024 WTBL CCR Units.dwg, 1/9/2025 2:20:41 PM

Attachment E

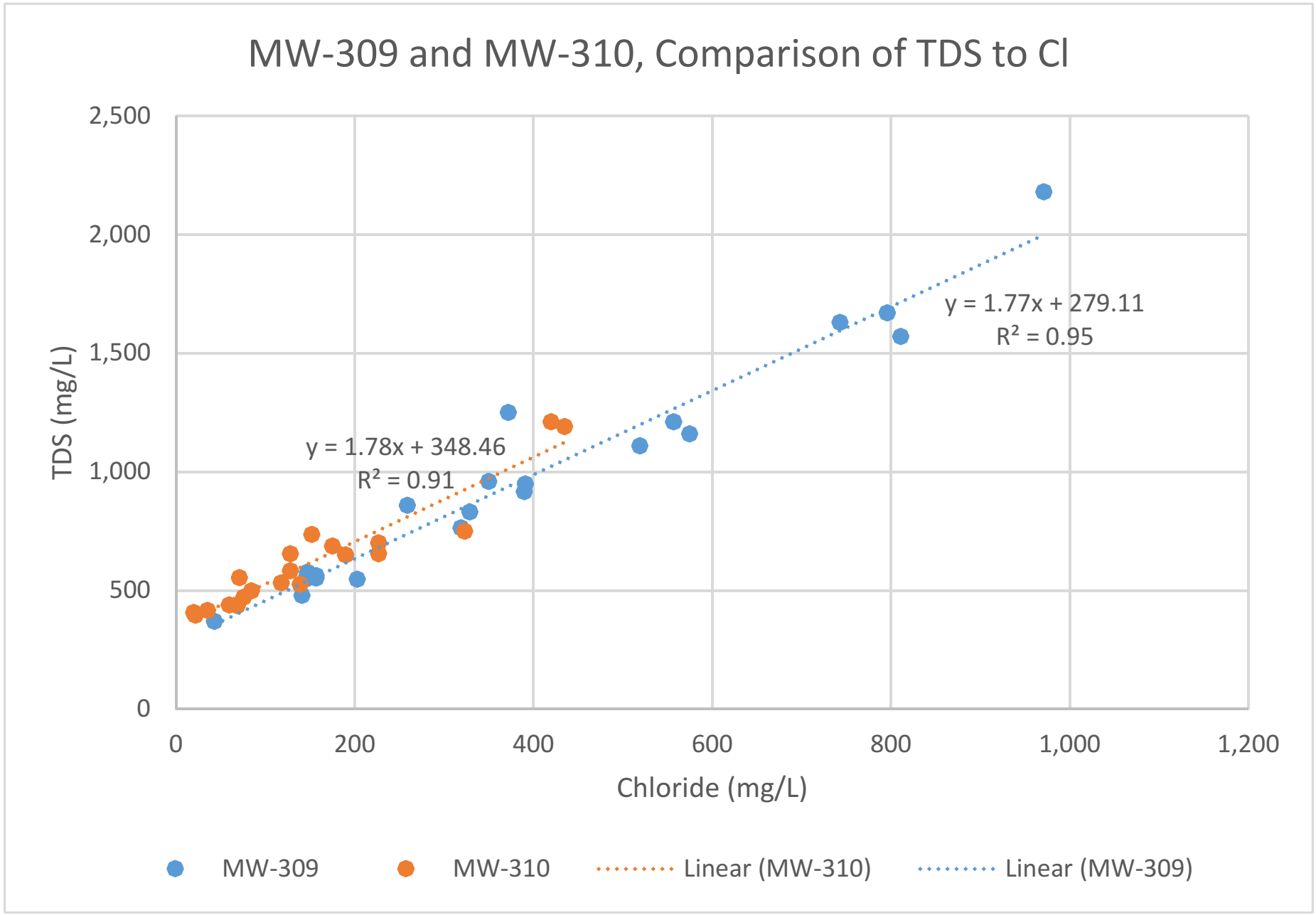
Columbia County Precipitation Graphs



2024 3-month precipitation totals, Columbia County, Wisconsin. https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series/WI-021/pcp/3/7/1895-2024, accessed 1/16/2024.

Attachment F

TDS-Cl Correlation Plot



Attachment G

Compact disc (CD) containing the results in Wisconsin DNR electronic data submittal format – (GEMS Data Submittal Contact copy only)

Appendix D

Monitoring Period Results Summary

2023-2024 CCR Monitoring Results - Groundwater Monitoring Wells
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

	Monitoring Point	Monitoring Period	Groundwater Elevation (ft AMSL)	Turbidity, Field (NTU)	Temperature, Field (deg C)	pH, Field (Standard Units)	Specific Conductance, Field (µmhos/cm)	Boron, Total (µg/L)	Calcium, Total (mg/L)	Chloride, Total (mg/L)	Fluoride, Total (mg/L)	Sulfate, Total (mg/L)	Alkalinity, Total as CaCO3 (mg/L)	Total Hardness, Dissolved (mg/L)	Total Dissolved Solids (mg/L)	N + N as Nitrogen, Total^^^ (mg/L)	Antimony, Total^ (µg/L)	Arsenic, Total^ (µg/L)	Barium, Total^ (µg/L)	Beryllium, Total^ (µg/L)	Cadmium, Total^ (µg/L)	Chromium, Total^ (µg/L)	Cobalt, Total^ (µg/L)	Copper, Total^^^ (µg/L)	Lead, Total^ (µg/L)	Lithium, Total^ (µg/L)	Manganese, Total^^^ (µg/L)	Mercury, Total^ (µg/L)	Molybdenum, Total^ (µg/L)	Selenium, Total^ (µg/L)	Thallium, Total^ (µg/L)	Radium 226 + 228 (pCi/L)	Zinc, Total^^^ (µg/L)
Background Wells	MW-84A*	Apr-24	784.90	0.00	11.0	7.68	588.1	11.9	73.7	3.2	0.12 J	1.4 J	335	337	322	--	<0.15	0.29 J	14.4	<0.25	<0.15	1.9 J	<0.12	--	<0.24	0.67 J	--	<0.066	<0.44	<0.32	<0.14	0.290	--
		Oct-24	787.14	2.55	12.4	7.36	502.7	10.3	73	3.3	<0.095	1.8 J	350	341	318	--	<0.15	<0.28	13.6	<0.25	<0.15	1.7 J	<0.12	--	<0.24	0.57 J	--	<0.066	<0.44	<0.32	<0.14	0.668	--
	MW-301	Apr-24	785.27	0.00	8.6	7.06	781	24.9	102	1.6 J	<0.095	11.5	446	455	458	--	<0.15	<0.28	8.1	<0.25	<0.15	<1.0	<0.12	--	<0.24	0.63 J	--	<0.066	<0.44	<0.32	<0.14	1.04	--
		Oct-24	787.92	1.84	11.7	6.85	602.4	22.1	97	1.5 J	0.13 J	10.4	433	434	410	--	<0.15	<0.28	10.6	<0.25	<0.15	<1.0	<0.12	--	<0.24	0.80 J	--	<0.066	<0.44	0.39 J	0.15 J	0.833	--
Downgradient Wells	MW-33AR*	Apr-24	783.02	1.47	11.0	7.58	706.0	471	64.2	22.8	<0.095	165.0	210	289	452	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	787.33	0.00	14.4	7.52	900.0	477	96	52.7	<0.095	224.0	193	415	620	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-34A*	Apr-24	784.14	3.65	11.3	7.40	472.6	265	58.5	2.2	<0.095	51.5	208	262	278	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		July-24***	787.29	2.44	11.7	7.69	470.6	214	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	786.79	0.86	12.9	7.64	476.2	219	58	5.4	<0.095	57.5	194	258	278	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-302	Apr-24	784.49	4.17	10.2	7.67	606.6	442	77.8	1.1 J	0.12 J	26.8	312	337	344	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	788.35	3.81	13.3	7.32	422.7	290	64	1.9 J	<0.095	57.9	213	282	262	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-309	Apr-24	782.79	4.93	12.5	7.27	1620	38.7	82.6	391	<0.095	75.1	309	366	948	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	786.46	2.24	13.5	7.64	3454	72.1	105	971	<4.8	142	367	438	2180	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Nov-24***	785.66	2.55	13.9	7.77	2634	72.3	--	743	--	131	--	--	1630	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-310	Apr-24	782.68	0.00	12.2	7.63	1170	65.2	44.6	175	<0.095	98.9	297	279	686	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	786.35	2.49	14	7.65	1927	93.1	108	420	<0.095	179.0	286	554	1210	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Nov-24***	785.45	1.40	13.9	7.70	1797	78.4	100	435	--	194.0	--	--	1,190	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-311	Apr-24	782.64	0.00	11.3	7.40	460.8	30.9	59.9	2.3	<0.095	10.1	268	285	276	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		Oct-24	786.40	2.81	13.7	7.71	442.9	34.0	65	2.6	0.10 J	11.2	265	307	262	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-313^^	Apr-24	783.16	2.48	11.0	7.24	515.2	22.7	65.4	12.0	<0.095	7.3	279	323	304	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-314^^	Apr-24	783.42	0.33	11.1	6.94	831	13.5	110	3.2	<0.095	4.6	498	522	492	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-315^^	Apr-24	783.53	2.66	11.0	6.68	1096	20.2	149	2.9	<0.095	4.4	720	704	660	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-317**	Oct-24	786.41	2.31	11.4	7.84	422.8	75.6	46	3.2	0.17 J	5.2	254	227	248	0.26	<0.15	1.3	51.6	<0.25	<0.15	<1.0	0.20 J	<3.4	<0.24	5.0	239	<0.066	24.6	<0.32	<0.14	0.634	48.5
	MW-318**	Oct-24	786.71	7.62	11.6	7.45	942	37.6	103	65.5	<0.095	231.0	245	464	674	1.4	<0.15	<0.28	22.6	<0.25	<0.15	1.8 J	0.18 J	<3.4	<0.24	1.1	13.7	<0.066	0.52 J	0.80 J	<0.14	0.397	<11.6
	MW-319**	Oct-24	788.22	7.40	11.40	7.61	2344	30.8	106	649.0	<1.9	62.9	350	470	1450	2.0	<0.15	<0.28	41.2	<0.25	<0.15	1.8 J	0.42 J	<3.4	<0.24	0.98 J	9.8	<0.066	0.62 J	1.4	<0.14	1.71	<11.6

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = not analyzed

Notes:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
^: Additional parameters are included at the background wells to support the Federal CCR Rule sampling program at the Primary and Secondary Ponds.
^^: MW-313, MW-314, and MW-315 were downgradient of Modules 10-11 and within the footprint of Module 12. These wells were abandoned in June 2024 as part of Module 12 construction. Because the wells were to be abandoned, well-specific PALs and ACLs were not established for these well
^^^ Additional parameters for baseline sampling requirements at MW-317, MW-318, and MW-319.
* Well sampled as part of both Dry Ash CCR and State programs in April 2024.
** MW-317, MW-318, and MW-319 were installed in April 2024. Additional parameters were collected in 2024 for baseline sampling.
*** Resampling Event

Created by: EMS Date: 12/20/2024
Last revision by: MDB Date: 1/8/2025
Checked by: _____ Date: _____

\\Mad-fs01\data\Projects\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Appendix D_Results\working files\[Dry Ash_Results_CCR Wells__2023-2024.xlsx]GW Monitoring Wells

2023-2024 CCR Monitoring Results - Leachate Basin LP-1
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

Monitoring Point	Monitoring Period	Temperature, Field (deg C)	pH, Field (Std. Units)	Specific Conductance, Field (µmhos/cm)	Chloride, Total (mg/L)	Fluoride, Total (mg/L)	Sulfate, Total (mg/L)	Alkalinity, Total as CaCO3 (mg/L)	Total Hardness by 2340B (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Biological Oxygen Demand, 5 Day (mg/L)	Chemical Oxygen Demand (mg/L)	SVOCs	Antimony, Total (µg/L)	Beryllium, Total (µg/L)	Boron, Total (µg/L)	Cadmium, Total (µg/L)	Cobalt, Total (µg/L)	Iron, Total (µg/L)	Lead, Total (µg/L)	Lithium, Total (µg/L)	Manganese, Total (µg/L)	Mercury, Total (µg/L)	Molybdenum, Total (µg/L)	Selenium, Total (µg/L)	Thallium, Total (µg/L)	Radium 226 + 228 (pCi/L)
LP-1	Apr-24	15.0	6.54	2,951	565	<4.8	1,130	78.6	821	2,810	18.0	3.7^	95.2	--	0.39 J	<0.25	1,980	<0.15	0.88 J	592	0.68 J	101.0	40.1	<0.066	264	13.8	<0.14	1.03
	Oct-24	16.5	7.00	3,260	493	<1.9	1,300	77.3	885	<0.15	4.3	3.0	--	ND	0.34 J	<0.25	2,190	<0.15	0.41 J	79.5 J	<0.24	84.1	59.3	0.091 J	149	6.8	<0.14	0.319

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = not analyzed
µmhos/cm = micromhos/centimeter
N = none observed
-- = not analyzed
SVOCs = Semivolatile Organic Compoun

Notes:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
^: The BOD sample collected on 4/16/2024 was received by the laboratory outside of the sample hold time. LP-1 was resampled for BOD on 4/23/2024, and that results is included in this table.

Created by: EMS Date: 12/20/2024
Last revision by: MDB Date: 1/8/2025
Checked by: Date:

\\Mad-fs01\data\Projects\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Appendix D_Results\working files\[Dry Ash_Results_CCR Wells__2023-2024.xlsx]LP1

2023-2024 Monitoring Results - Groundwater Monitoring Wells
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

Monitoring Point	Monitoring Period	Groundwater Elevation (ft AMSL)	Color, Field (no units)	Odor, Field (no units)	Turbidity, Field (no units/NTU)	Temperature, Field (deg C)	pH, Field (Standard Units)	Specific Conductance, Field (µmhos/cm)	Monitoring Point Dry/ Broken	Nitrate + Nitrite as Nitrogen (mg/L)	Aluminum, Dissolved (µg/L)	Arsenic, Dissolved (µg/L)	Barium, Dissolved (µg/L)	Boron, Dissolved (µg/L)	Cadmium, Dissolved (µg/L)	Chromium, Dissolved (µg/L)	Molybdenum, Dissolved (µg/L)	Selenium, Dissolved (µg/L)	Mercury, Dissolved (µg/L)	Chloride, Dissolved (mg/L)	Sulfate, Dissolved (mg/L)	Alkalinity, Total as CaCO3, Dissolved (mg/L)	Total Hardness, Dissolved (mg/L)	Copper, Dissolved* (µg/L)	Lead, Dissolved* (µg/L)	Manganese, Dissolved* (µg/L)	Silver, Dissolved* (µg/L)	Sodium, Dissolved* (µg/L)	Zinc, Dissolved* (µg/L)	Fluoride, Dissolved* (mg/L)	Chemical Oxygen Demand* (mg/L)
MW-33AR**	Apr-23	785.79	N	N	N	10.2	7.61	609.3	--	1.7	<31.6	0.38 J	24.9	534	<0.15	2.1 J	2.2	2.9	--	24.0 B	112	192	250	--	--	--	--	--	--	--	--
	Oct-23	782.57	N	N	Y	13.3	7.88	691	--	0.43	<31.6	0.47 J	28.6	495	<0.15	2.0 J	2.8	2.9	<0.066	24.9	143	221	248	--	--	--	--	--	--	--	--
	Apr-24	783.02	N	N	N	11.0	7.58	706	--	0.81	<29.3	0.49 J	29.4	471	<0.15	2.4 J	2.7	3.0	--	22.8	159	212	257	--	--	--	--	--	--	--	--
MW-33BR	Apr-23	785.35	N	N	N	12.1	7.66	524.1	--	3.7	39.9 J	0.40 J	25.4	474	<0.15	1.9 J	7.1	0.47 J	--	6.0 J, B, D3	83.4	226	244	--	--	--	--	--	--	--	--
	Oct-23	782.39	N	N	N	11.4	7.68	517.2	--	4.0	<31.6	0.40 J	26.6	309	<0.15	2.9 J	5.6	0.73 J	<0.066	3.2	32.4	268 M0	252	--	--	--	--	--	--	--	--
	Apr-24	782.94	N	N	N	11.8	8.04	521.9	--	3.5	<29.3	0.45 J	25.8	549	<0.15	1.2 J	14.7	<0.32	--	4.7	121	199	234	--	--	--	--	--	--	--	--
	Oct-24	786.64	N	N	N	13.0	7.34	577	--	--		0.38 J		261			4.9	--	--	--	25.4	247	256				--	--	--	--	--
MW-34A**	Apr-23	786.22	N	N	N	10.9	7.53	465.8	--	4.5	<31.6	<0.28	9.2	227	<0.15	1.1 J	0.55 J	0.83 J		2.5 B	51.5	195	231	--	--	--	--	--	--	--	--
	Oct-23	783.55	N	N	Y	13.0	7.78	457.3	--	4.0	<31.6	<0.28	10.2	240	<0.15	1.3 J	0.60 J	0.72 J	<0.066	4.3 J, D3	42.5	214	236	--	--	--	--	--	--	--	--
	Apr-24	784.14	N	N	N	11.3	7.4	472.6	--	4.0	<29.3	<0.28	10.7	235	<0.15	2.2 J	0.62 J	0.92 J	--	2.3	49.3	210	225	--	--	--	--	--	--	--	--
MW-34B	Apr-23	786.12	N	N	N	12.2	6.61	335.4	--	4.7	<31.6	0.30 J	5.6	136	<0.15	1.5 J	<0.44	0.75 J	--	1.8 J, B	17.1	168	186	--	--	--	--	--	--	--	--
	Oct-23	783.40	N	N	N	11.8	7.42	317	--	5.4	<31.6	0.36 J	5.5	125	<0.15	1.5 J	<0.44	0.67 J	<0.066	2.2	16.2	183	200	--	--	--	--	--	--	--	--
	Apr-24	784.11	N	N	N	12.0	8.06	383.8	--	5.5	<29.3	0.34 J	5.8	121	<0.15	1.2 J	<0.44	0.72J	--	1.8 J	15.3	185	192	--	--	--	--	--	--	--	--
	Oct-24	786.75	N	N	N	13.0	7.48	579	--	--	--	0.34 J	--	151	--	--	<0.44	--	--	--	23.2	185	219	--	--	--	--	--	--	--	--
MW-37A	Apr-23	784.99	Y	N	Y	10.9	7.4	648	--	0.55	<31.6	<0.28	10.4	25.6	<0.15	2.2 J	<0.44	3.4	--	40.7	7.9	337	220	--	--	--	--	--	--	--	--
	Oct-23	782.94	N	N	Y	11.9	7.60	628	--	5.9	<31.6	<0.28	13.9	31.5	<0.15	2.7 J	<0.44	2.8	<0.066	54.0	18.8	311	308	--	--	--	--	--	--	--	--
	Apr-24	782.95	Y	N	Y	11.7	7.87	423.8	--	10.4	<29.3	<0.28	7.4	19.9	<0.15	1.9 J	<0.44	0.64 J	--	4.0	2.8	270	279	--	--	--	--	--	--	--	--
	Oct-24	786.6	Y	N	Y	12.3	7.32	756	--	--	--	<0.28	--	29.8	--	--	<0.44	--	--	--	55.4	312	354	--	--	--	--	--	--	--	
MW-5R	Apr-23	787.76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-23	785.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-24	785.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-24	788.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-83	Apr-23	786.05	N	N	Y	8.6	6.69	430	--	3.1	<31.6	<0.28	10.2	15	<0.15	<1.0	1.3 J	0.56 J	--	1.4 J, B	6.3	147	155	--	--	--	--	--	--	--	--
	Oct-23	--	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-24	783.41	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-24	788.86	N	N	Y	17.8	7.51	382.1	--	--	--	0.32 J	--	24.5	--	--	1.8	--	--	--	3.2	190	221	--	--	--	--	--	--	--	--
MW-84A**	Apr-23	786.97	N	N	N	10.7	7.01	556.6	--	0.36	<31.6	0.29 J	12.4	9.1 J	<0.15	1.9 J	<0.44	<0.32	--	3.5 B	1.4 J	324	316	--	--	--	--	--	--	--	--
	Oct-23	784.39	N	N	Y	12.3	7.51	599.9	--	0.36	<31.6	<0.28	14.2	12.2	<0.15	1.8 J	<0.44	<0.32	<0.066	3.1	1.4 J	345	333	--	--	--	--	--	--	--	--
	Apr-24	784.90	N	N	N	11.0	7.68	588.1	--	0.37	<29.3	<0.28	13.6	11.3	<0.15	1.9 J	<0.44	<0.32	--	3.3	1.8 J	349	307	--	--	--	--	--	--	--	--
MW-84B	Apr-23	786.86	N	N	N	11.8	7.39	577.7	--	0.43	<31.6	<0.28	16.1	9.6 J	<0.15	2.6 J	<0.44	<0.32	--	2.7	1.4 J	332	308	--	--	--	--	--	--	--	--
	Oct-23	784.31	N	N	N	11.1	7.59	476	--	0.34	<31.6	<0.28	16.9	10.9	<0.15	1.7 J	<0.44	<0.32	<0.066	3.9	1.8 J	337	311	--	--	--	--	--	--	--	--
	Apr-24	784.84	N	N	N	11.60	7.55	551.2	--	0.53	<29.3	0.31 J	17.8	11	<0.15	1.8 J	<0.44	<0.32	--	3.3	1.3 J	349	313	--	--	--	--	--	--	--	--
	Oct-24	787.06	N	N	N	12.6	7.41	669	--	--	--	<0.28	--	17.3	--	--	0.59 J	--	--	--	3.1	338	328	--	--	--	--	--	--	--	--
MW-86	Apr-23	786.67	N	N	Y	10.4	6.94	1742	--	0.28	<31.6	0.38 J	62.6	10.1	<0.15	1.5 J	<0.44	0.34 J	--	323	54.9	440	467	--	--	--	--	--	--	--	--
	Oct-23	784.24	N	N	N	11.0	7.59	1207	--	0.44	<31.6	0.36 J	52.8	11.4	<0.15	1.5 J	<0.44	0.32 J	--	236	48.8	392	439	--	--	--	--	--	--	--	--
	Apr-24	784.54	N	N	Y	11.2	7.64	1454	--	0.31	<29.3	0.38 J	57.2	11.5	<0.15	1.6 J	<0.44	<0.32	--	263	53.2	426	414	--	--	--	--	--	--	--	--
	Oct-24	787.14	Y	N	Y	11.4	7.66	1311	--	--	--	0.37 J	--	12.3	--	--	<0.44	--	--	--	--	423	361	--	--	--	--	--	--	--	--
MW-91AR	Apr-23	786.76	N	N	Y	9.6	7.09	710	--	4.4	<31.6	0.45 J	30.3	87.8	<0.15	1.3 J	18.5	1.0 J	--	16.6	36.1	343	430	--	--	--	--	--	--	--	--
	Oct-23	784.63	Y	N	Y	12.5	7.56	726	--	5.1	34.5 J	<0.28	36.5	90.8	<0.15	1.2 J	17.8	0.78 J	<0.066	24.3	70.8	355	446	--	--	--	--	--	--	--	--
	Apr-24	784.61	Y	N	Y	15.7	7.48	658.0	--	6.9	<29.3	<0.28	45	85.2	<0.15	1.3 J	15.7	0.75 J	--	15.8	117	381	486	--	--	--	--	--	--	--	--
	Oct-24	787.81	N	N	Y	13.2	7.35	1145	--	--	--	<0.28	--	150	--	--	16.2	--	--	--	110	418	539	--	--	--	--	--	--	--	--
MW-91B	Apr-23	786.59	N	N	Y	11.7	7.36	895	--	9.2	<31.6	0.47 J	31.2	1110	<0.15	1.4 J	114	0.49 J	--	26	99.9	322	409	--	--	--	--	--	--	--	--
	Oct-23	784.36	N	N	N	11.0	7.30	746	--	9.1	<31.6	0.31 J	35.4	800	<0.15	1.1 J	87.0	0.51 J	0.073 J	29.2	89.3	381	474	--	--	--	--	--	--	--	--
	Apr-24	784.57	N	N	N	12.4	7.66	741	--	10.4	<29.3	0.29 J	35.1	976	<0.15	1.2 J	101	0.48 J	--	28	98	371	412	--	--	--	--	--	--	--	--
	Oct-24	787.52	N	N	N	12.4	7.2	1009	--	--	--	<0.28	--	733	--	--	65.0	--	--	--	83.3	392	472	--	--	--	--	--	--	--	--
MW-92A	Apr-23	787.53	N	N	Y	9.2	7.15	403.6	--	1.5	<31.6	<0.28	7.8	30	<0.15	1.1 J	<0.44	<0.32	--	1.4 J	9.6	245	256	--	--	--	--	--	--	--	--
	Oct-23	784.89	N	Y	N	10.8	7.40	539	--	2.9	<31.6	0.59 J	18.6	23.1	<0.15	<1.0	<0.44	0.32 J	<0.066	1.3 J	12.4	357	352	--	--	--	--	--	--	--	--
	Apr-24	785.19	N	N	N	9.9	7.58	567.5	--	5.1	<29.3	<0.28	13.5	26.6	<0.15	1.4 J	<0.44	0.89 J	--	0.89 J	8.0	341	338	--	--	--	--	--	--	--	--
	Oct-24	788.33	Y	N	Y	12.9	7.4	394.5	--	--	--	<0.28	--	32.8	--	--	<0.44	--	--	--	4.3	264	266	--	--	--	--	--	--	--	--
MW-92B	Apr-23	787.11	N	N	N	10.7	6.92	792	--	<0.059	<31.6	2.2	55	8.1 J	<0.15	<1.0	<0.44	<0.32	--	2.1	22	468	492	--	--	--	--	--	--	--	--
	Oct-23	784.36	N	N	N	10.2	7.41	655	--	0.36	<31.6	0.37 J	42.2	9.2 J	<0.15	<1.0	<0.44	<0.32	<0.066	1.8 J	21.2	402	414	--	--	--	--	--	--	--	--
	Apr-24	784.75	N	N	N	10.6	7.36	726	--	0.27	<29.3	0.59 J	46.7	9.1 J	<0.15	<1.0	<0.44	<0.32	--	2.1	23.6	444	428	--	--	--	--	--	--	--	--
	Oct-24	787.86	N	N	N	10.8	7.2	627.2	--	--	--	2.1	--	8.7 J	--	--	<0.44	--	--	--	24.3	445	484	--	--	--	--	--	--	--	--
MW-93A	Apr-23	785.87	Y	N	Y	10.7	6.94	689	--	0.82	41.7 J	0.36 J	89.5	11.8	<0.15	<1.0	0.64 J	0.92 J	--	18.3	4.5	396	347	2.9 J	<0.24	2.8 J	<0.13	16700	<10.3	<0.095	347
	Oct-23	783.86	Y	Y	Y	10.9	7.48	570	--	0.74	<31.6	0.28 J	84.4	14.6	<0.15	<1.0	0.52 J	0.91 J	<0.066	19.2	4.0	375	364	<1.9	<0.24	2.8 J	<0.13	16,900	<10.3	<0.095	32.4 J
	Apr-24	783.88	N	N	N	12.1	7.63	690	--	0.82	<29.3	<0.28	76.3	14.6	<0.15	1.2 J	<0.44	0.84 J	--	34.6	4.8	389	352	<1.9	<0.24	<1.2	<0.13	15,200	<10.3	0.10 J	<15.5
	Oct-24	787.00	Y	N	Y	10.6	7.31	605.8	--	--	<32.2	<0.28	85	17.2	<0.15	<1.0	0.58 J	0.82 J	<0.066	16.3	11.1	397	388	<1.9	<0.24	1.3 J	<0.13	25300	<10.3	<0.095	18.1 J

Abbreviations:
µg/L = micrograms per liter or parts per billion (pp AMSL: Above mean sea level -- = not analyzed
mg/L = milligrams per liter or parts per million (pp -- = not analyzed

Notes:
B: Analyte was detected in the field blank and/or associated method blank at a concentration above both 5% of the PAL and 10% of the concentration detected in the monitoring well sample.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
*: Parameter included for baseline sampling of new well MW-93A
** Well sampled as part of Dry Ash CCR program in October 2024. See file named "Dry Ash_Results_ CCR Wells__2023-2024" for data.

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2023-2024 Monitoring Results - Surface Water
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

Monitoring Point	Monitoring Period	Color, Field (no units)	Odor, Field (no units)	Turbidity, Field (no units)	Temperature, Field (deg C)	pH, Field (Std. Units)	Specific Conductance, Field (µmhos/cm)	Nitrate + Nitrite as Nitrogen (mg/L)	Aluminum, Total (µg/L)	Arsenic, Total (µg/L)	Barium, Total (µg/L)	Boron, Total (µg/L)	Cadmium, Total (µg/L)	Chromium, Total (µg/L)	Molybdenum, Total (µg/L)	Selenium, Total (µg/L)	Thallium (µg/L)	Mercury (µg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)	Alkalinity, Total as CaCO3 (mg/L)	Total Hardness (mg/L)
LP-1*	Apr-23	N	N	N	9.6	8.21	2910	4.3	101 J	1.9	99.1	2,110	<0.15	6.1	153	10.1	--	--	404	856	88.8	688
	Oct-23	N	N	Y	13.1	7.62	3791	1.4	2.1	2.1	74.9	2,640	<0.15	3.4	156	5.7	<0.14	<0.066	726	1,350	127	1,090
	Apr-24	N	N	Y	14.7	7.07	3414	3.1	167 J	2.1	76.2	1,900	<0.15	3.7	220	12.9	--	--	442	923	89.7	742

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = not analyzed
µmhos/cm = micromhos/centim
-- = not analyzed
N = none observed

Notes:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
* LP-1 was sampled as part of the CCR program in October 2024.

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2023-2024 Monitoring Results - Lysimeters
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

Monitoring Point	Monitoring Period	Leachate Depth (feet)	Color, Field (no units)	Odor, Field (no units)	Turbidity, Field (no units)	Temperature, Field (deg C)	pH, Field (Std. Units)	Specific Conductance, Field (µmhos/cm)	Monitoring Point Dry	Nitrate + Nitrite as Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Chemical Oxygen Demand (mg/L)	Aluminum, Total (µg/L)	Arsenic, Total (µg/L)	Barium, Total (µg/L)	Boron, Total (µg/L)	Cadmium, Total (µg/L)	Chromium, Total (µg/L)	Molybdenum, Total (µg/L)	Selenium, Total (µg/L)	Mercury (µg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)	Alkalinity, Total as CaCO3 (mg/L)	Total Hardness (mg/L)
LS-1	Apr-23	3.5	N	N	N	6.0	7.77	2056	--	0.068 J	--	--	1980	6.7	120	6200	<0.15	19.7	1260	7.1	--	27.1 J, D3	969	148	449
	Oct-23	--	Y	N	Y	14.8	7.86	1705	--	0.17 J	--	--	1,450	11.0	181	6,330	<0.15	63.5	1,430	7.5	<0.066	<11.8 D3	1,050	156	537
	Apr-24	--	Y	N	Y	10.9	7.95	2030	--	0.080 J	1.2	75.7	1,420	16.5	166	6,020	<0.30 D3	56.4	1360.0	10.7	--	20.1 J, D3	1040	153	493
	Oct-24	--	Y	Y	Y	17.4	7.27	1826	--	0.085 J	0.67 J	--	3040	3.6	--	6,240	--	3.9	1420	3.7	--	13.7	1030	159	443
LS-3R	Apr-23	--	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	`	--	--
	Oct-23	--	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Apr-24	--	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oct-24	--	--	--	--	--	--	--	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = not analyzed
µmhos/cm = micromhos/cen
N = none observed
Y = observed
-- = not analyzed

Notes:
Lysimeter LS-3R was dry during all sampling events in 2023-2024
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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2023-2024 Monitoring Results - Water Supply Wells
Wisconsin Power and Light - Columbia Dry Ash Disposal Facility
License #3025

Monitoring Point	Monitoring Period	Color, Field (no units)	Odor, Field (no units)	Turbidity, Field (no units)	Temperature, Field (deg C)	pH, Field (Std. Units)	Specific Conductance, Field (µmhos/cm)	Nitrate + Nitrite as Nitrogen (mg/L)	Aluminum, Total (µg/L)	Arsenic, Total (µg/L)	Barium, Total (µg/L)	Boron, Total (µg/L)	Cadmium, Total (µg/L)	Chromium, Total (µg/L)	Molybdenum, Total (µg/L)	Selenium, Total (µg/L)	Mercury (µg/L)	Chloride, Total (mg/L)	Sulfate, Total (mg/L)	Alkalinity, Total as CaCO3 (mg/L)	Total Hardness (mg/L)
HC-1	Apr-23	N	N	N	18.0	7.02	1036	1.0	<31.6	1.0	54.8	215	<0.15	<1.0	4.5	<0.32	--	139	91.1	278	356
	Oct-23	N	N	N	17.7	7.67	1133	1.2	<31.6	0.97 J	52.8	222	<0.15	<1.0	4.2	<0.32	<0.066	145	93.4	304	346
	Apr-24	N	N	N	17.5	7.73	1110	1.1	<29.3	1.1	60.4	225	<0.15	<1.0	4.7	0.39 J	--	147 M0	92.5 M0	305	387
	Oct-24	N/N*	N/N*	N/N*	17.3/17.4*	7.3/7.24*	1311/1091*	1.2*	--	1.0	--	233	--	--	4.0	--	--	151	97.6	319	401
HC-2	Apr-23	N	N	N	12.7	7.2	818	1.7	<31.6	0.75 J	44.6	370	<0.15	1.3 J	16.6	2.5	--	85.9	111	224	327
	Oct-23	N	N	N	15.6	7.84	885	1.8	<31.6	0.67 J	45.9	390	0.19 J	1.6 J	15.1	2.5	<0.066	89.3	111	241	341
	Apr-24	N	N	N	13.1	8.01	887	1.8	<29.3	0.53 J	47.1	350	<0.15	1.4 J	15.6	2.4	--	96.8 M0	114 M0	241	349
	Oct-24	N/N*	N/N*	N/N*	13.0/11.8*	7.57/7.40*	999/655*	1.8	--	0.55 J	--	342	--	--	16.3	--	--	93.9	108	235	347
HC-3	Apr-23	N	N	N	11.8	7.22	652	2.0	<31.6	0.79 J	36.2	394	<0.15	1.5 J	18.8	1.1	--	35.7	117	206	298
	Oct-23	N	N	N	11.8	7.13	709	2.4	<31.6	0.75 J	36.4	406	<0.15	1.4 J	16.9	1.2	<0.066	37.9	117	224	298
	Apr-24	N	N	N	12.0	7.94	694	2.3	<29.3	0.60 J	39.7	396	<0.15	1.6 J	18.7	1.6	--	37.2	115	220	325
	Oct-24	N	N	N	12.1/13.1*	7.58/7.41*	742/800*	2.4	--	0.57 J	--	356	--	--	17.0	--	--	37.3	112	217	312

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = not analyzed
N = none observed
-- = not analyzed
µmhos/cm = micromhos/centimeter

Notes:
M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
* Well was monitored on 10/2/2024 and 10/9/2024. * Indicates sample results from 10/9/2024.

Created by: TLC Date: 12/1/2014
Last revision by: EMS Date: 1/2/2025
Checked by: KMV Date: 1/2/2025

I:\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Appendix B_Results\working files\[Dry Ash_Results_Non CCR Wells__2023-2024.xlsx]Supply Well

Measurement Date[1]	Leachate Depth (feet)								
	LH-2	LH-3	LH-4	LH-5	LH-6	LH-10A	LH-10B	LH-11A	LH-11B
Jan-23	0.0	0.13	0.25	NI	NI	NI	NI	NI	NI
Feb-23	0.0	0.13	0.26	NI	NI	NI	NI	NI	NI
Mar-23	0.0	0.13	0.25	0.02	0.01	NI	NI	NI	NI
Apr-23	0.0	0.13	0.53	0.02	0.01	NI	NI	NI	NI
May-23	0.0	0.20	0.10	0.02	0.01	NI	NI	NI	NI
Jun-23	0.0	AB	AB	0.0	0.0	NI	NI	NI	NI
Jul-23	0.01	AB	AB	0.0	0.0	NI	NI	NI	NI
Aug-23	0.01	AB	AB	0.0	0.0	NI	NI	NI	NI
Sep-23	0.01	AB	AB	0.0	0.0	NI	NI	NI	NI
Oct-23	0.01	AB	AB	0.0	0.0	NI	NI	NI	NI
Nov-23	0.01	AB	AB	0.0	0.0	0.0	0.0	0.0	0.0
Dec-23	0.0	AB	AB	0.0	0.0	0.0	0.0	0.0	0.0
Jan-24	0.0	AB	AB	0.0	0.0	0.7	0.7	0.6	0.6
Feb-24	0.0	AB	AB	0.0	0.0	0.1	0.1	0.2	0.1
Mar-24	0.0	AB	AB	0.0	0.0	0.1	0.1	0.2	0.1
Apr-24	0.0	AB	AB	0.0	0.0	0.0	0.0	0.0	0.0
May-24	0.0	AB	AB	0.0	0.0	1.0	1.2	1.5	1.6
Jun-24	0.0	AB	AB	0.0	0.0	1.0	1.2	1.0	1.4
Jul-24	0.0	AB	AB	0.0	0.0	1.3	1.3	1.3	1.5
Aug-24	0.0	AB	AB	0.0	0.0	1.5	1.3	1.3	1.5
Sep-24	0.1	AB	AB	0.0	0.0	1.4	1.3	0.5	1.5
Oct-24	0.0	AB	AB	0.0	0.0	1.4	1.3	0.5	1.6

Abbreviations:
NM: Not Measured NI: Not Installed AB: Abandoned

Note:
1: Measurements are collected from a transducer and are recorded monthly by WPL-Columbia staff.

2: LH-3 and LH-4 were last measured and abandoned in May 2023.

Created by: NAS Date: 12/31/2018
Last revision by: EMS Date: 1/2/2025
Checked by: Date:

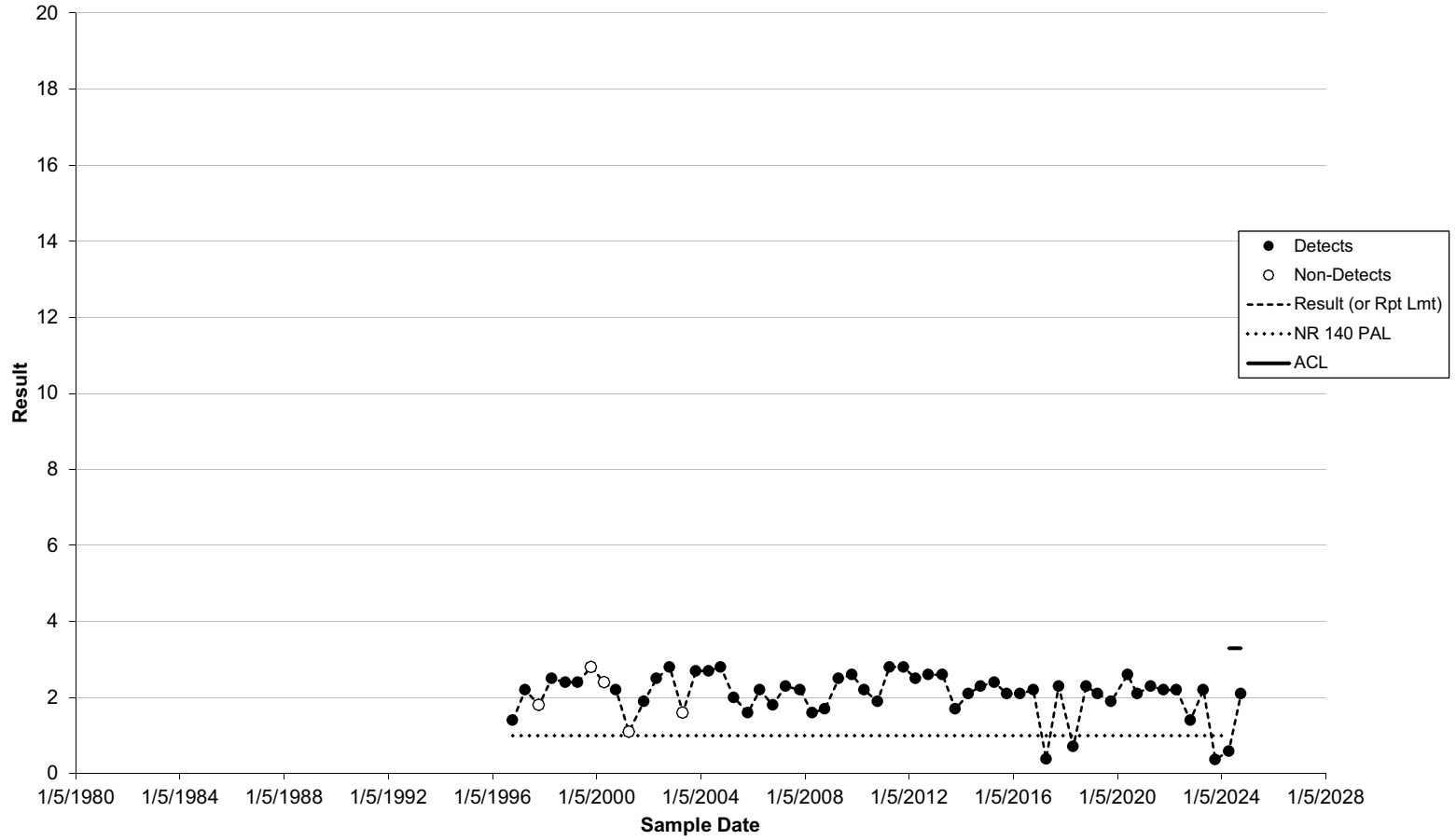
I:\25224067.00\Deliverables\2024 Biennial Report (2023-2024)\Appendix B_Results\working files\[Dry Ash_Results_Non CCR Wells__2023-2024.xlsx]LH

Appendix E

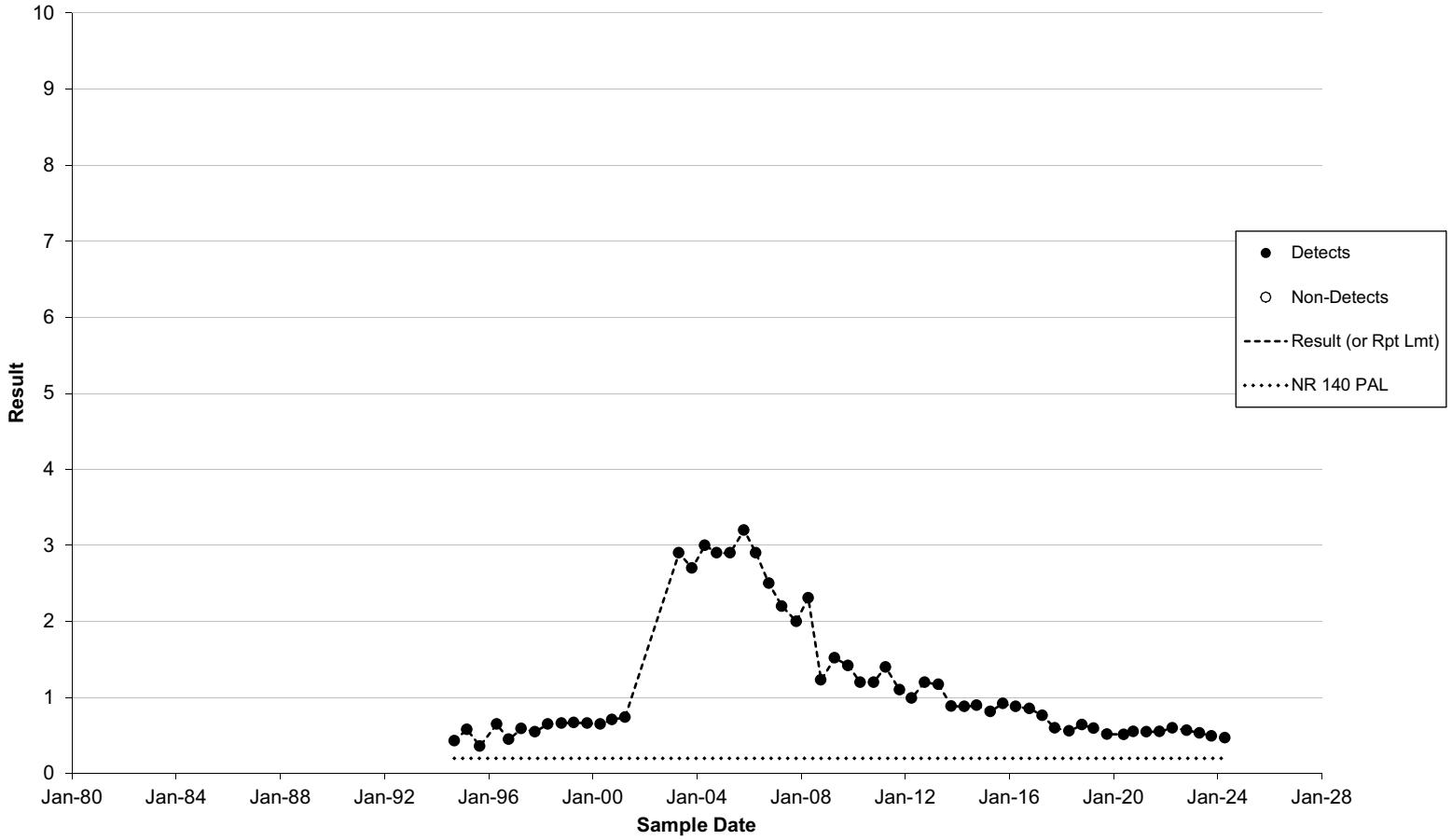
Historical Data Graphs

E1 – Historical Data Graphs – ADF Wells

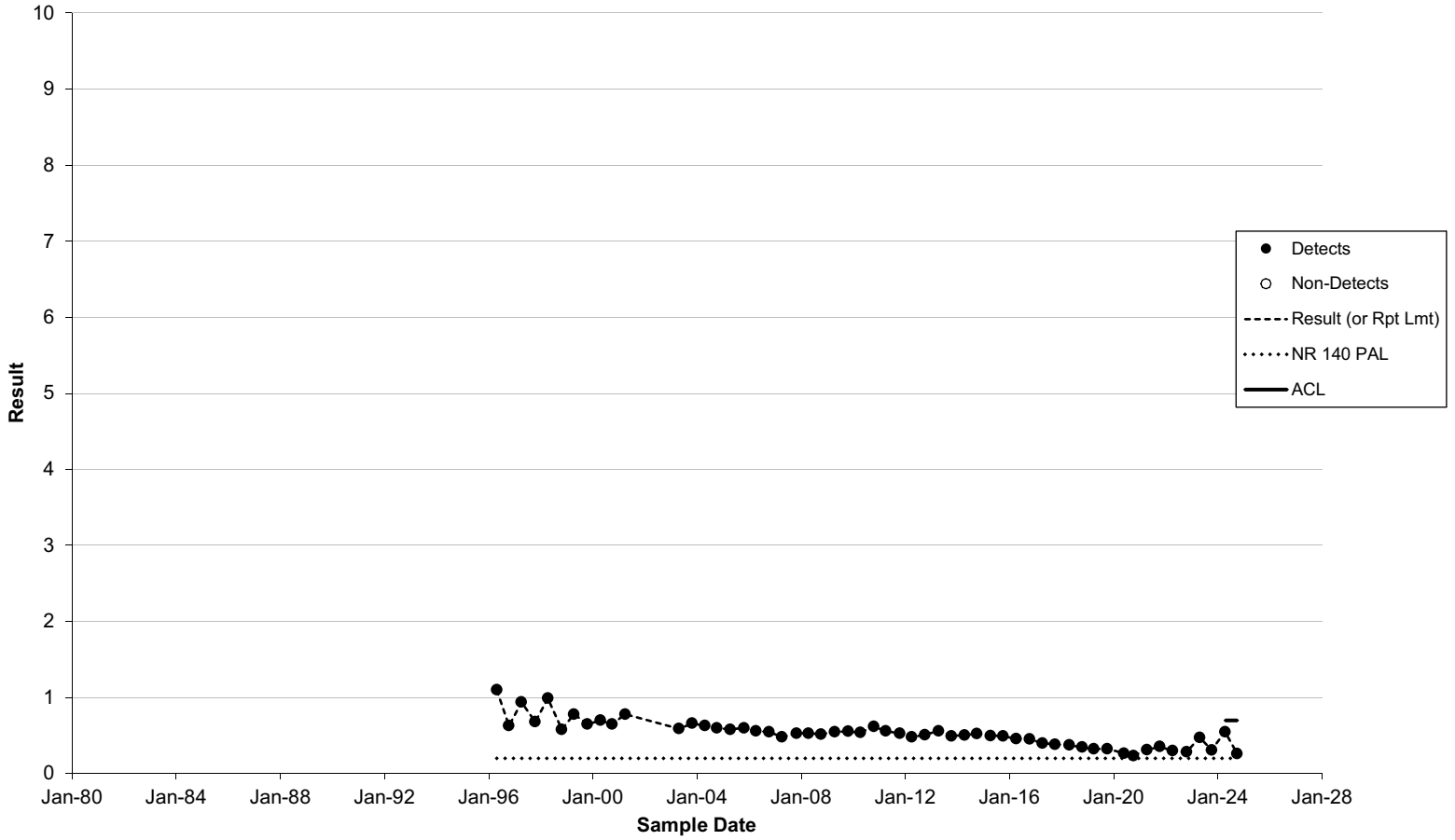
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-92B - Arsenic, dissolved (ug/l As)



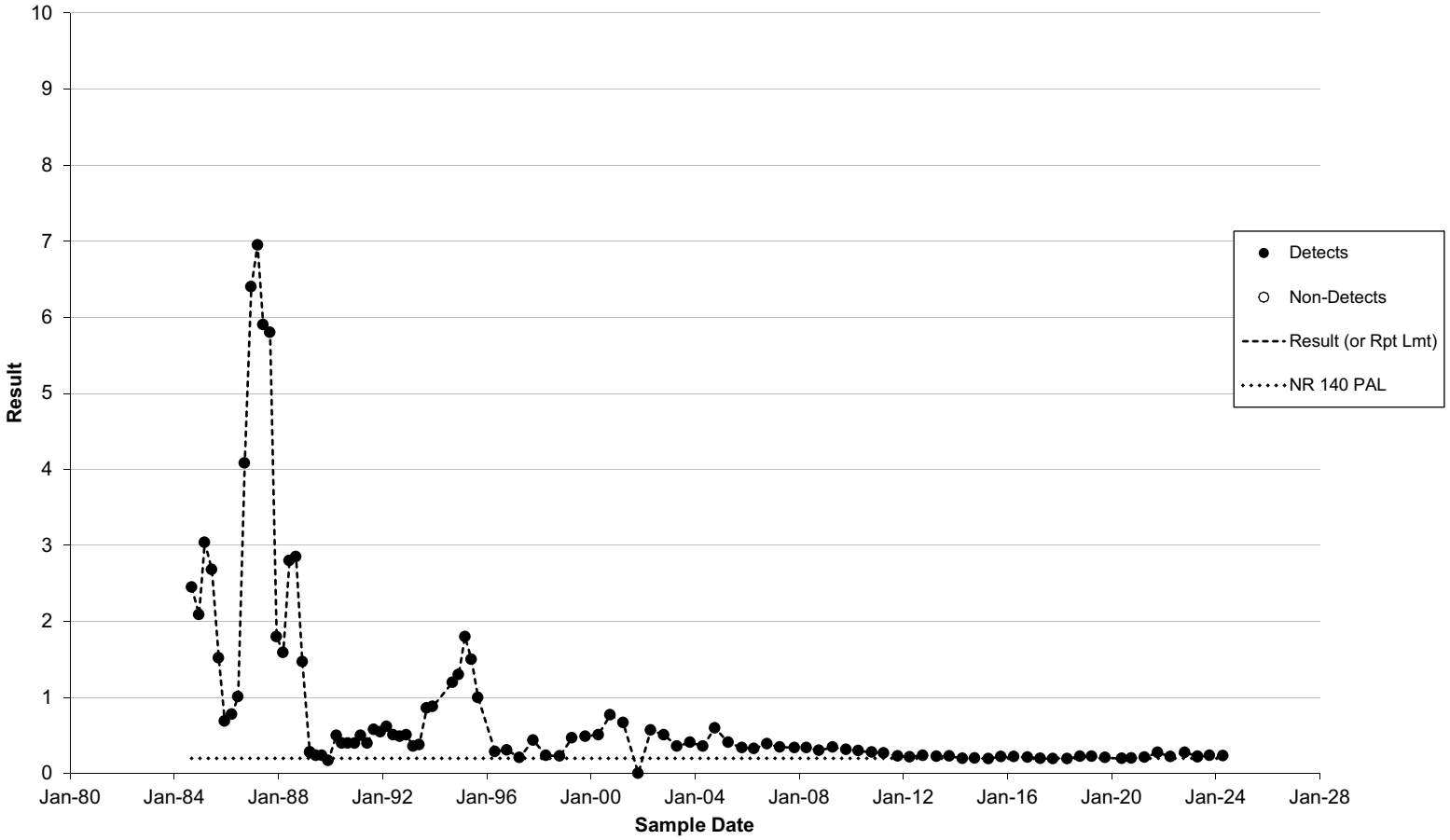
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33AR - Boron, dissolved (mg/l as B)



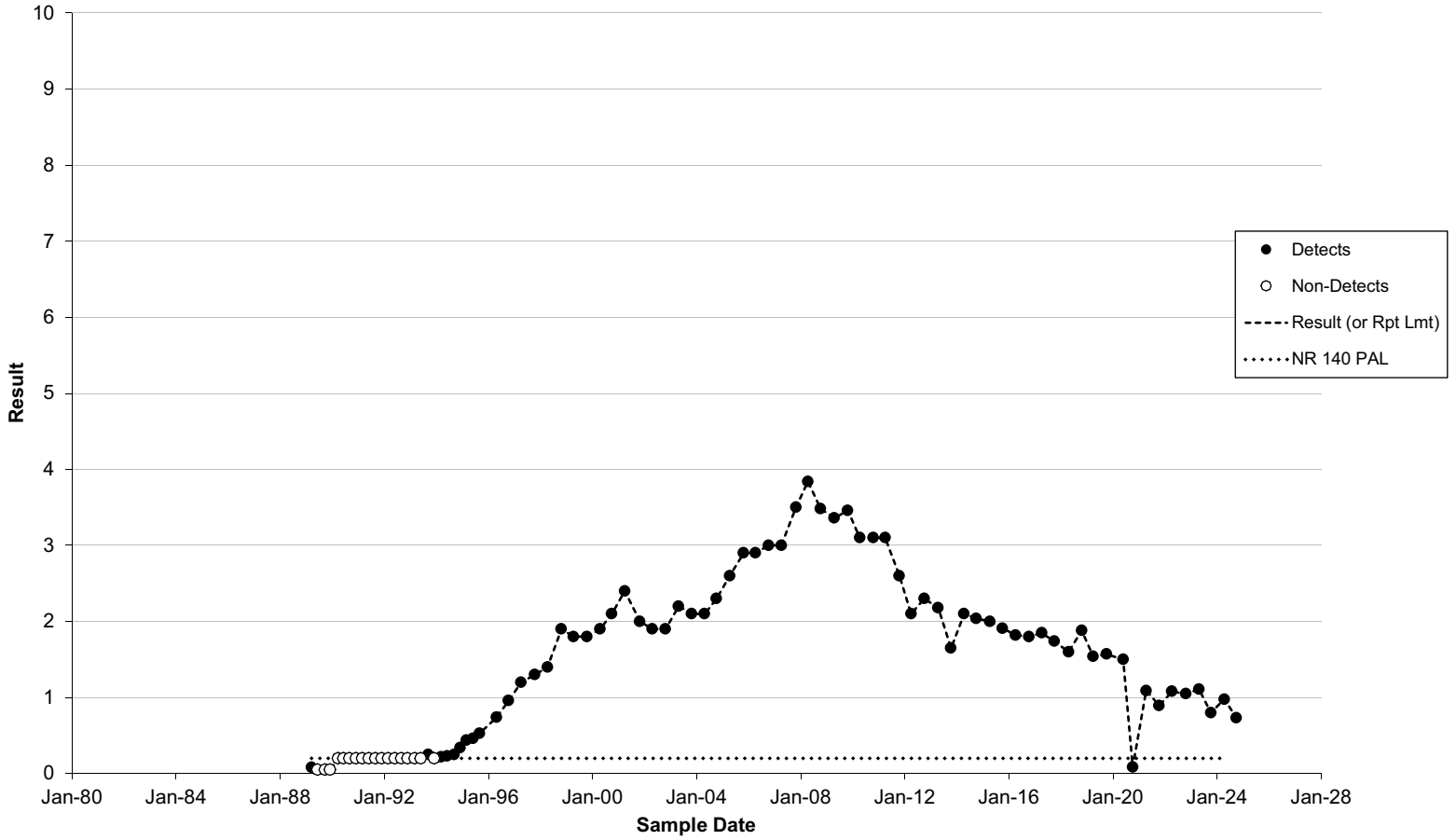
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33BR - Boron, dissolved (mg/l as B)



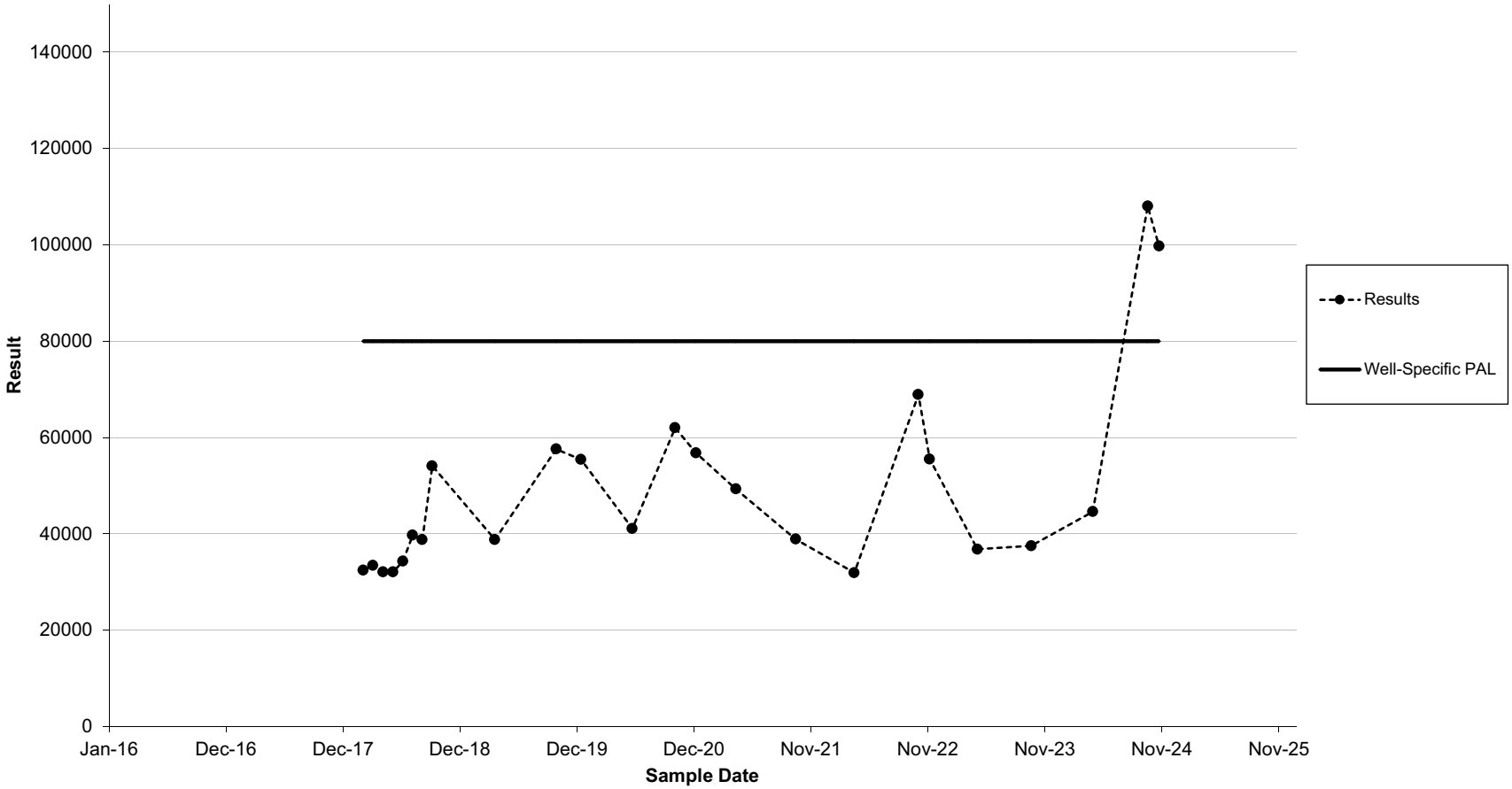
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-34A - Boron, dissolved (mg/l as B) - Non-CCR Monitoring Program



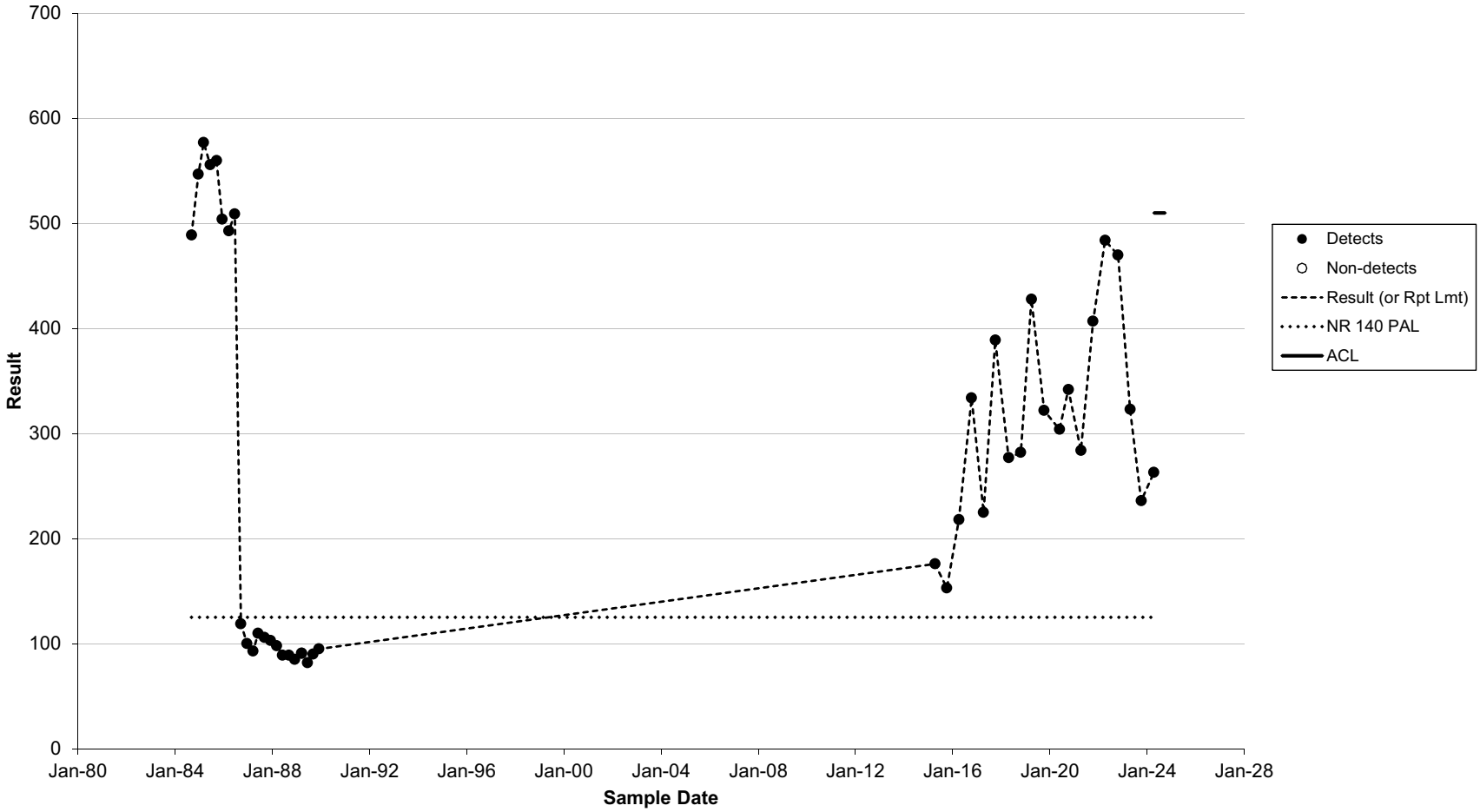
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-91B - Boron, dissolved (mg/l as B)



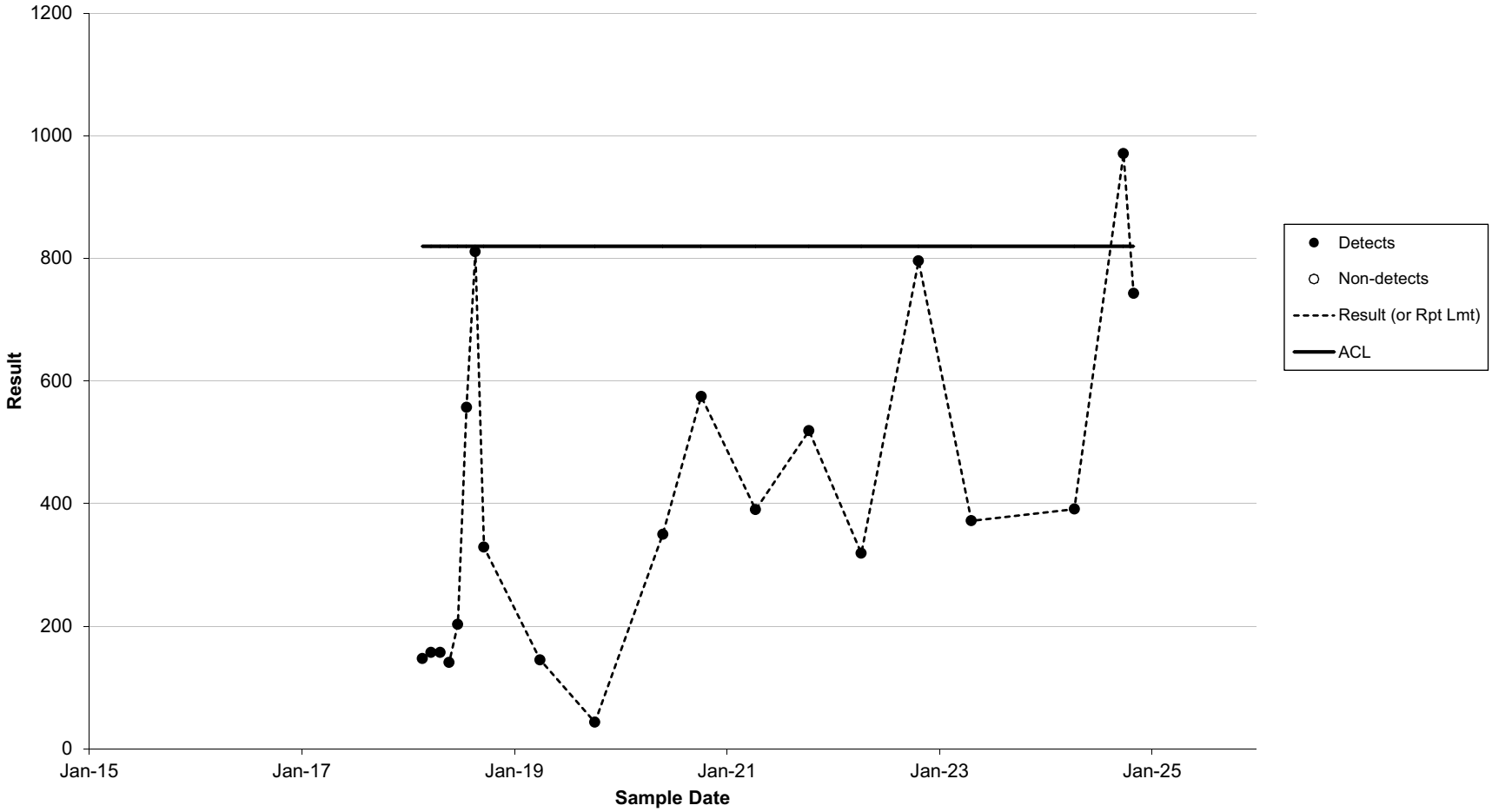
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-310 - Calcium, total (ug/l as Ca)



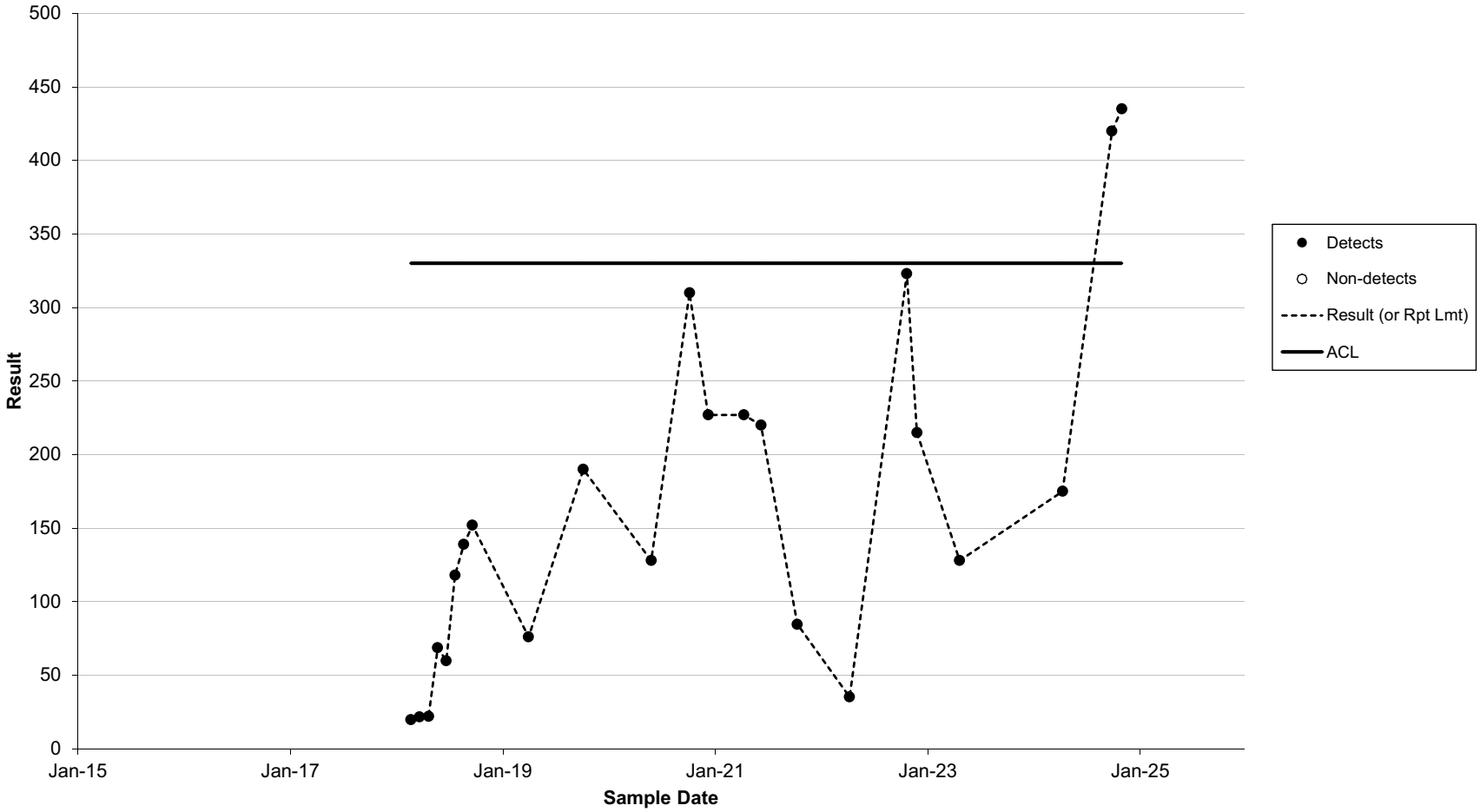
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-86 - Chloride (mg/l as Cl)



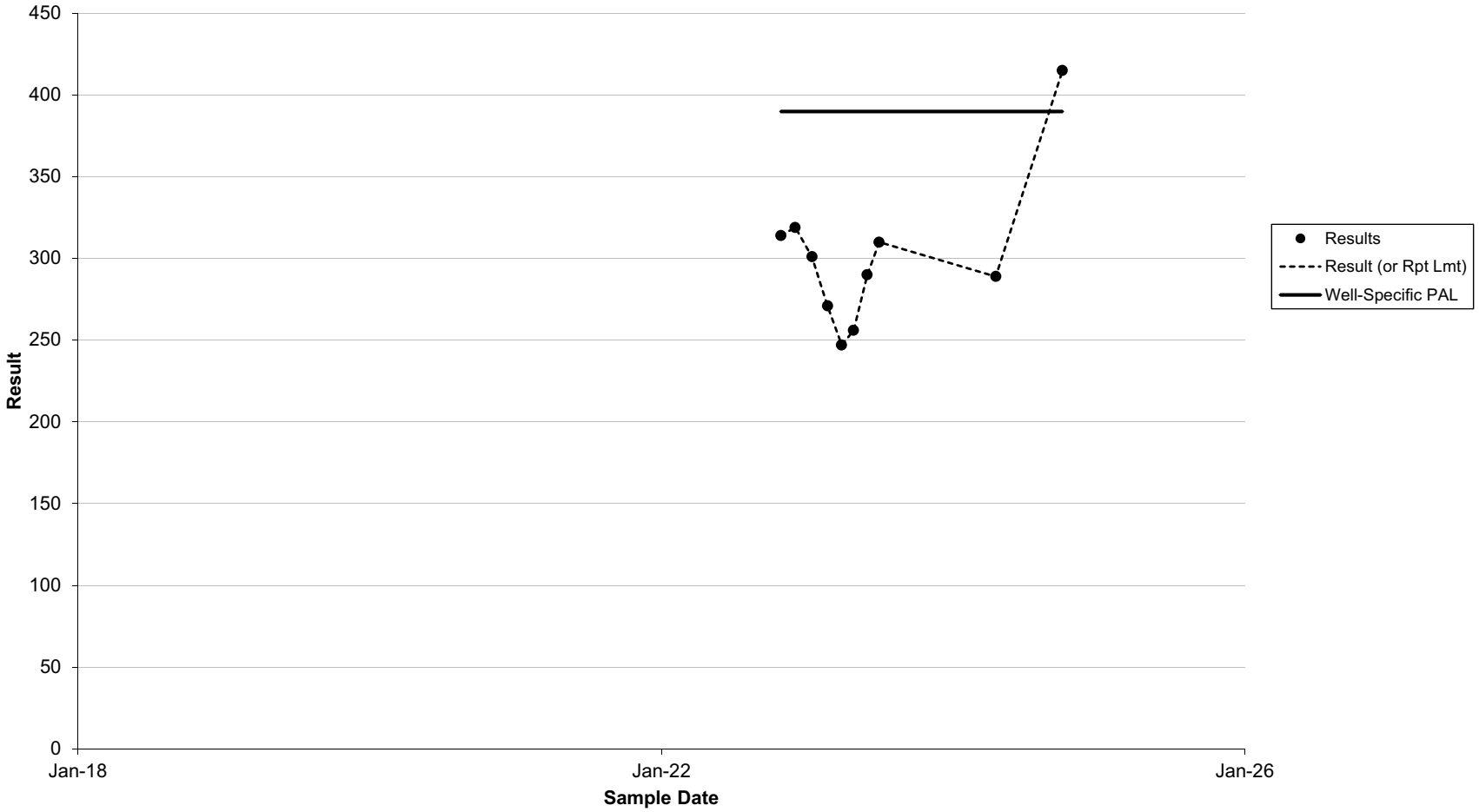
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-309 - Chloride, Total (mg/l as Cl)



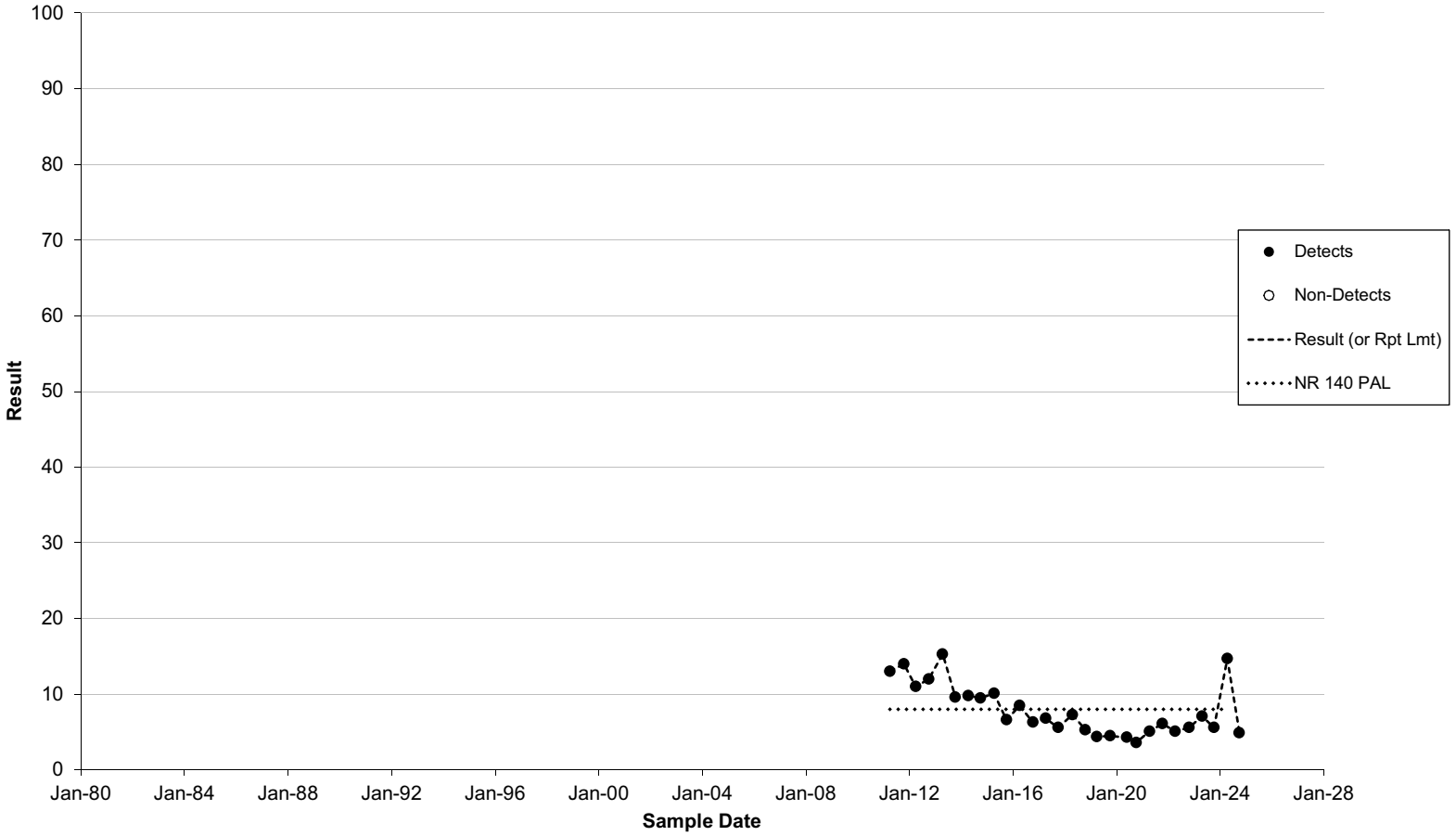
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-310 - Chloride, Total (mg/l as Cl)



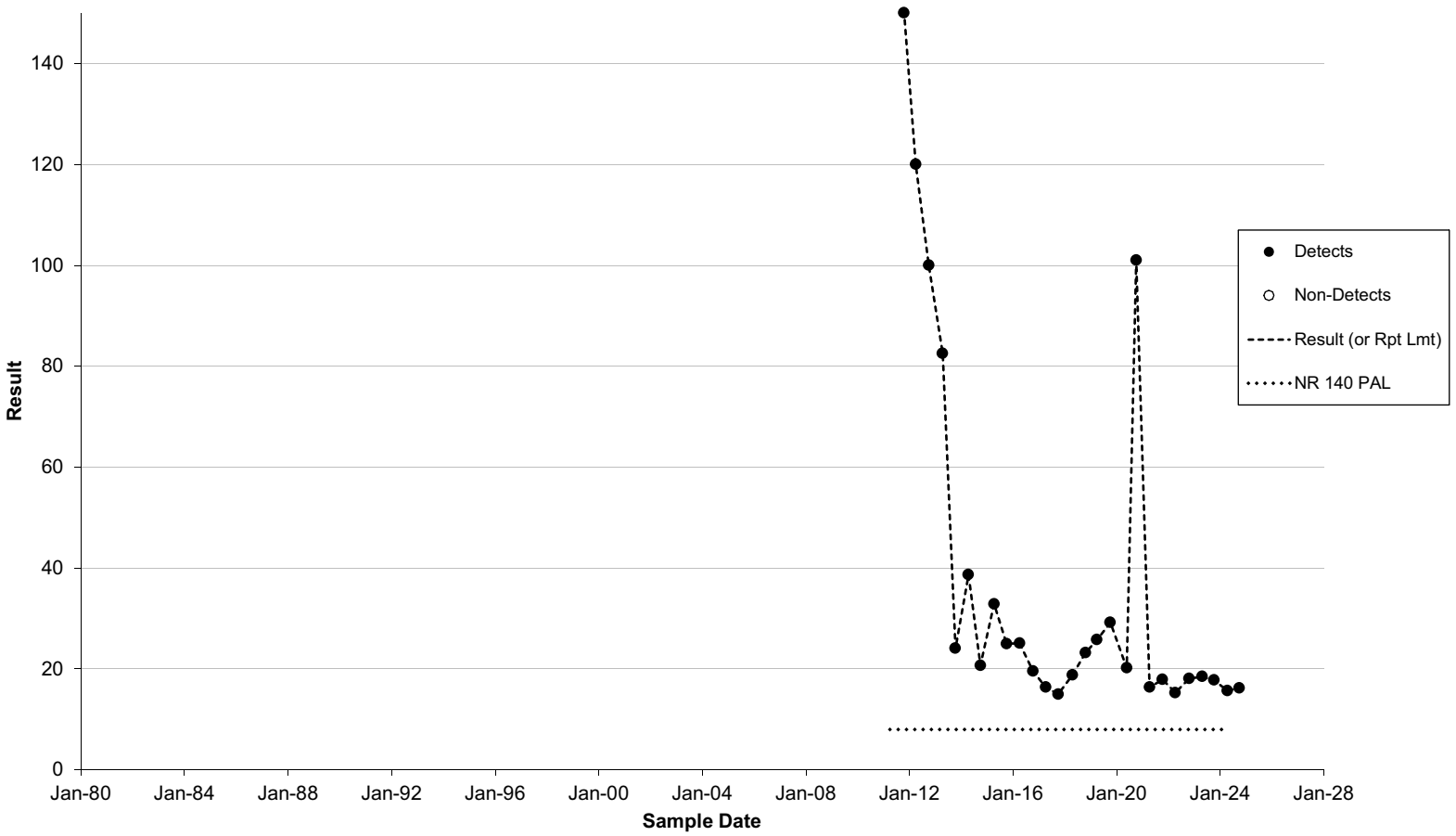
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33AR - HARDNESS, TOTAL (MG/L AS CACO3)



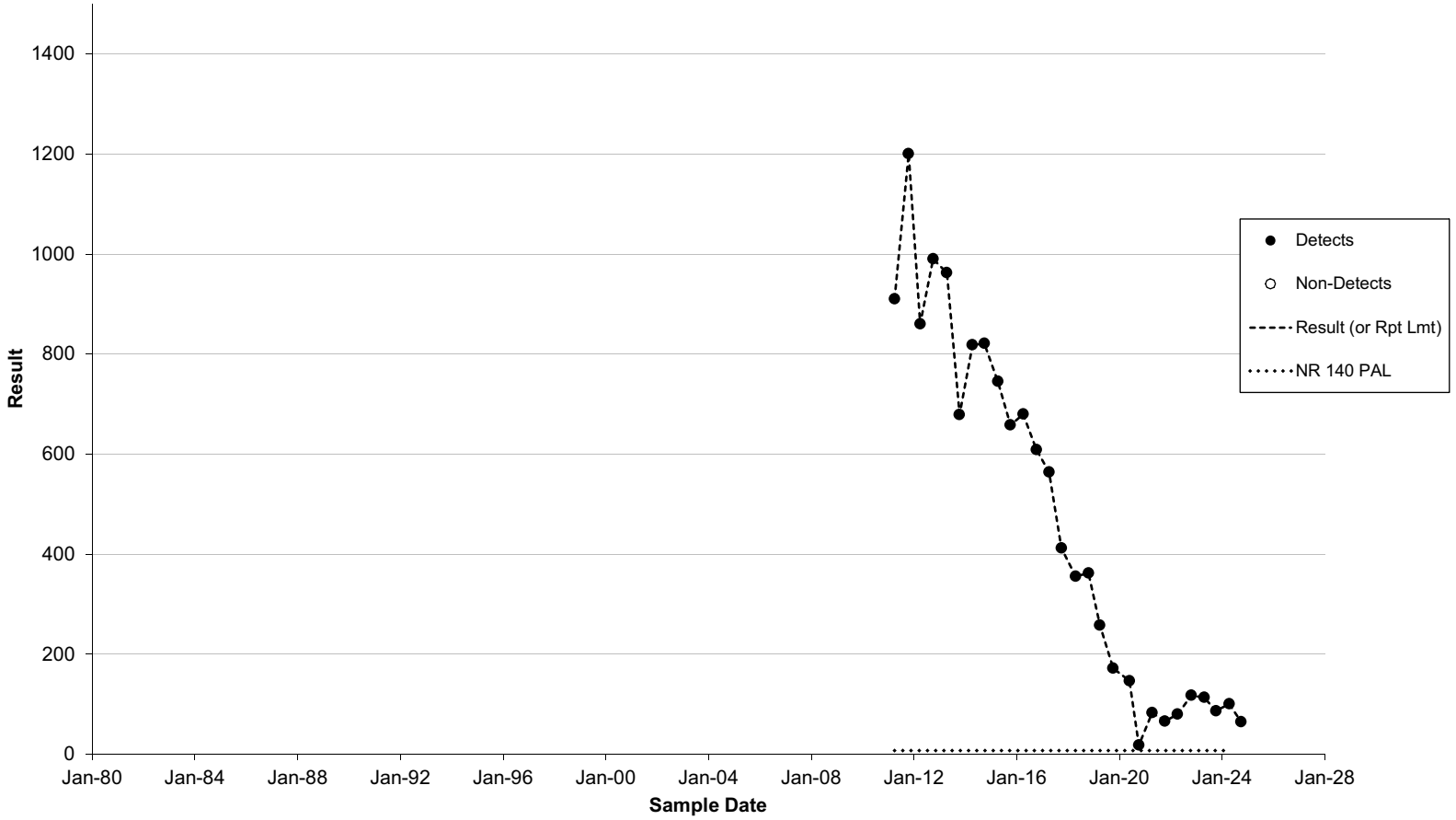
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33BR - Molybdenum, dissolved (ug/l as Mo)



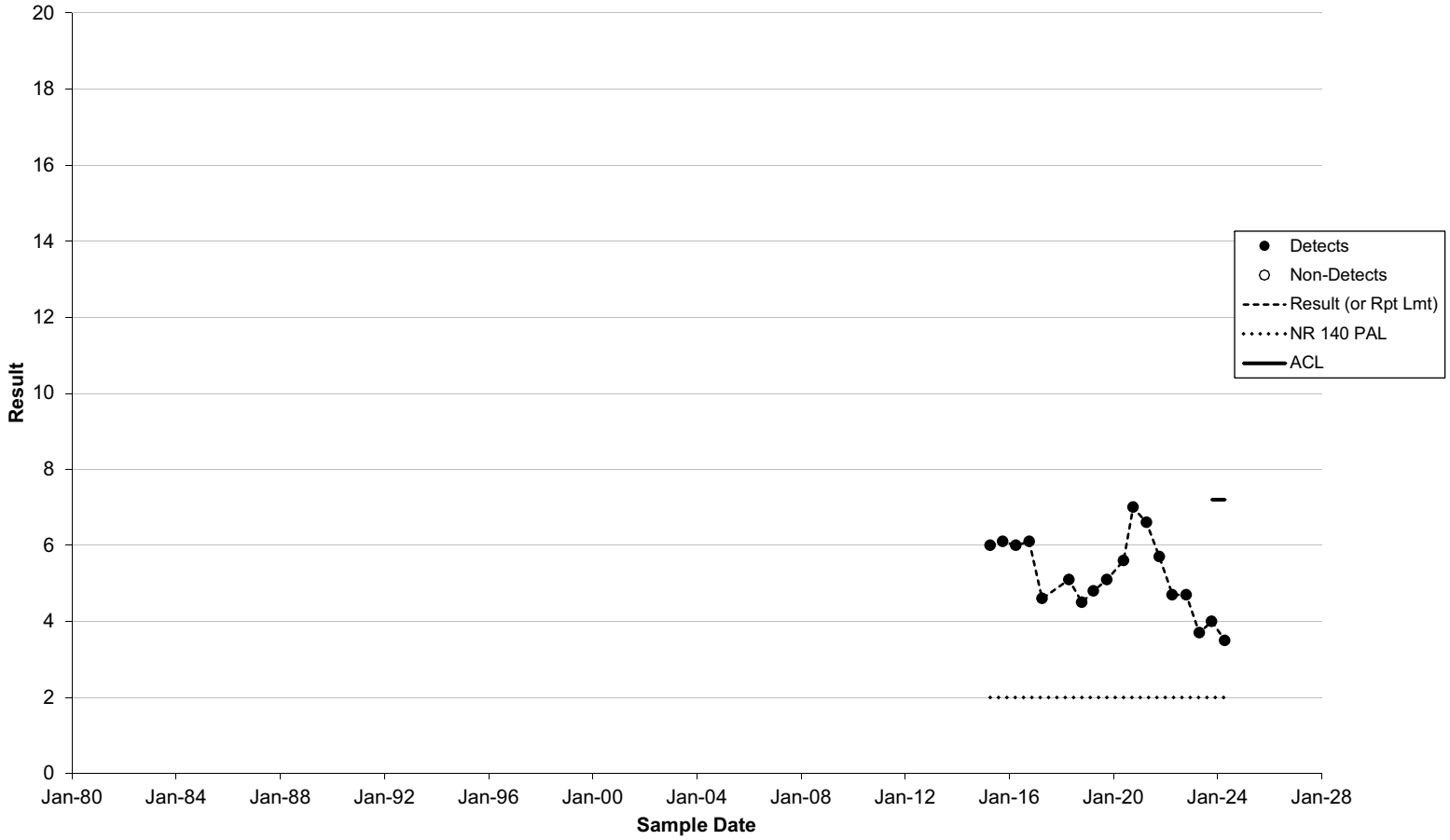
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-91AR - Molybdenum, dissolved (ug/l as Mo)



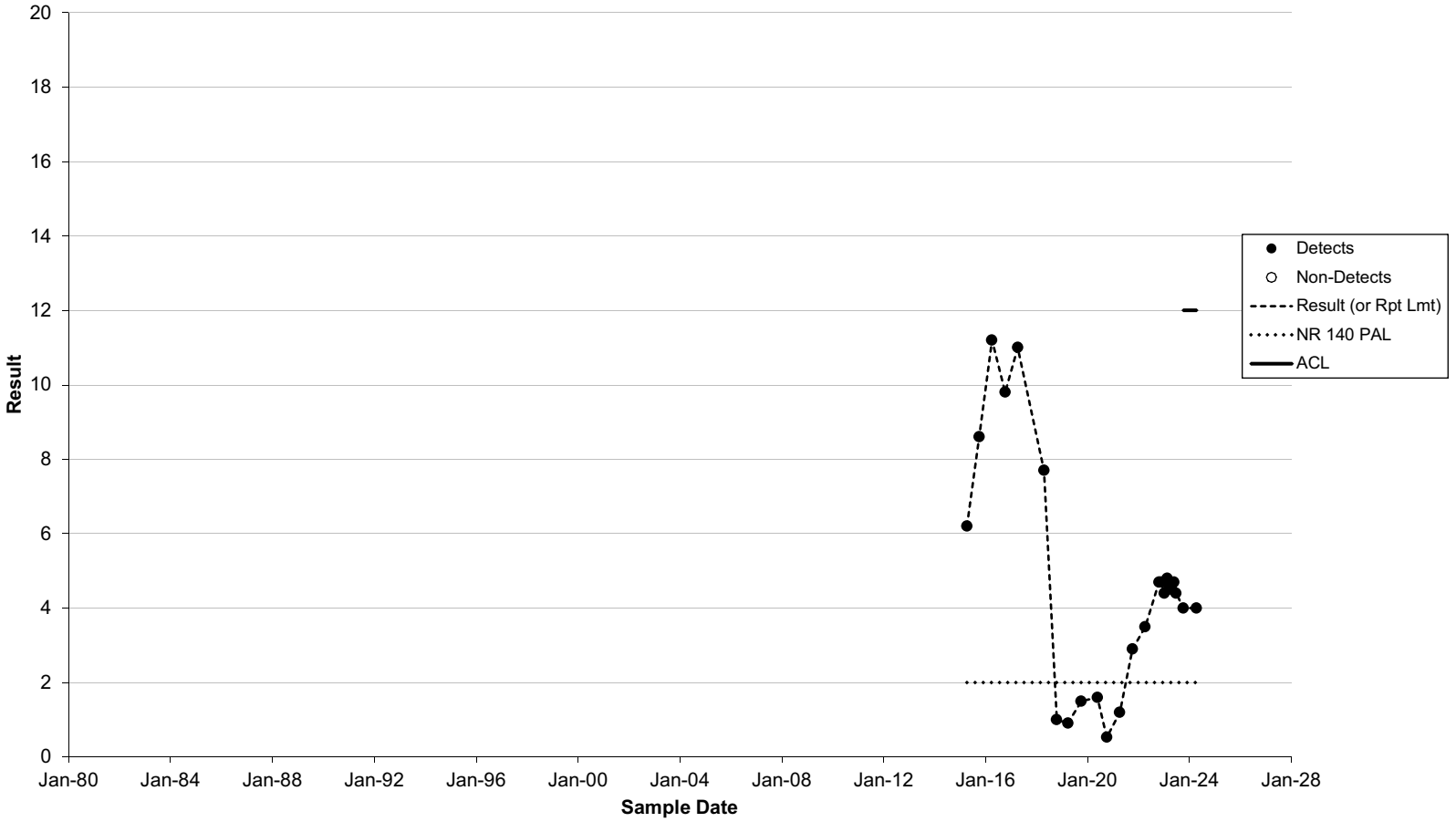
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-91B - Molybdenum, dissolved (ug/l as Mo)



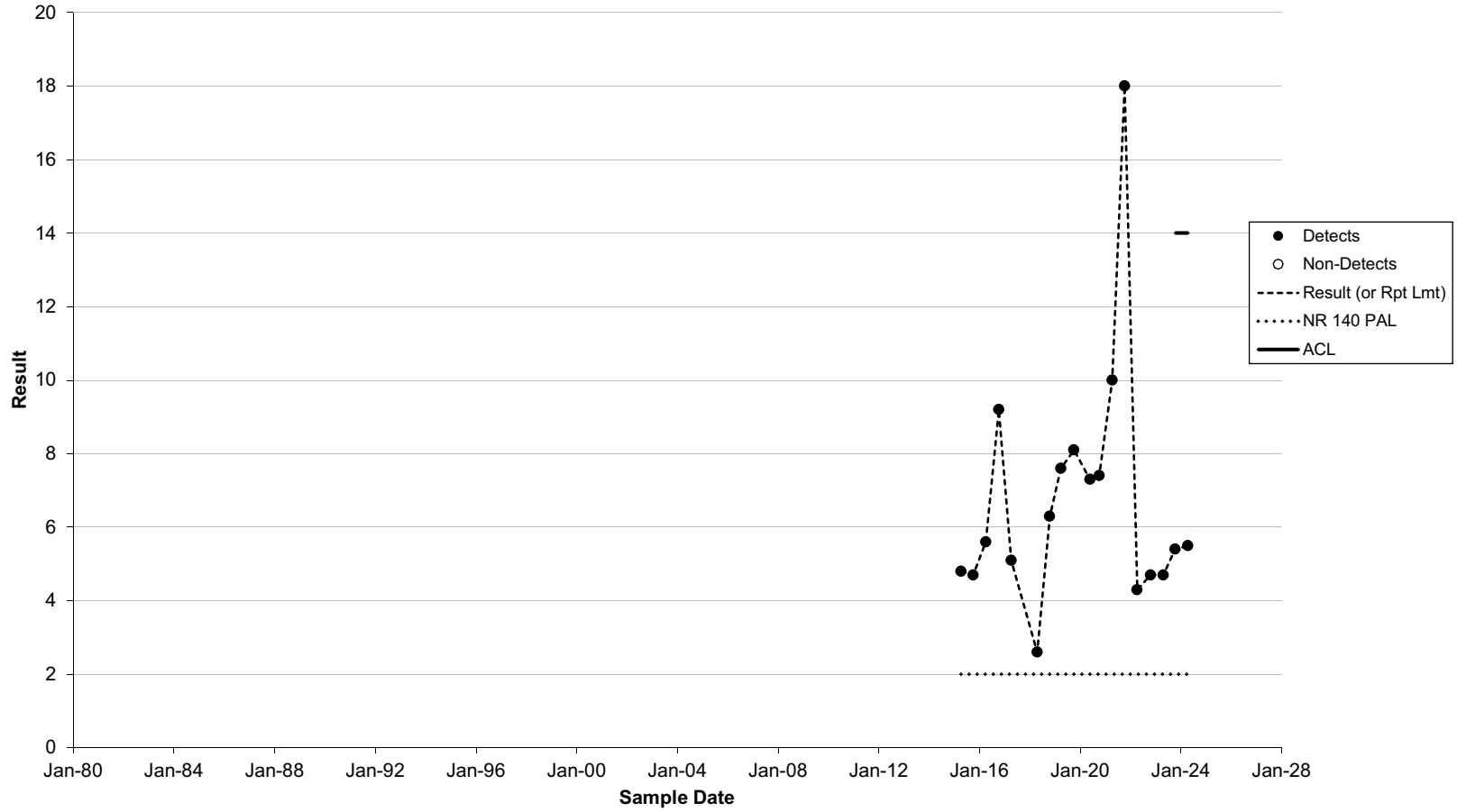
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33BR - Nitrite + nitrate, total 1 det. (mg/l as N)



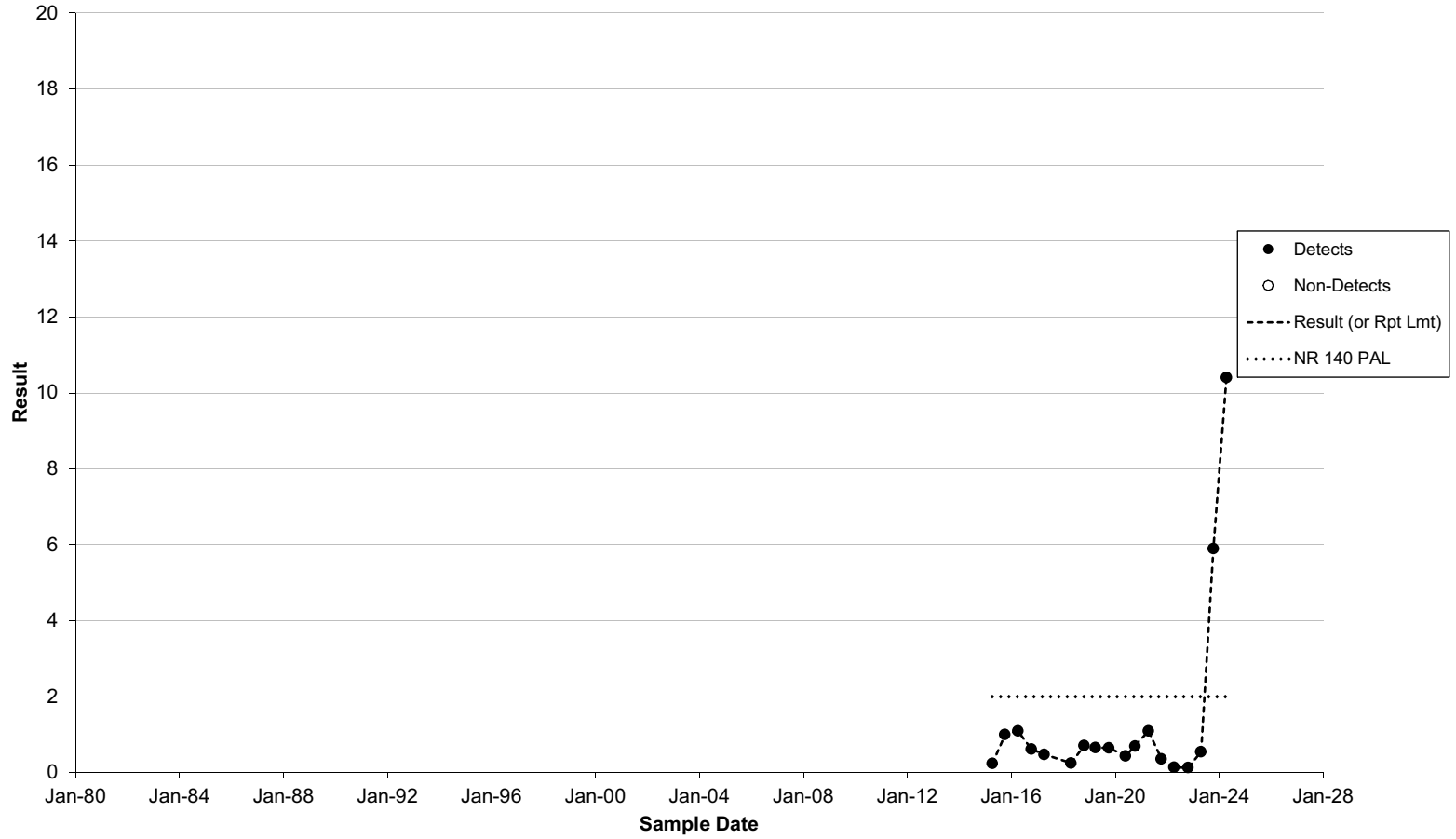
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW34A - Nitrite + nitrate, total 1 det. (mg/l as N)



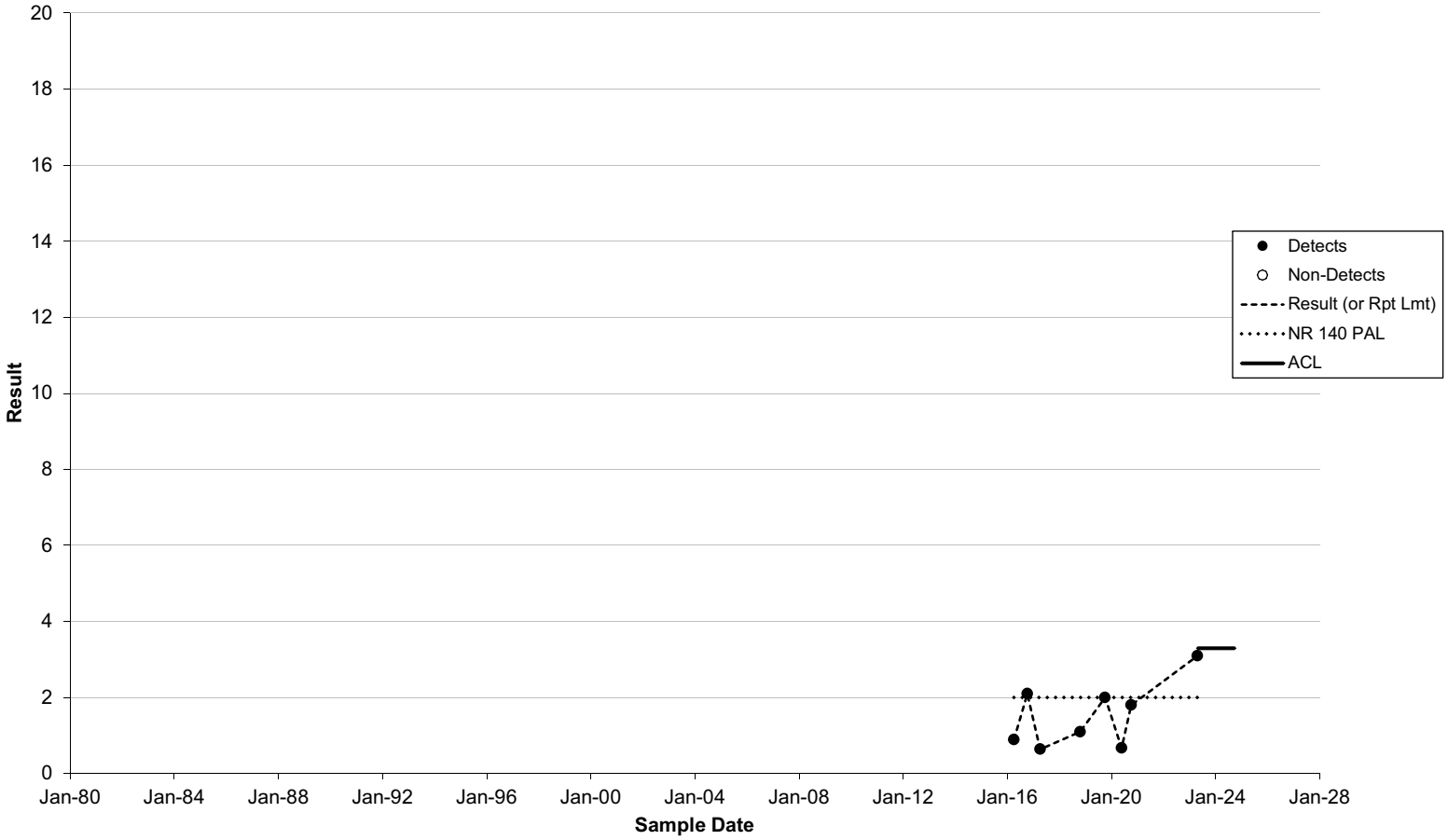
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW34B - Nitrite + nitrate, total 1 det. (mg/l as N)



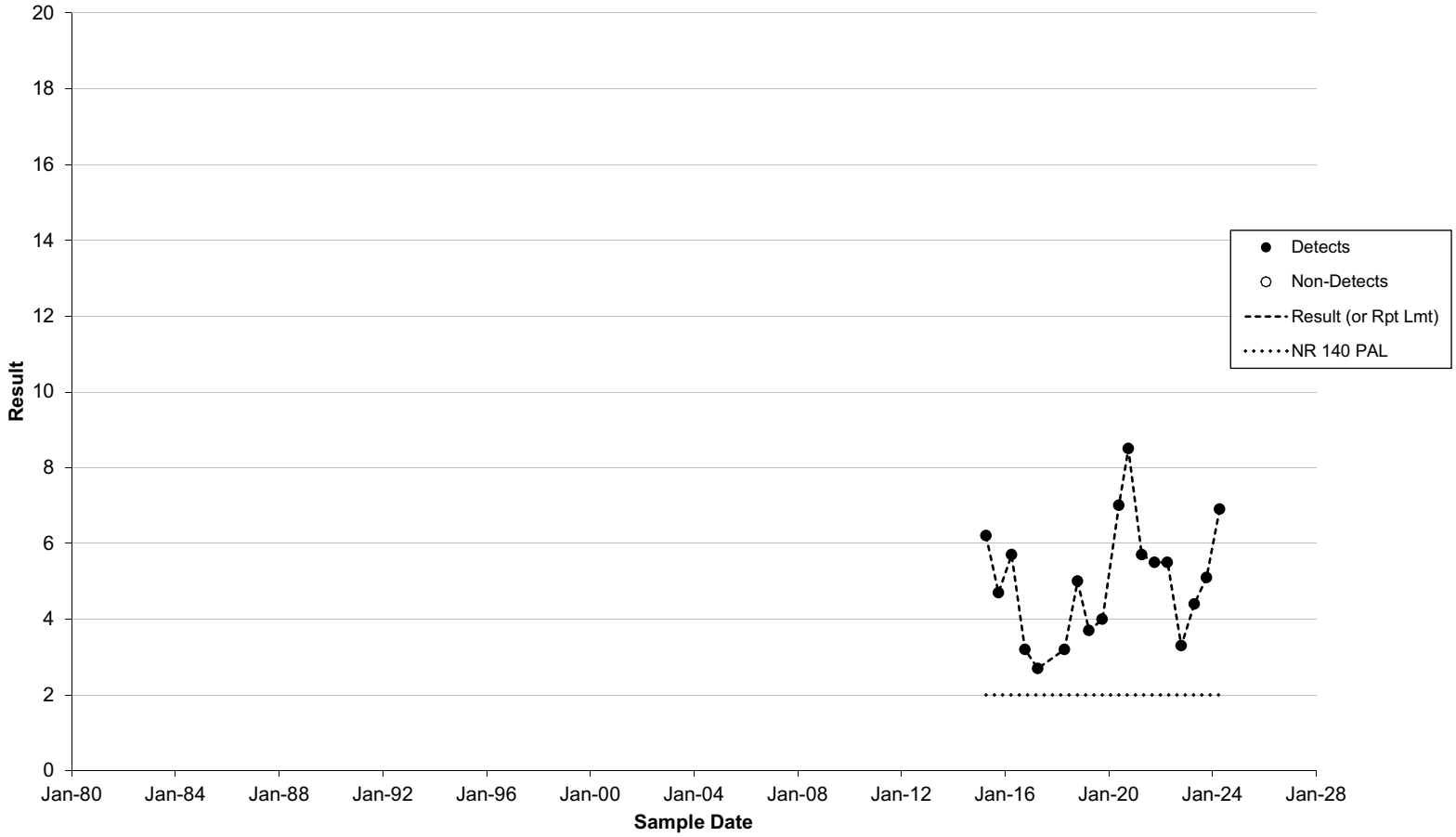
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW37A - Nitrite + nitrate, total 1 det. (mg/l as N)



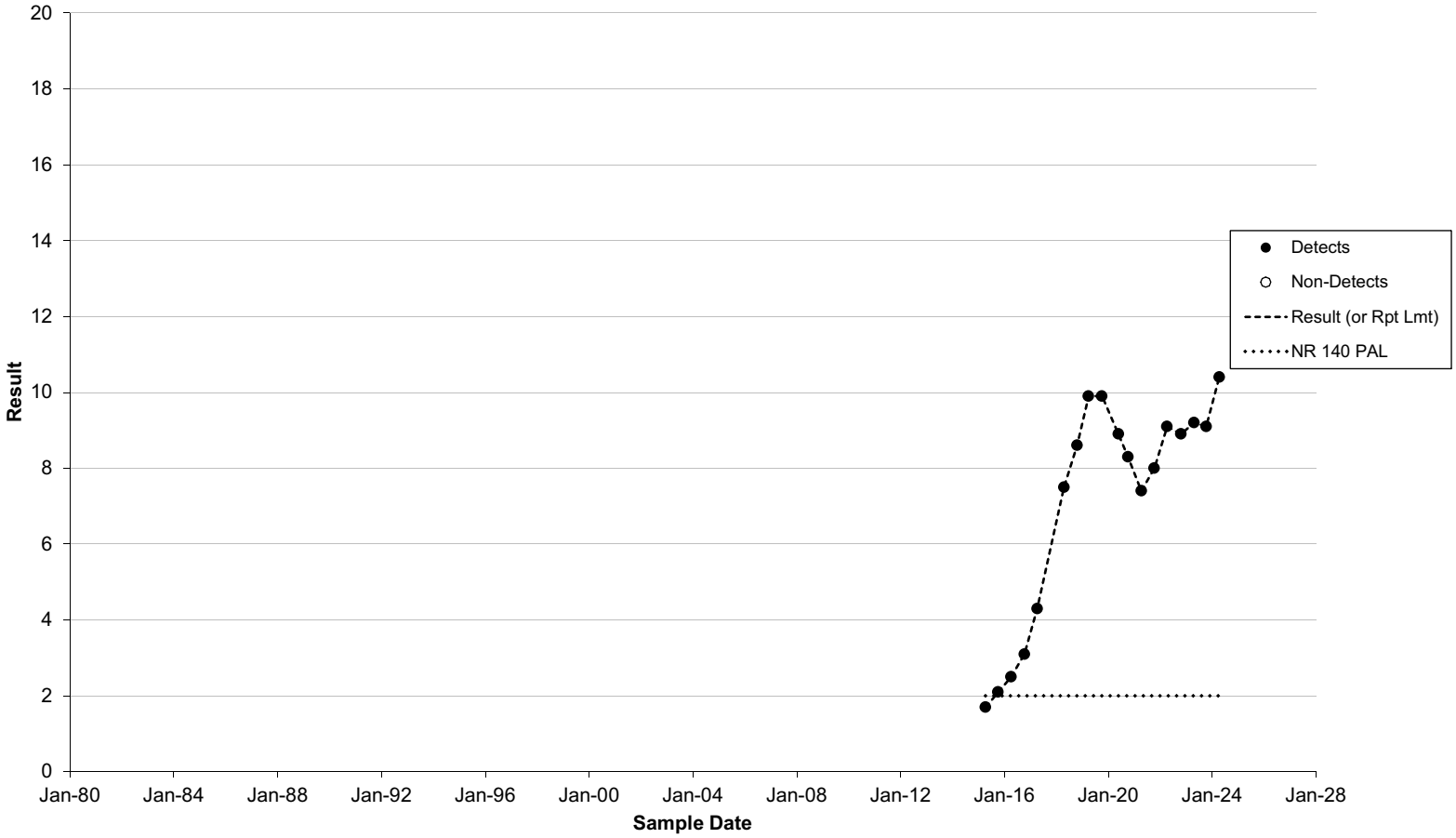
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-83 - Nitrite + nitrate, total 1 det. (mg/l as N)



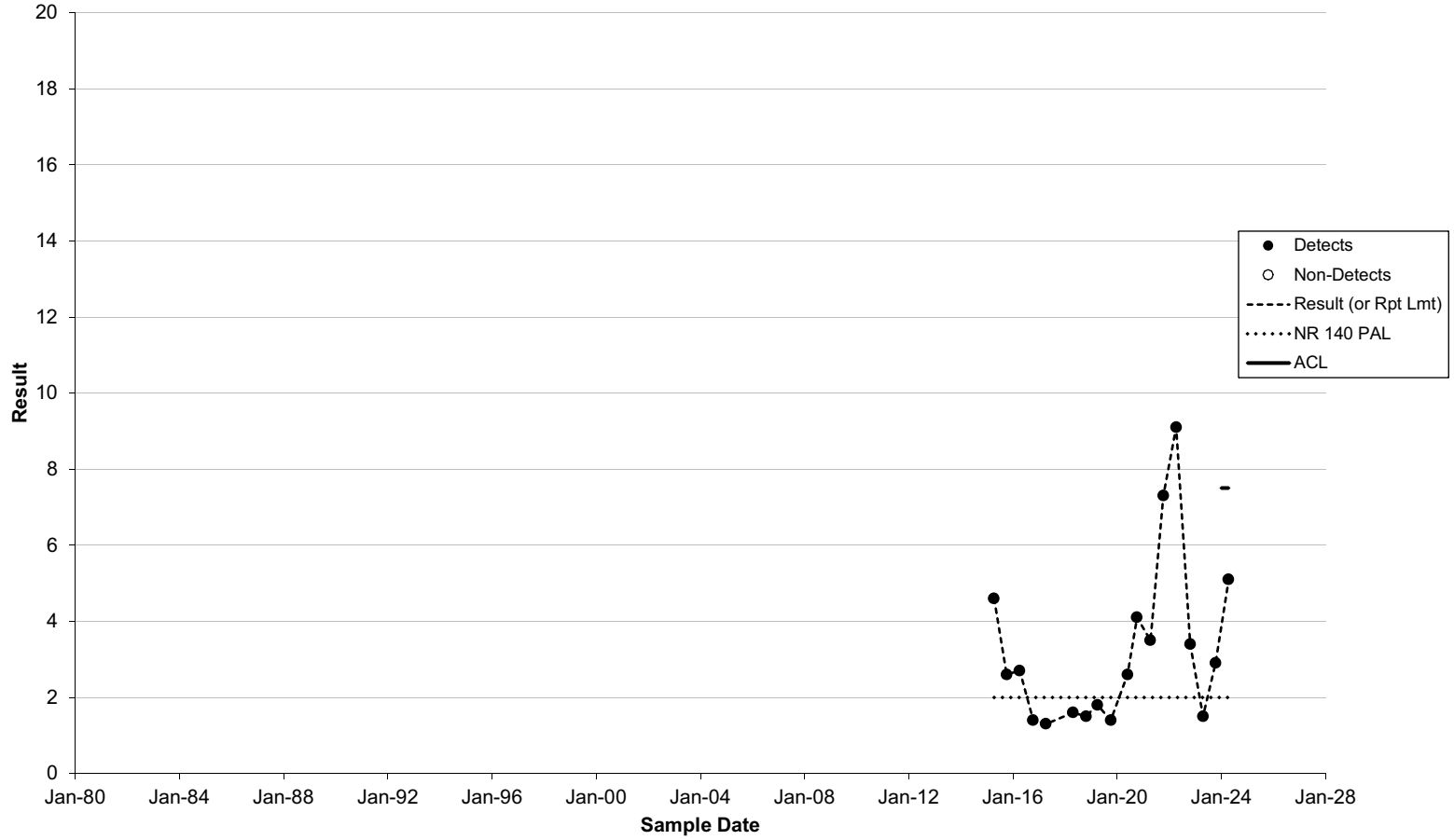
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-91AR - Nitrite + nitrate, total 1 det. (mg/l as N)



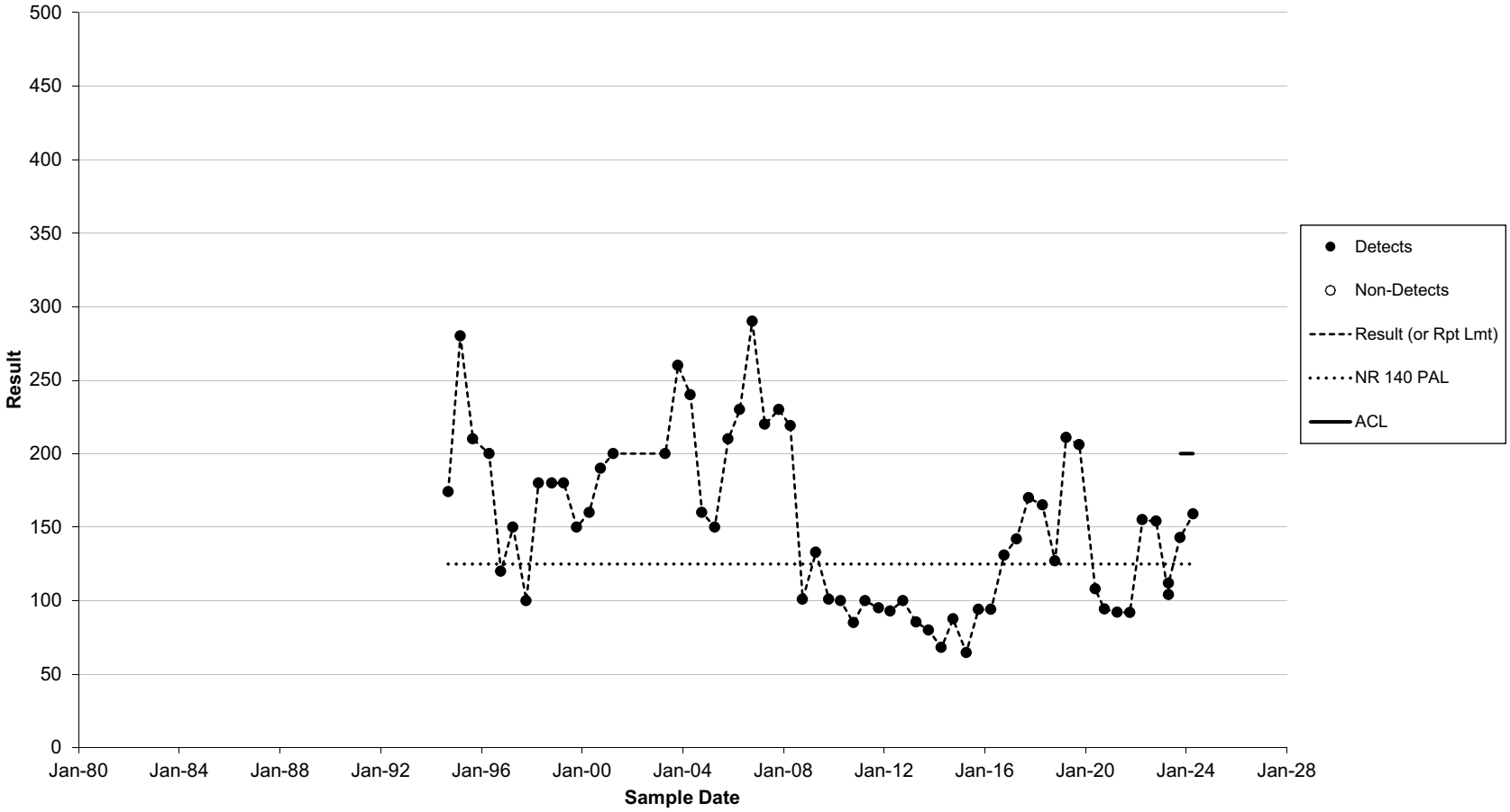
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-91B - Nitrite + nitrate, total 1 det. (mg/l as N)



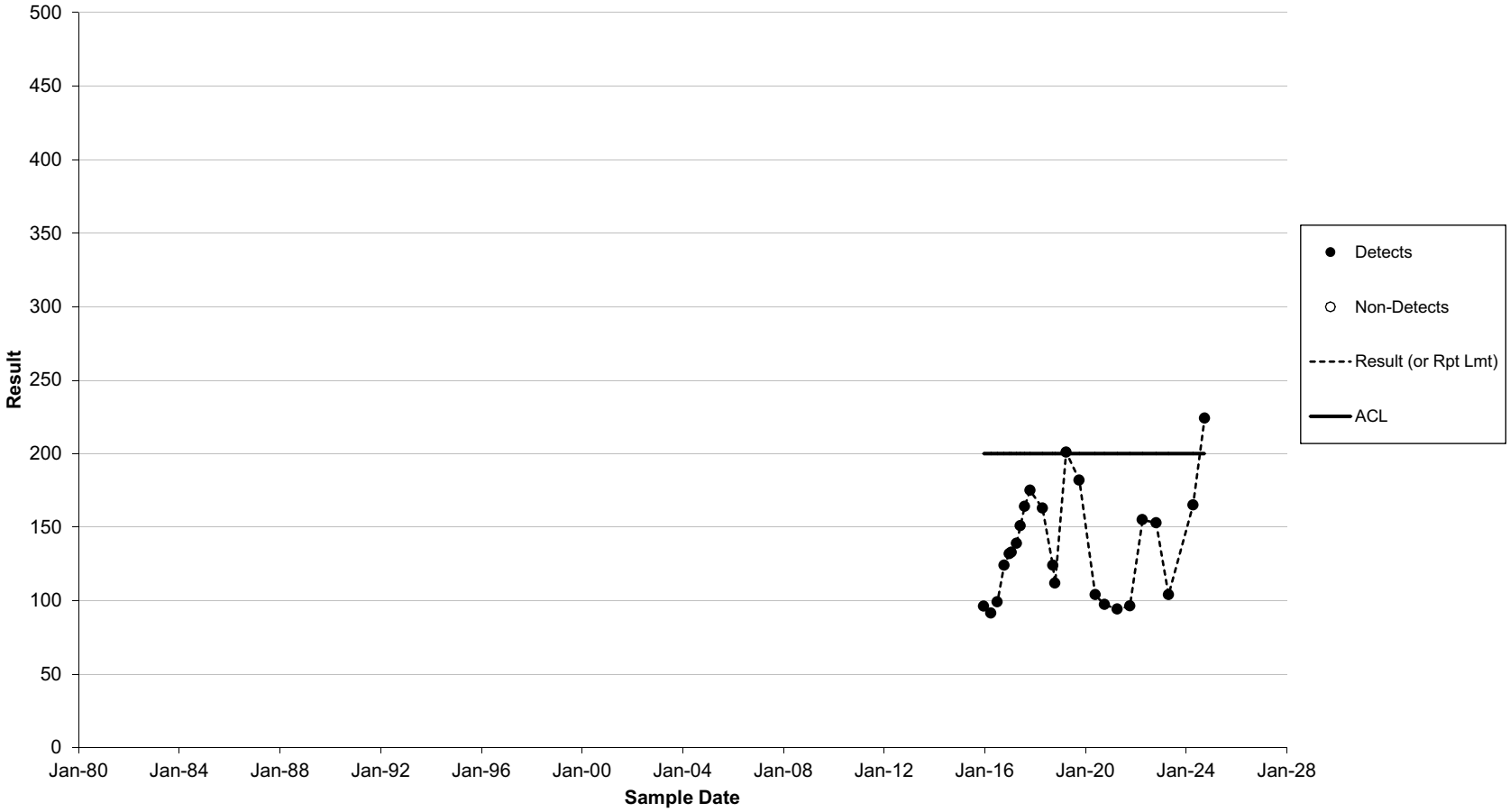
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-92A - Nitrite + nitrate, total 1 det. (mg/l as N)



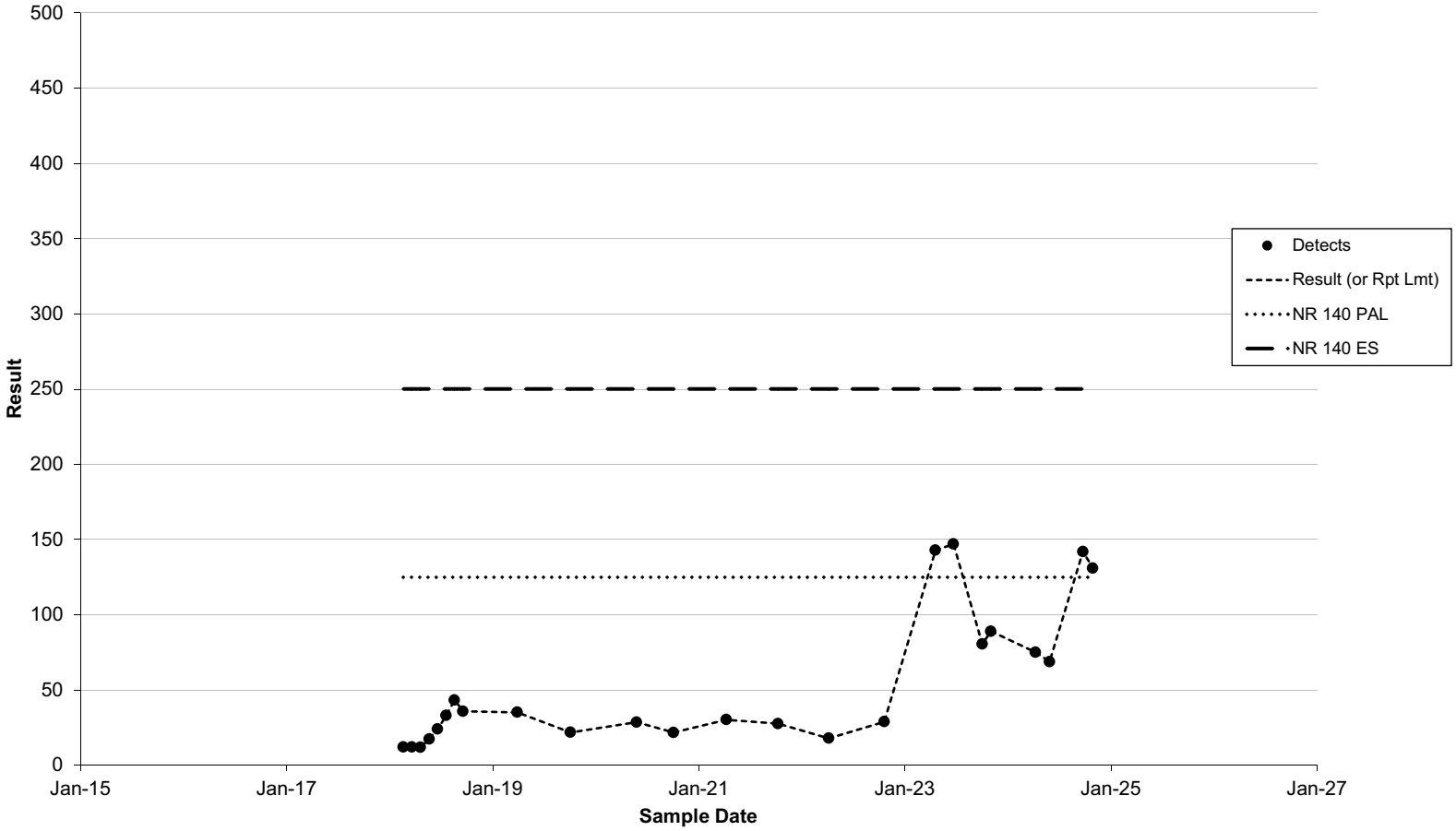
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33AR - Sulfate, dissolved (mg/l as SO4)



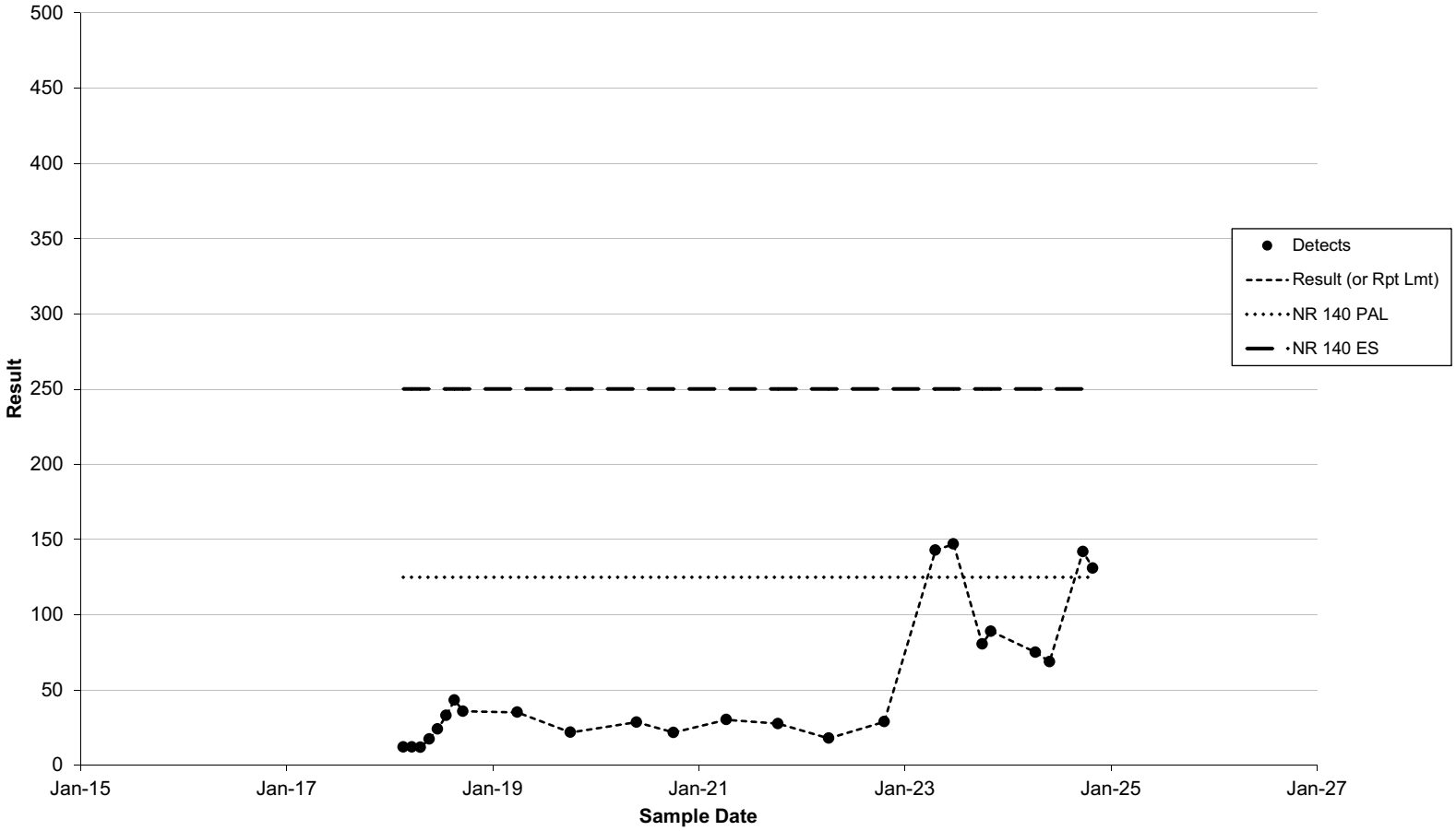
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-33AR - Sulfate, total (mg/l as SO4)



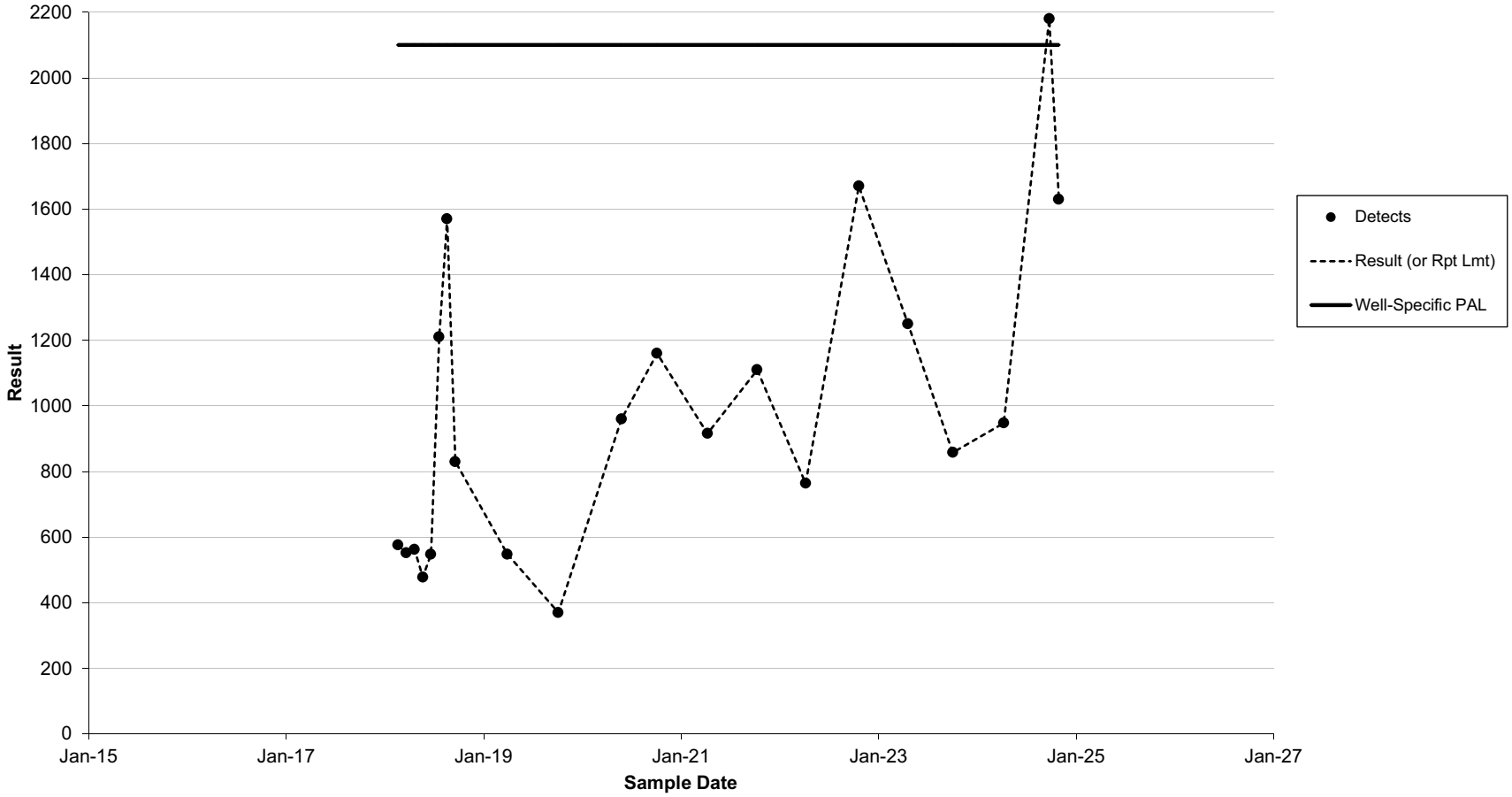
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-309 - Sulfate, total (mg/l as SO4)



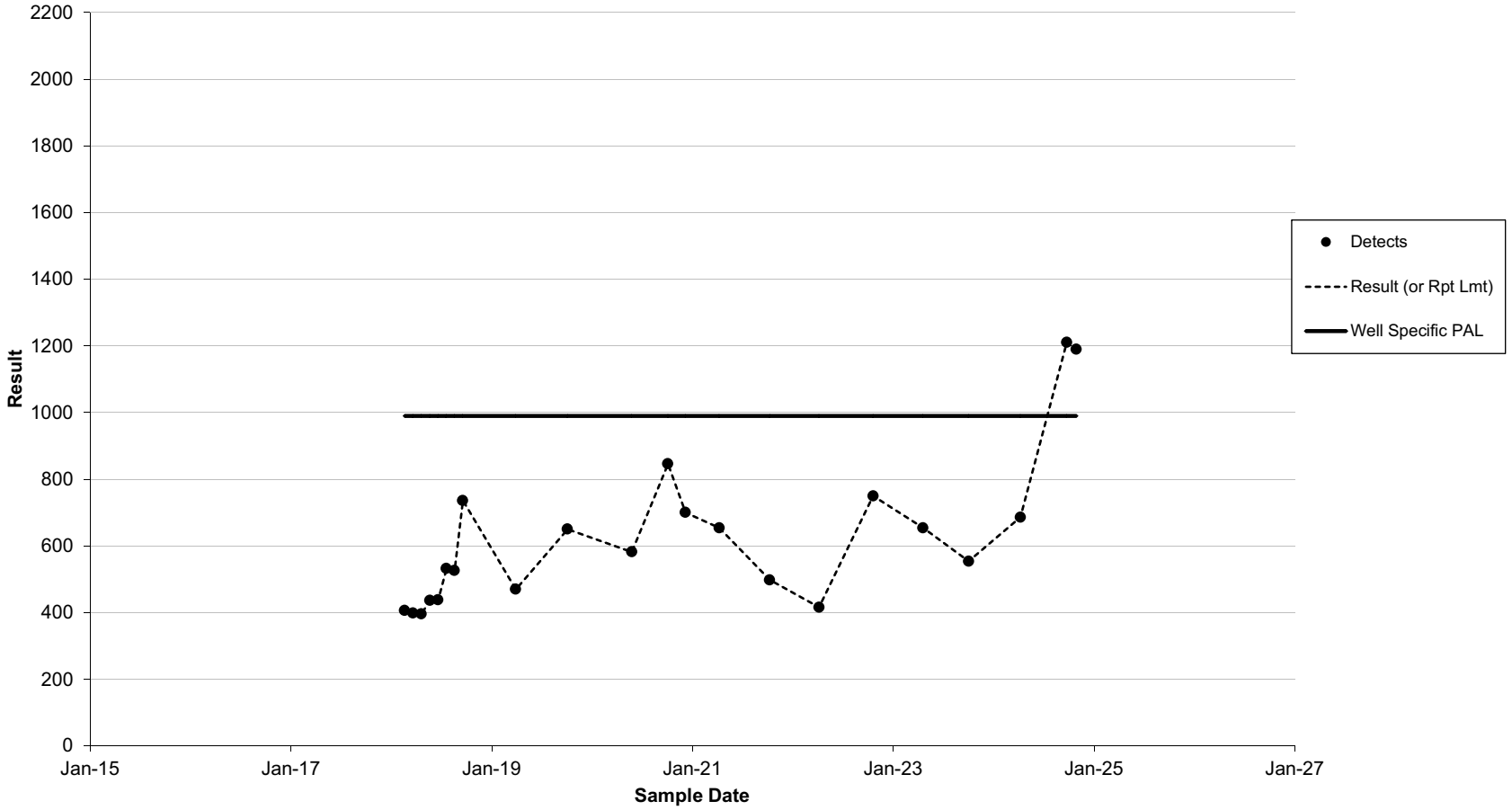
Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-310 - Sulfate, total (mg/l as SO4)



Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-309 - Total Dissolved Solids (mg/L)

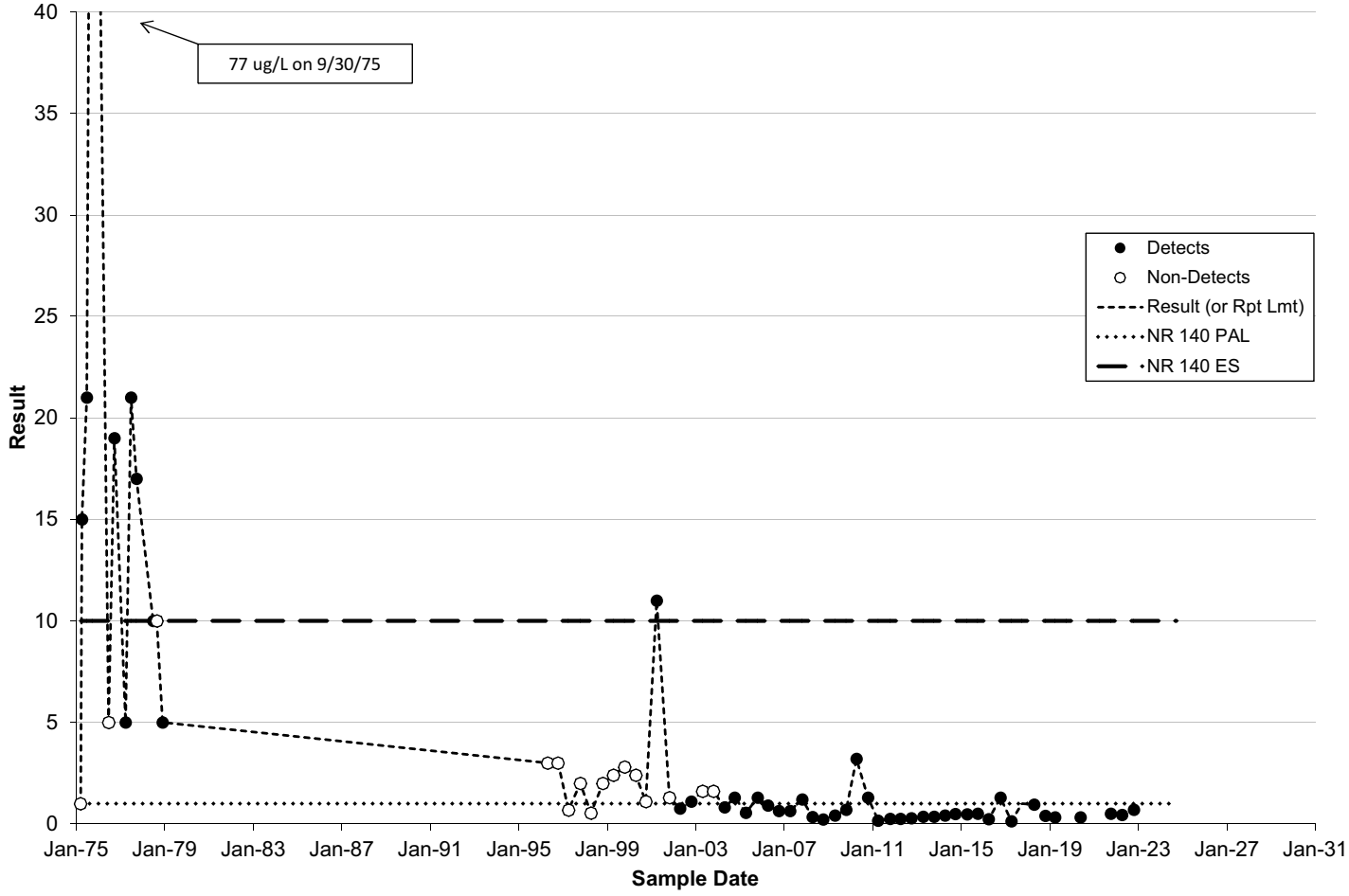


Wisconsin Power & Light Company
Columbia Dry Ash Disposal Facility
MW-310 - Total Dissolved Solids (mg/L)

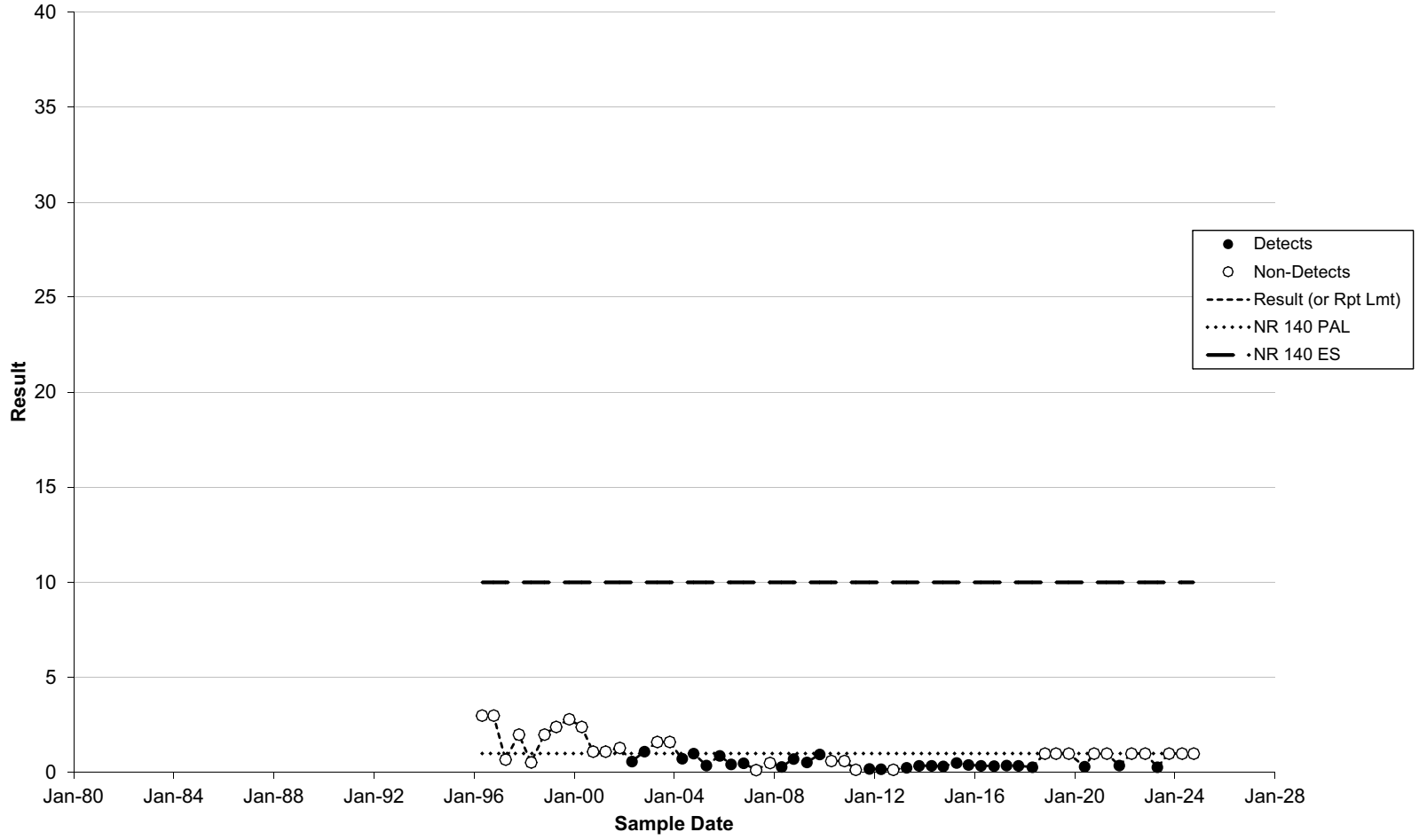


E2 – Historical Data Graphs – Ash Ponds Facility Wells

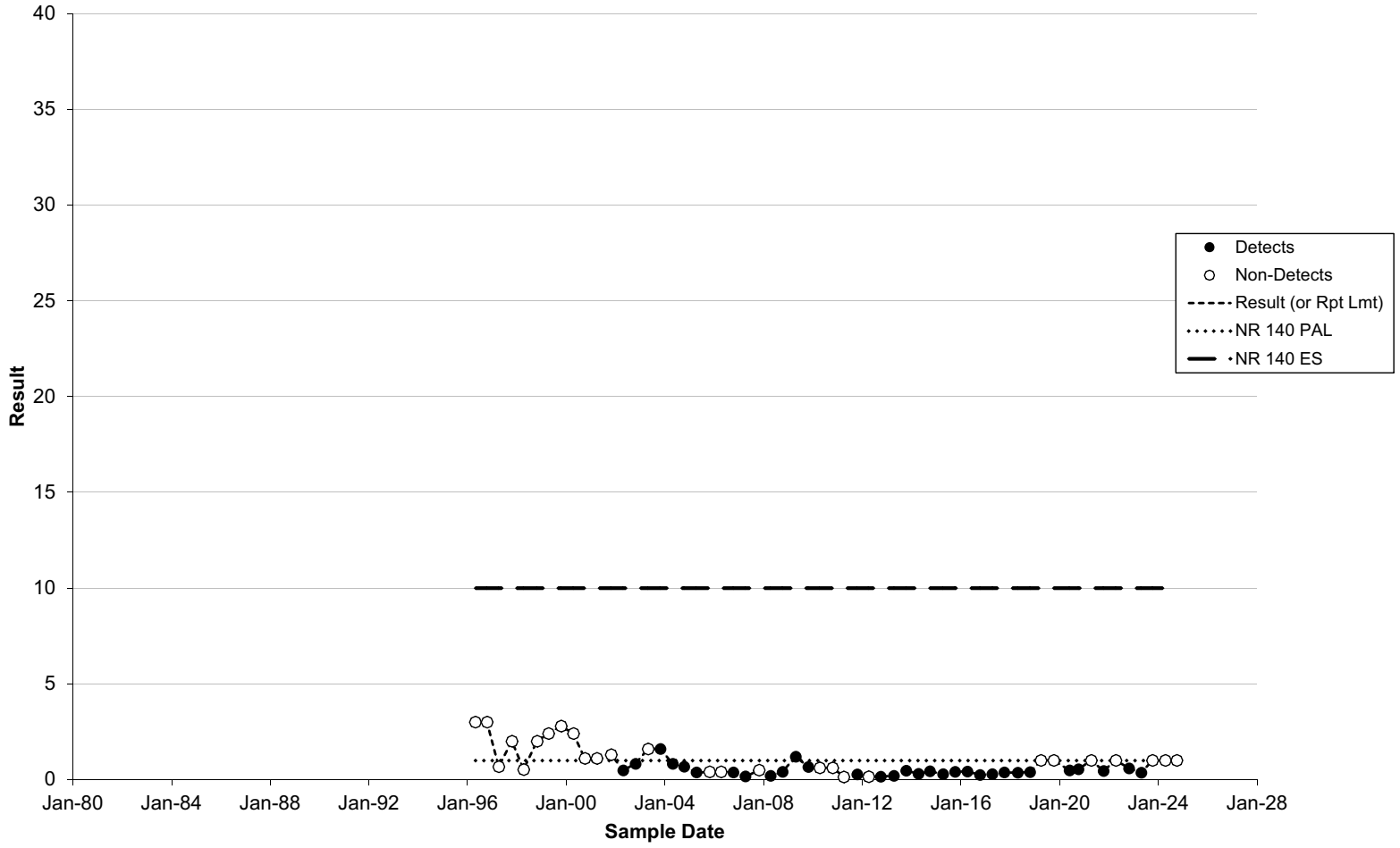
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
M-4R Arsenic (ug/l as As)



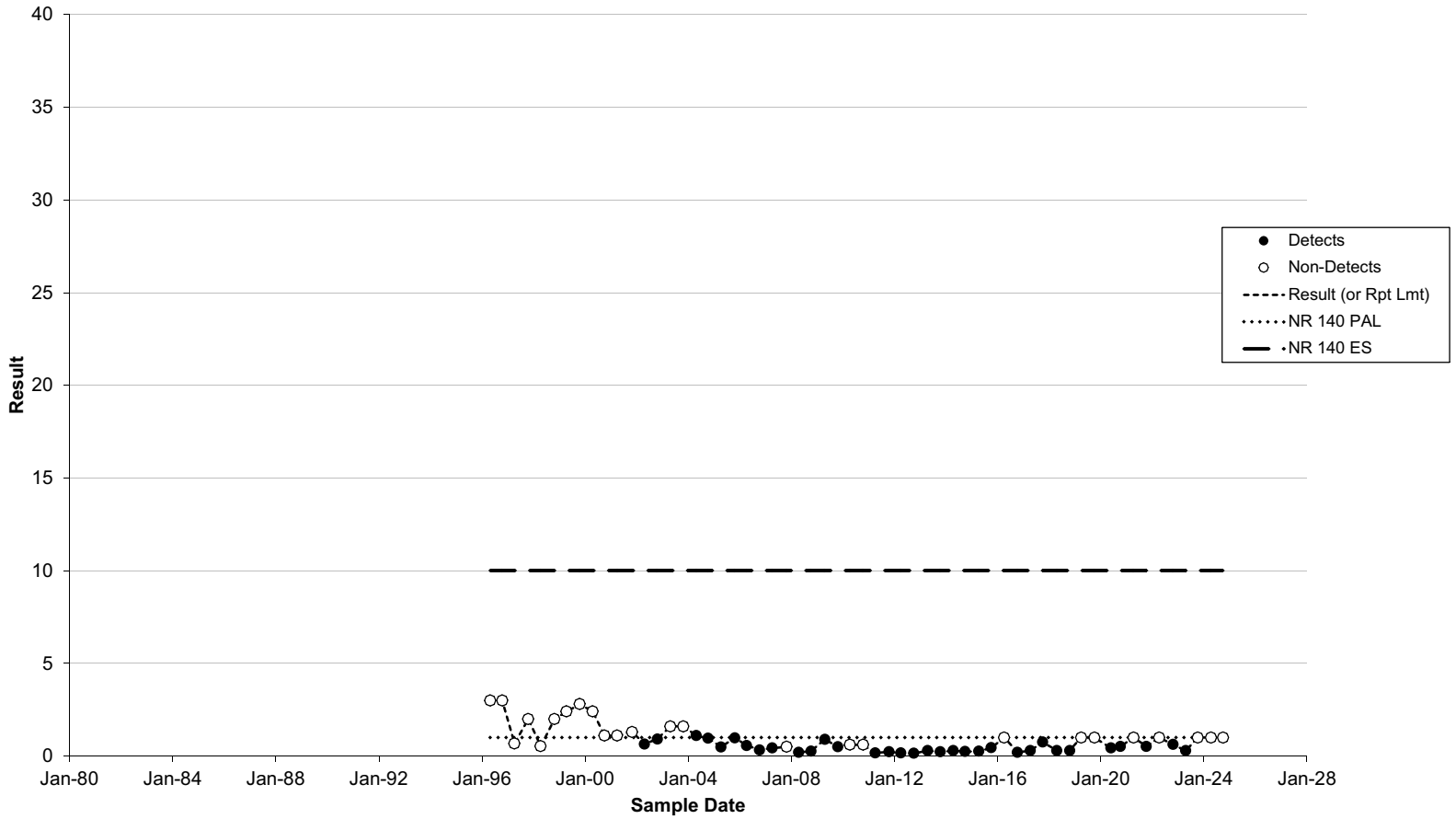
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-39A - Arsenic, dissolved (ug/l As)



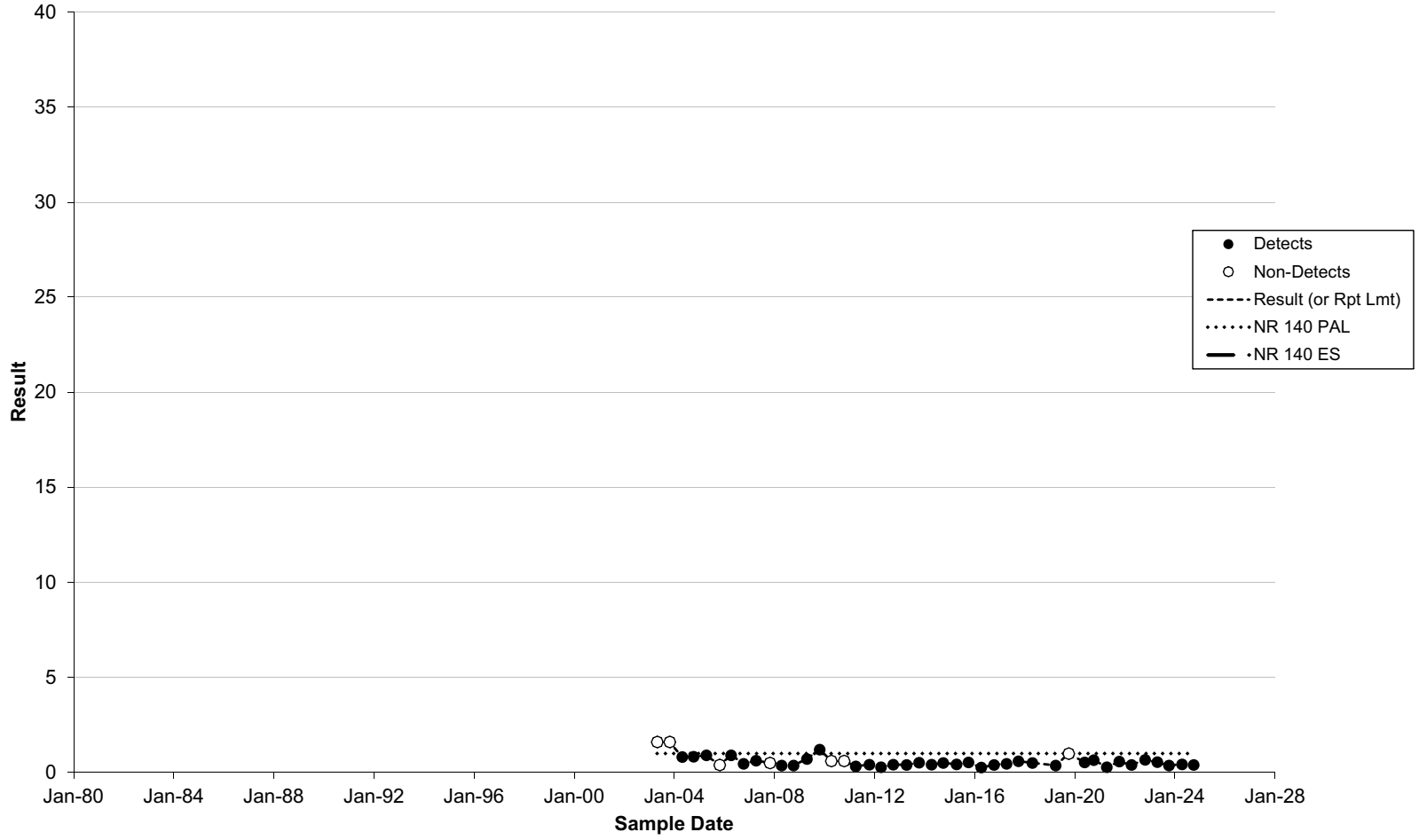
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-48A - Arsenic, dissolved (ug/l As)



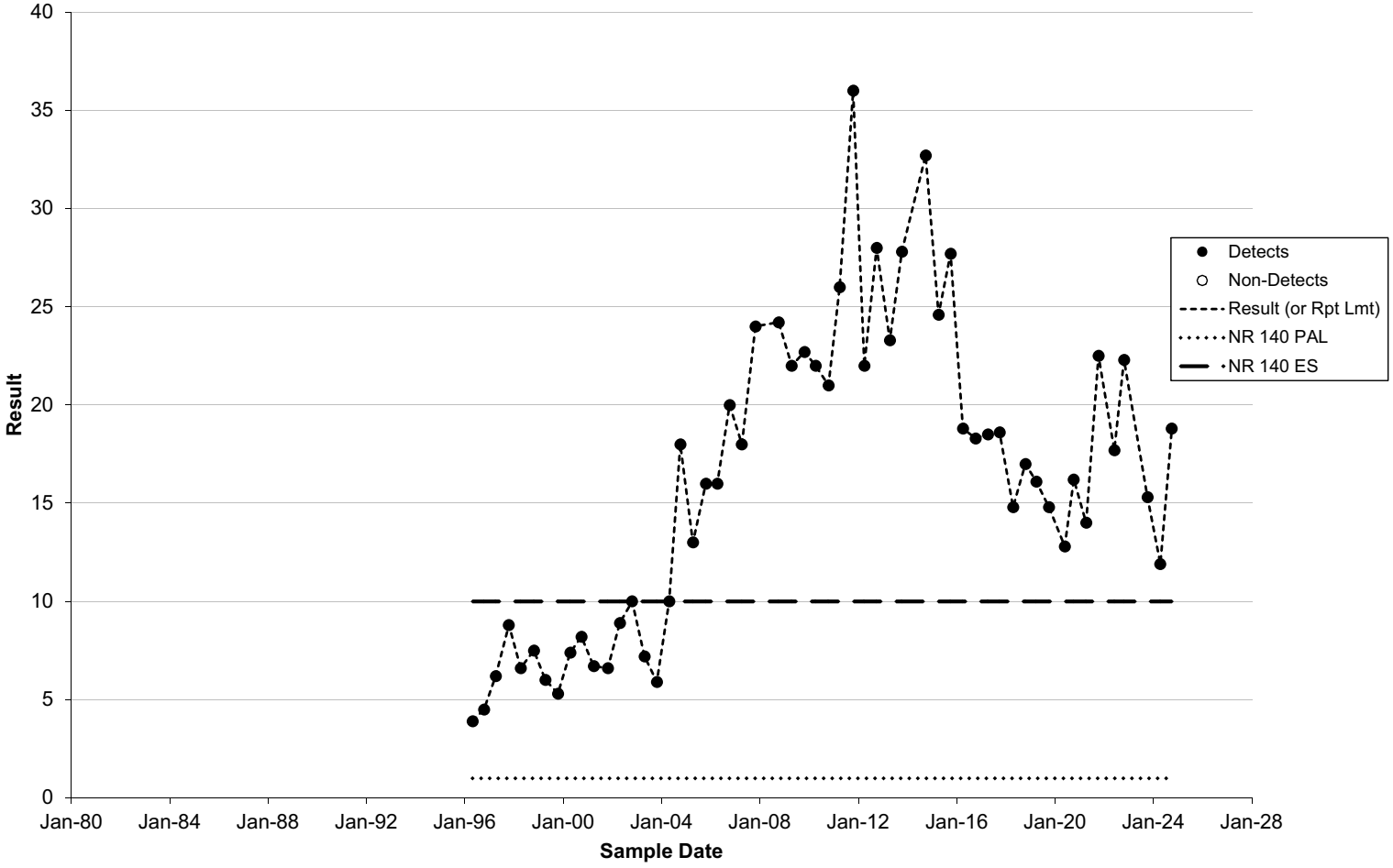
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-48B - Arsenic, dissolved (ug/l As)



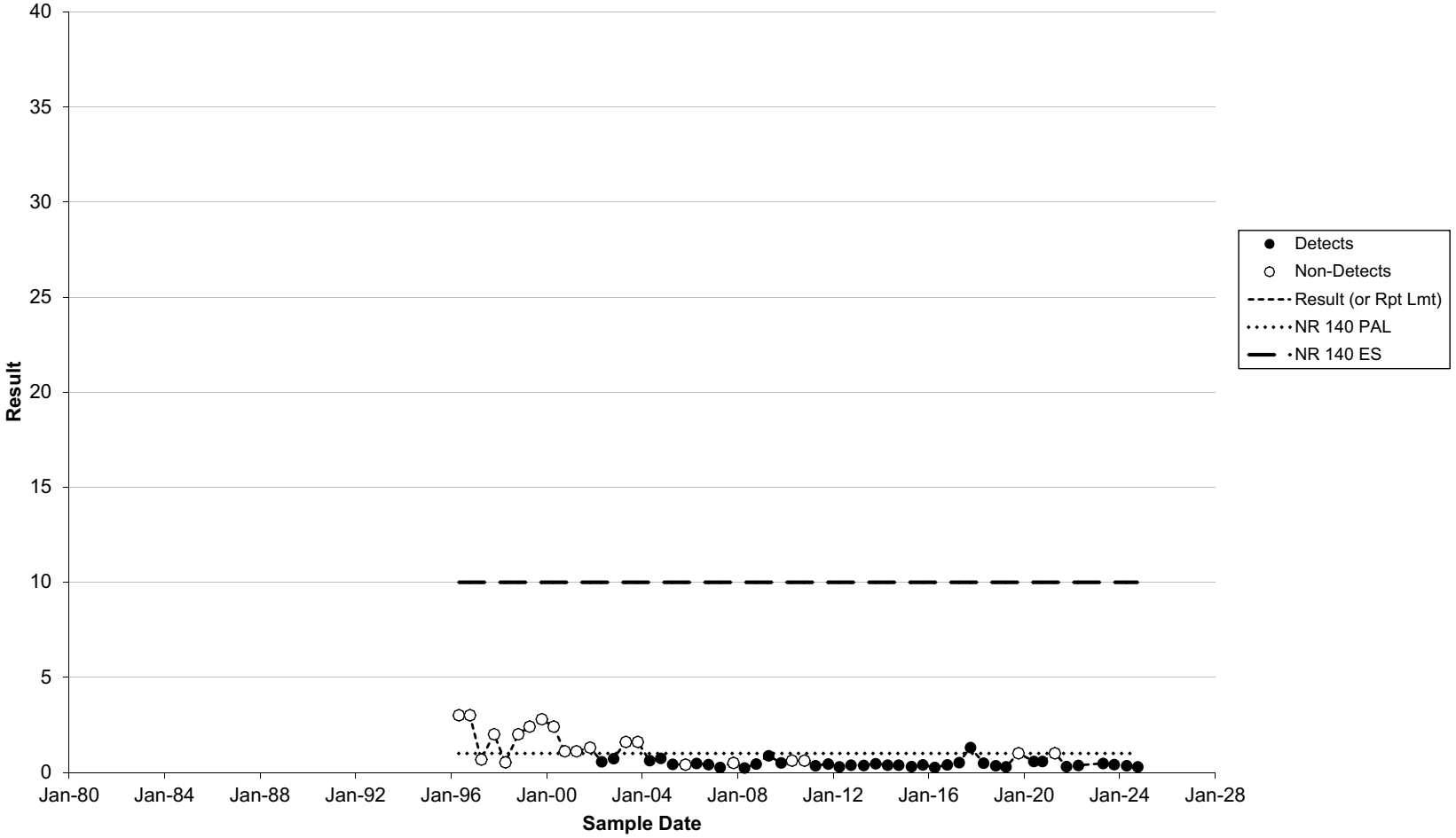
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-216R - Arsenic, dissolved (ug/l As)



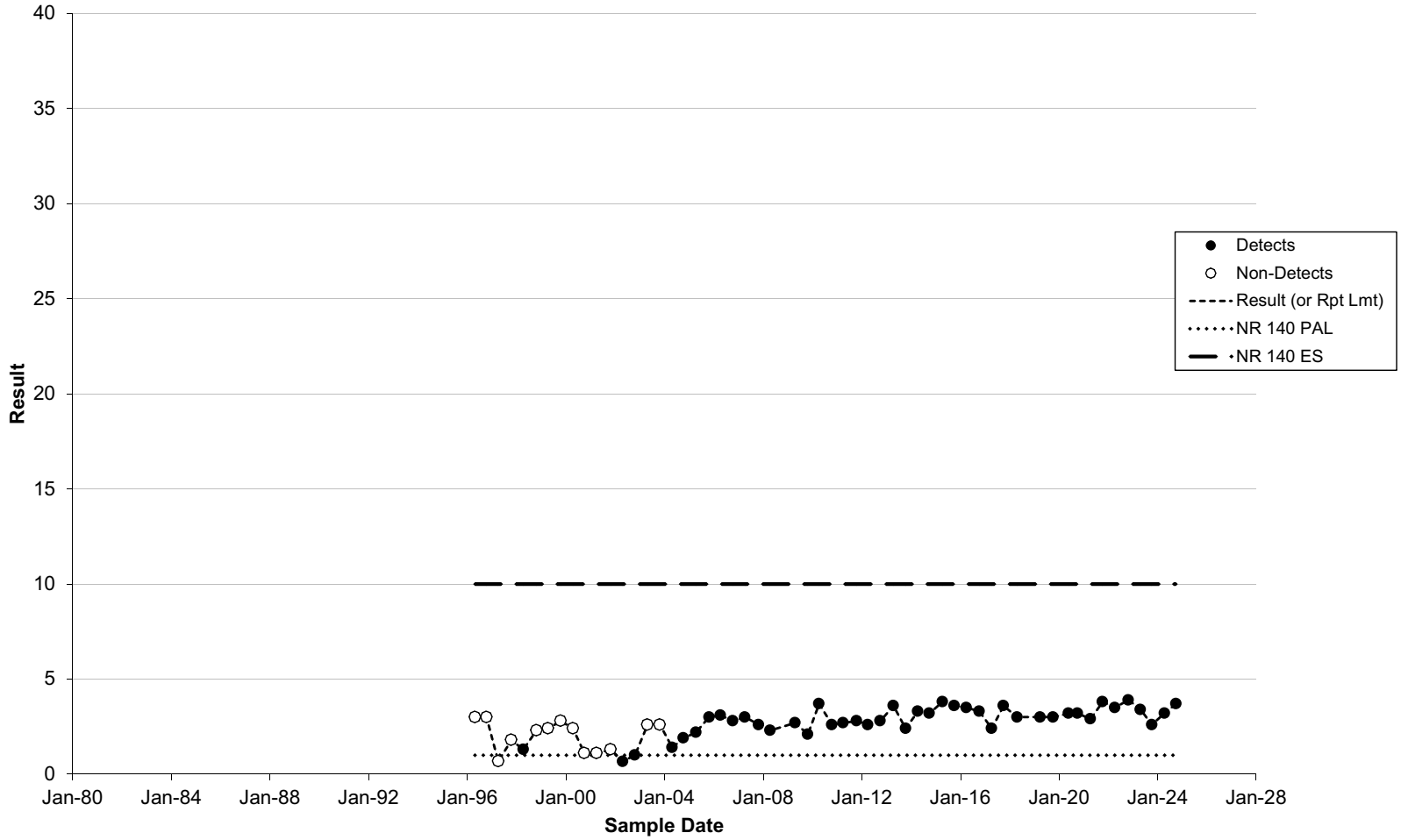
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-57 - Arsenic, dissolved (ug/l As)



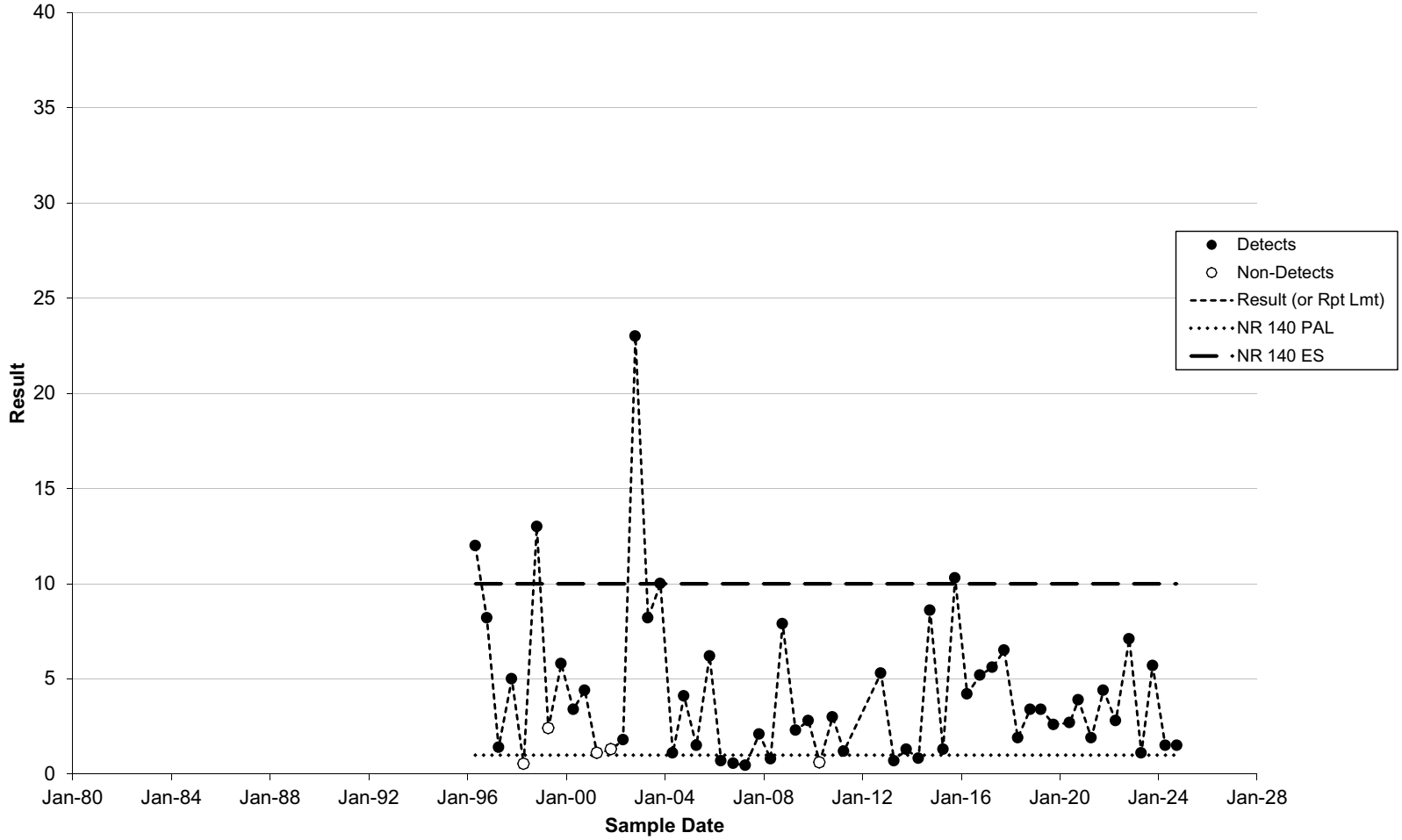
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-59 (W-2) - Arsenic, dissolved (ug/l As)



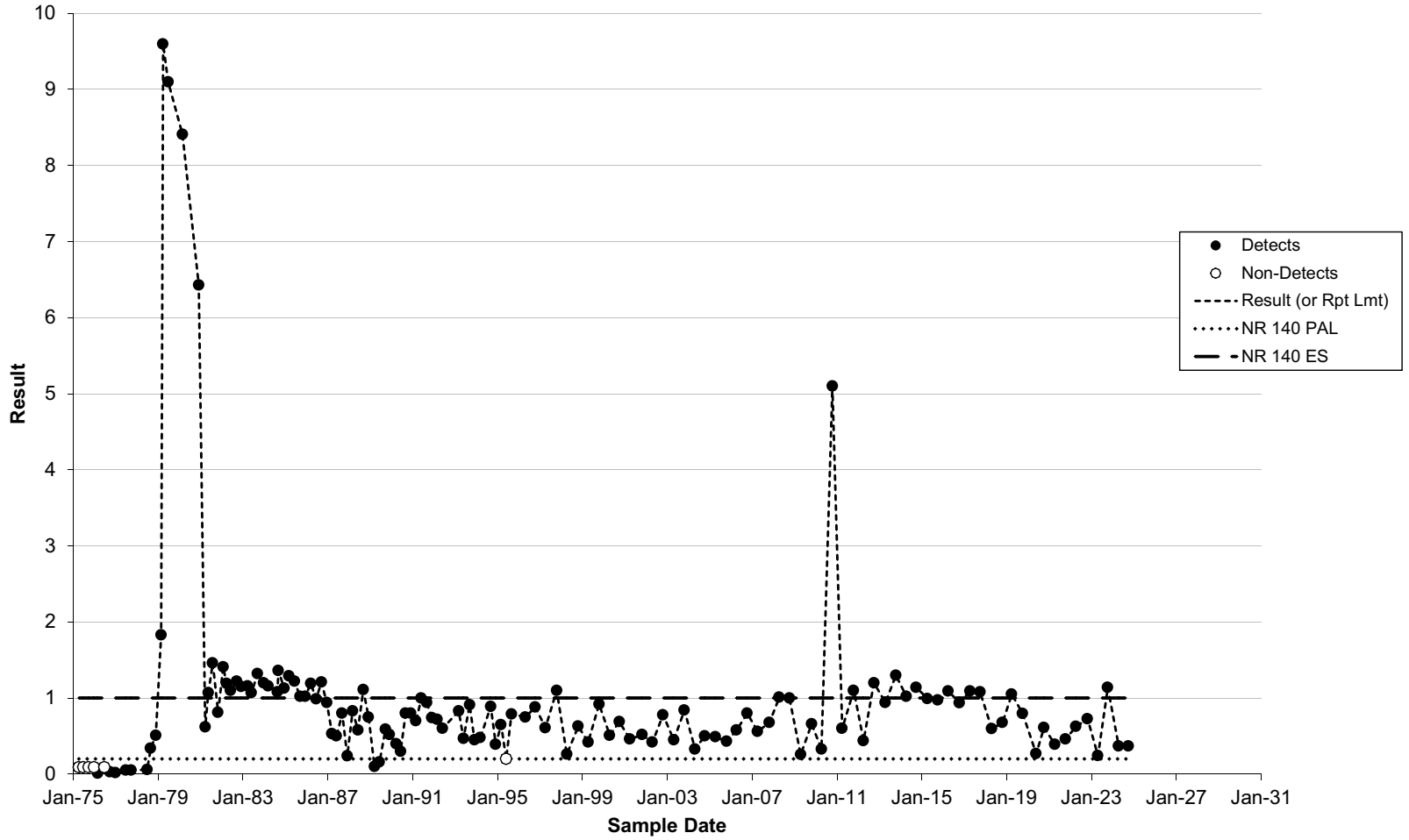
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-217 - Arsenic, dissolved (ug/l As)



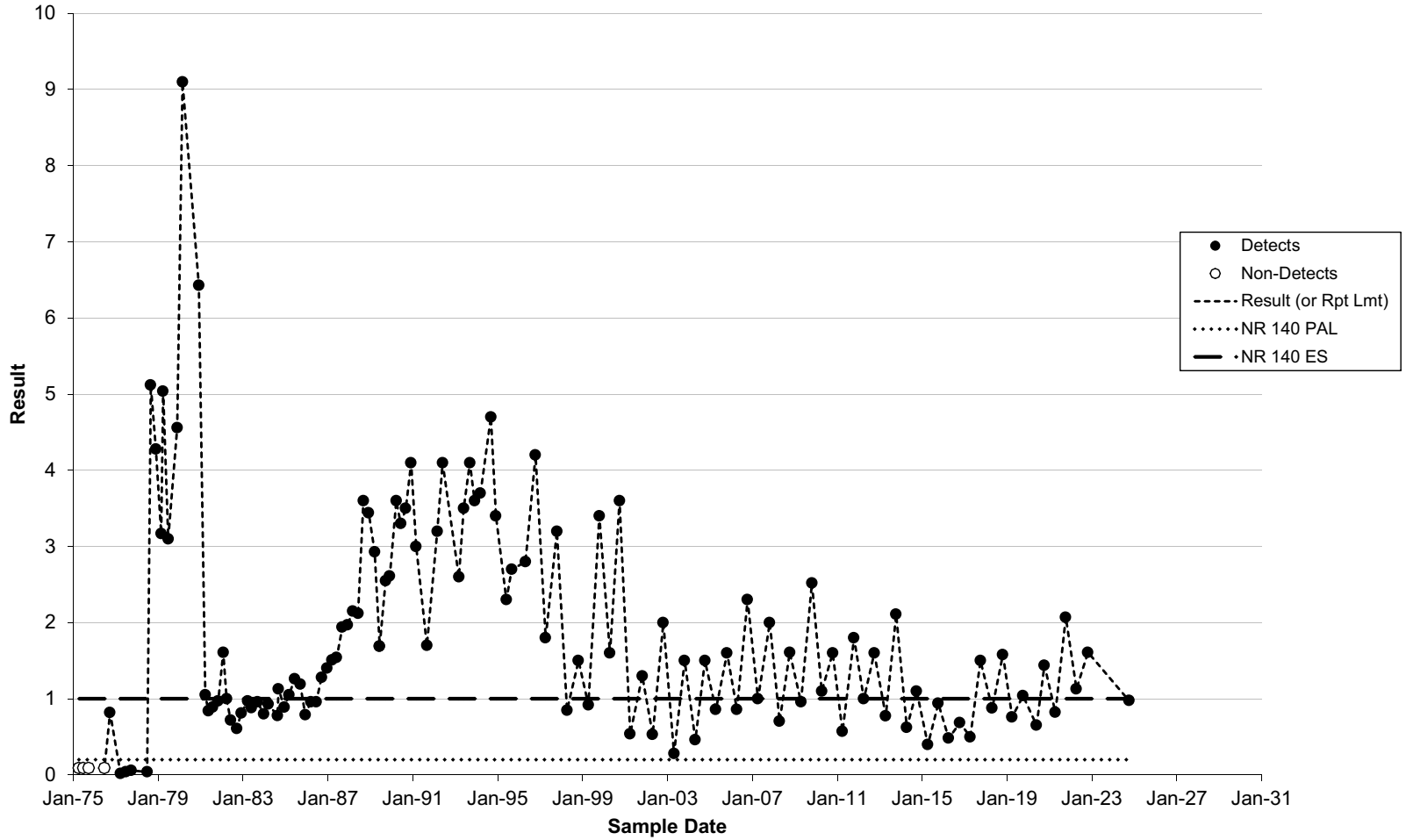
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-220R/220RR - Arsenic, dissolved (ug/l As)



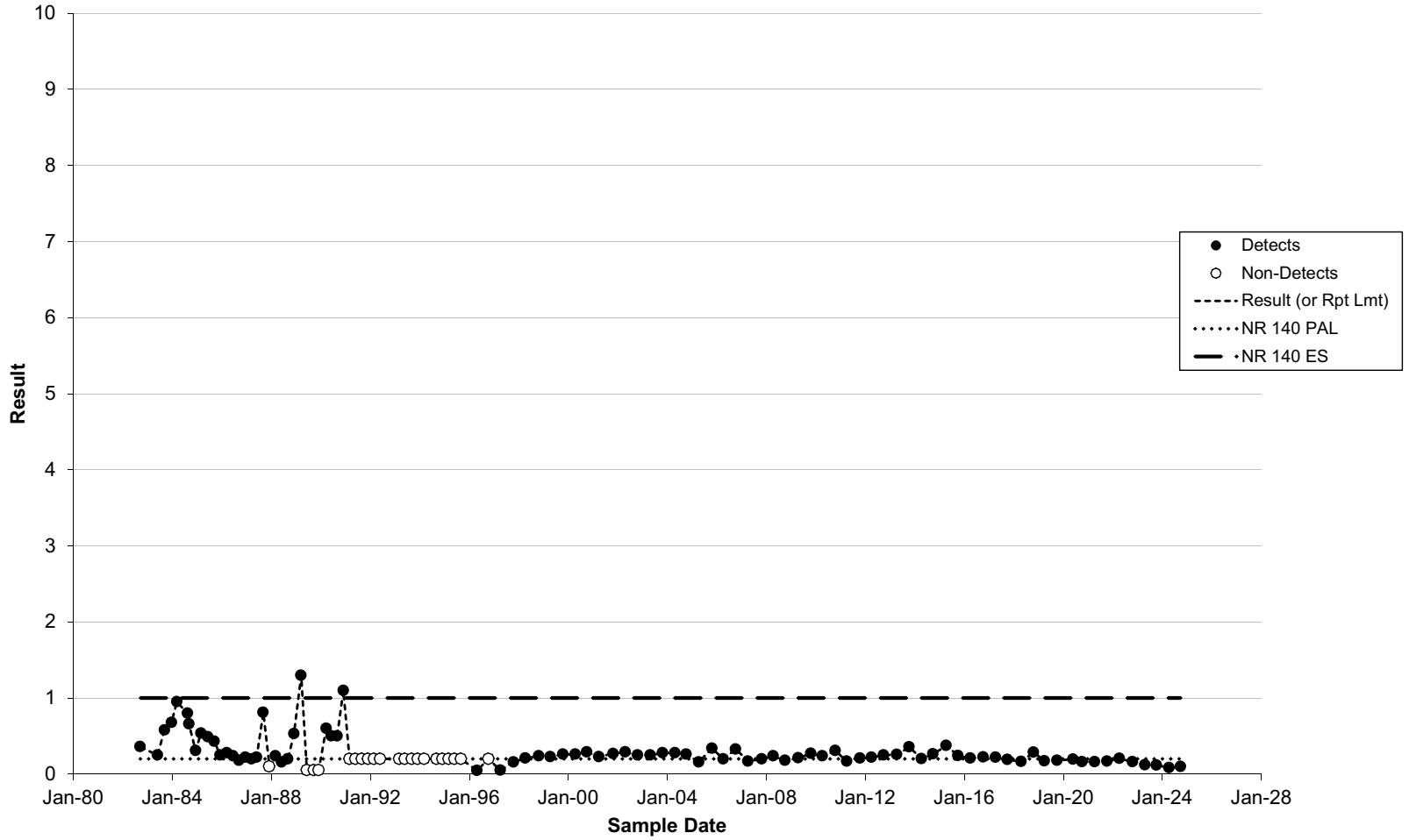
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
M-3 - Boron (mg/l as B)



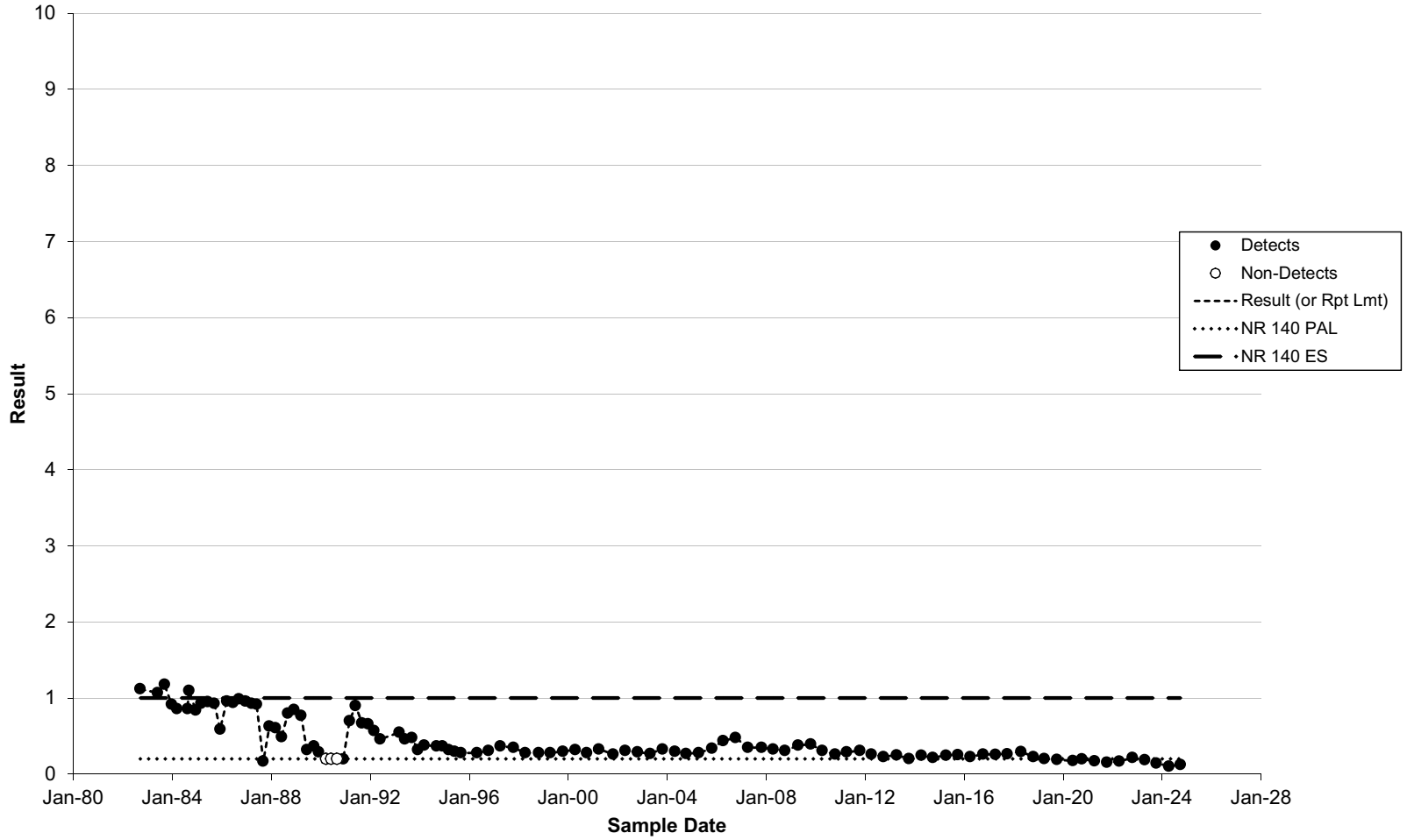
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
M-4/M-4R - Boron (mg/l as B)



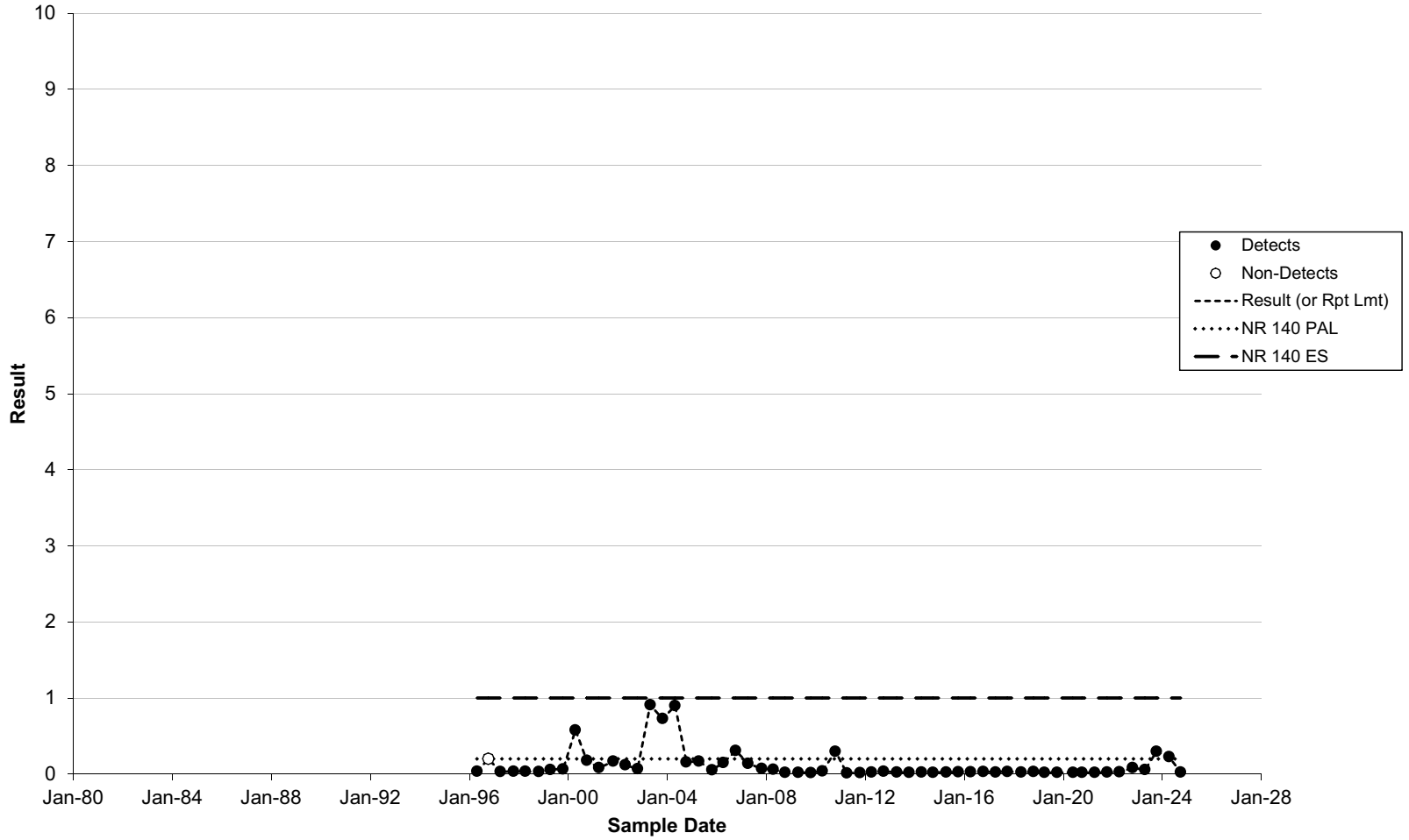
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-39A - Boron (mg/l as B)



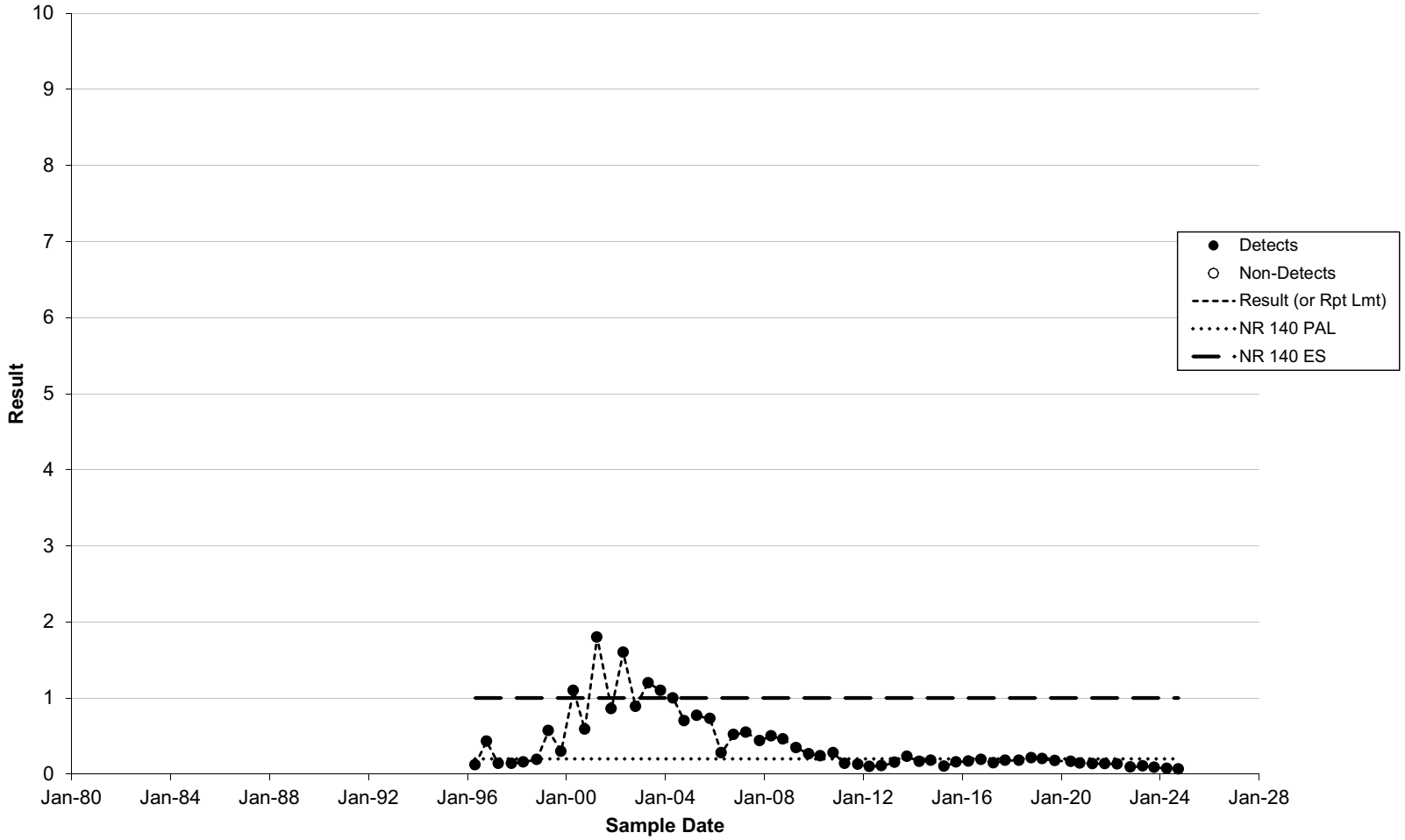
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-39B - Boron (mg/l as B)



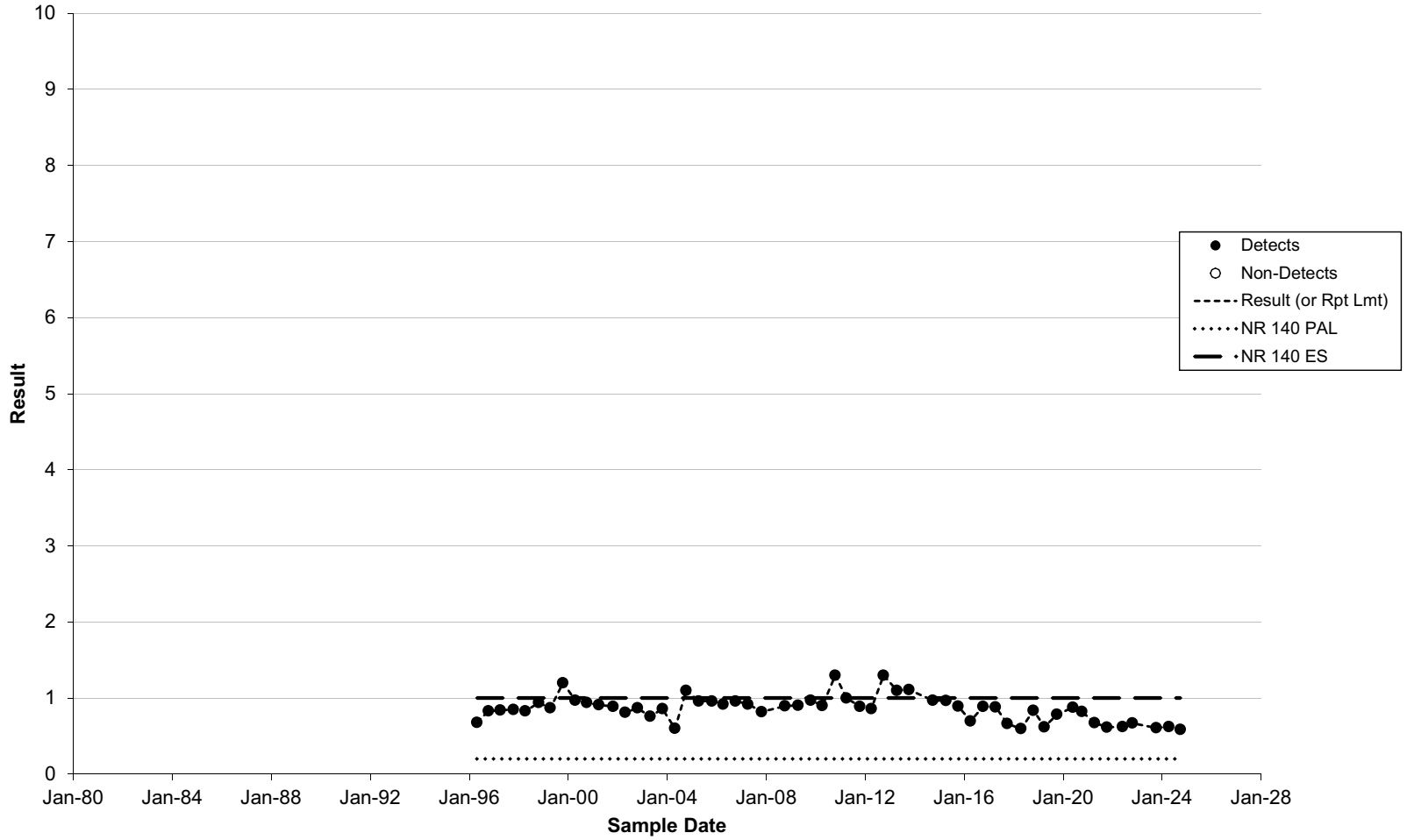
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-48A - Boron, dissolved (mg/l as B)



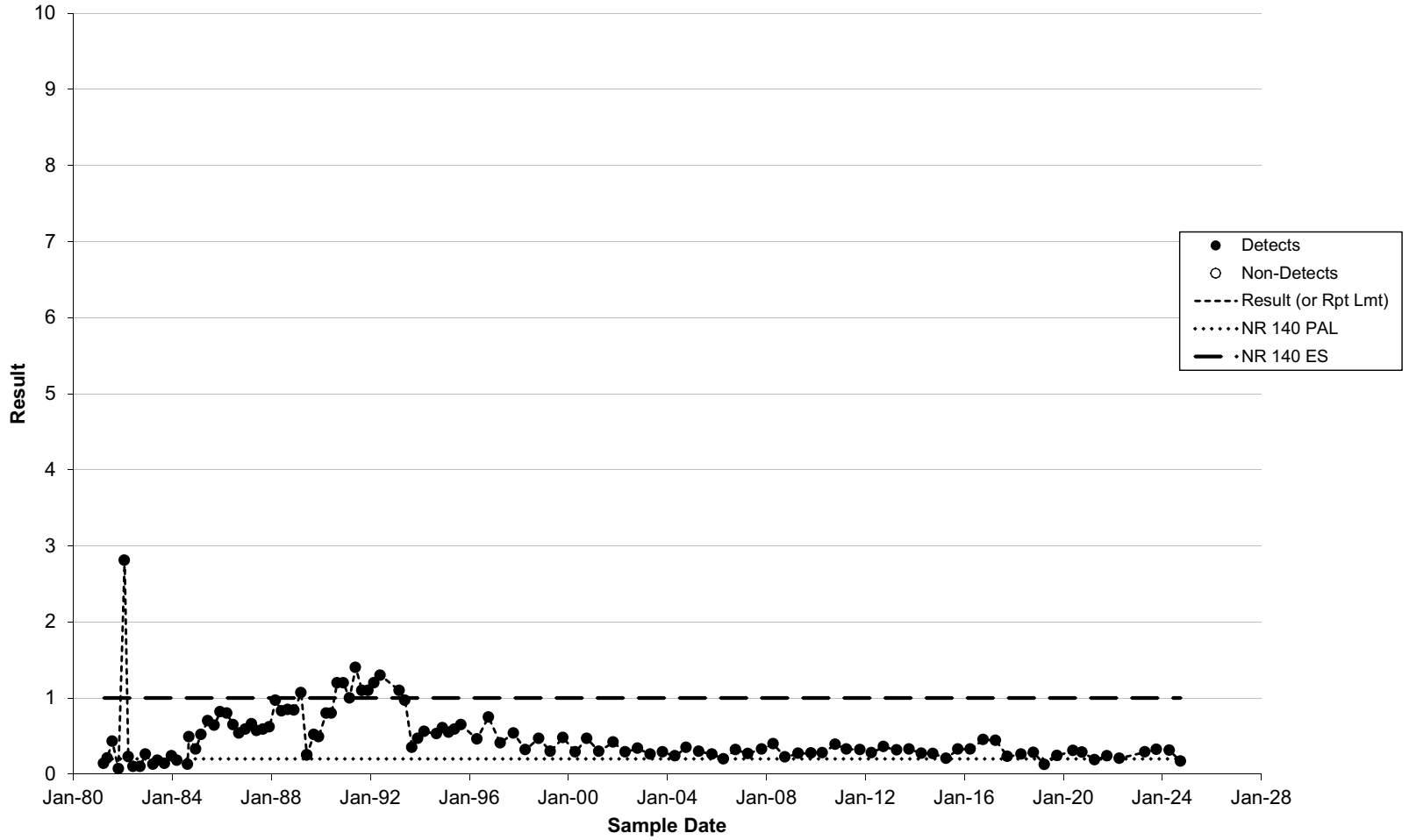
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-48B - Boron, dissolved (mg/l as B)



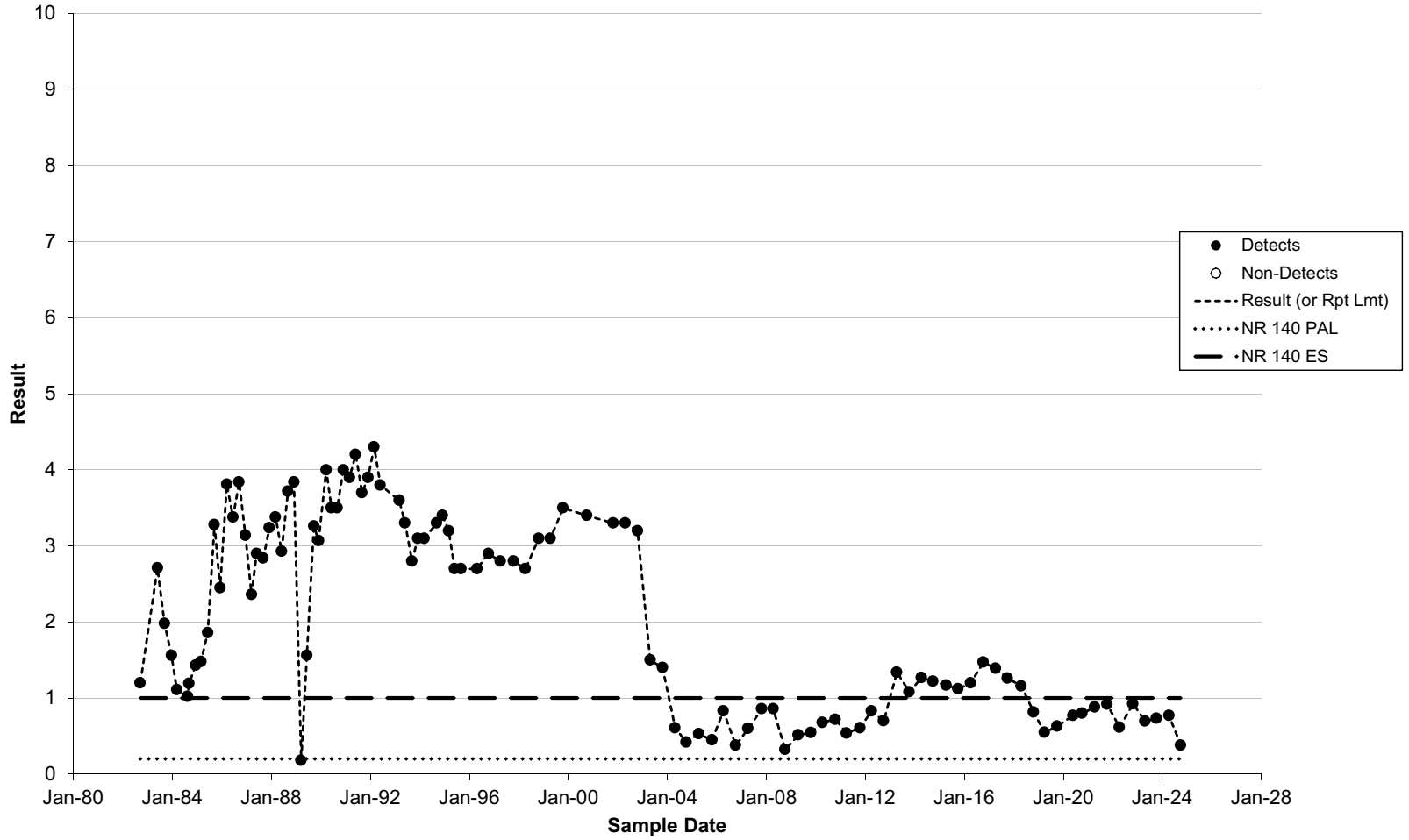
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-57 - Boron, dissolved (mg/l as B)



Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-59 - Boron (mg/l as B)

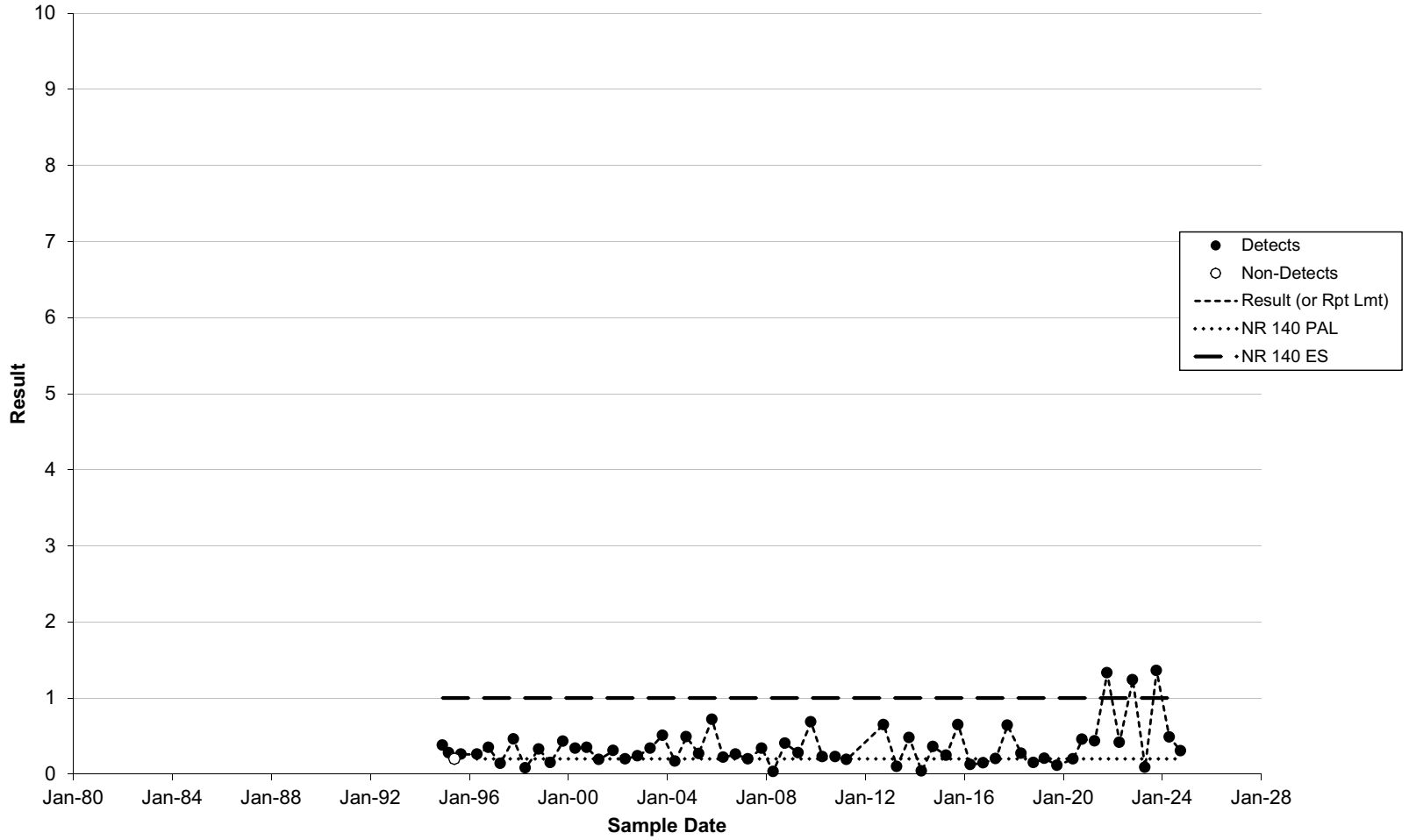


Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-216R - Boron (mg/l as B)

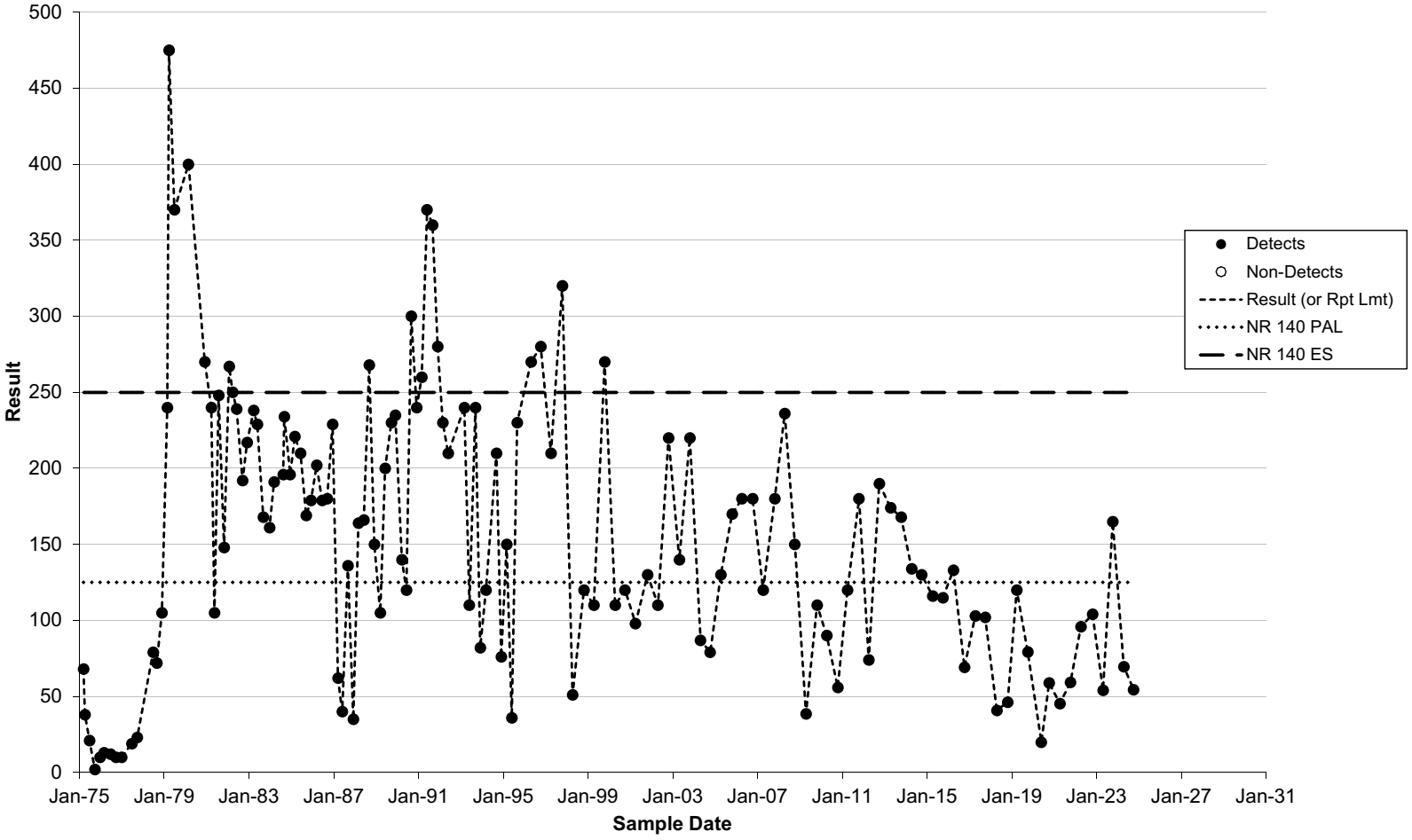


Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
W-217 - Boron (mg/l as B)

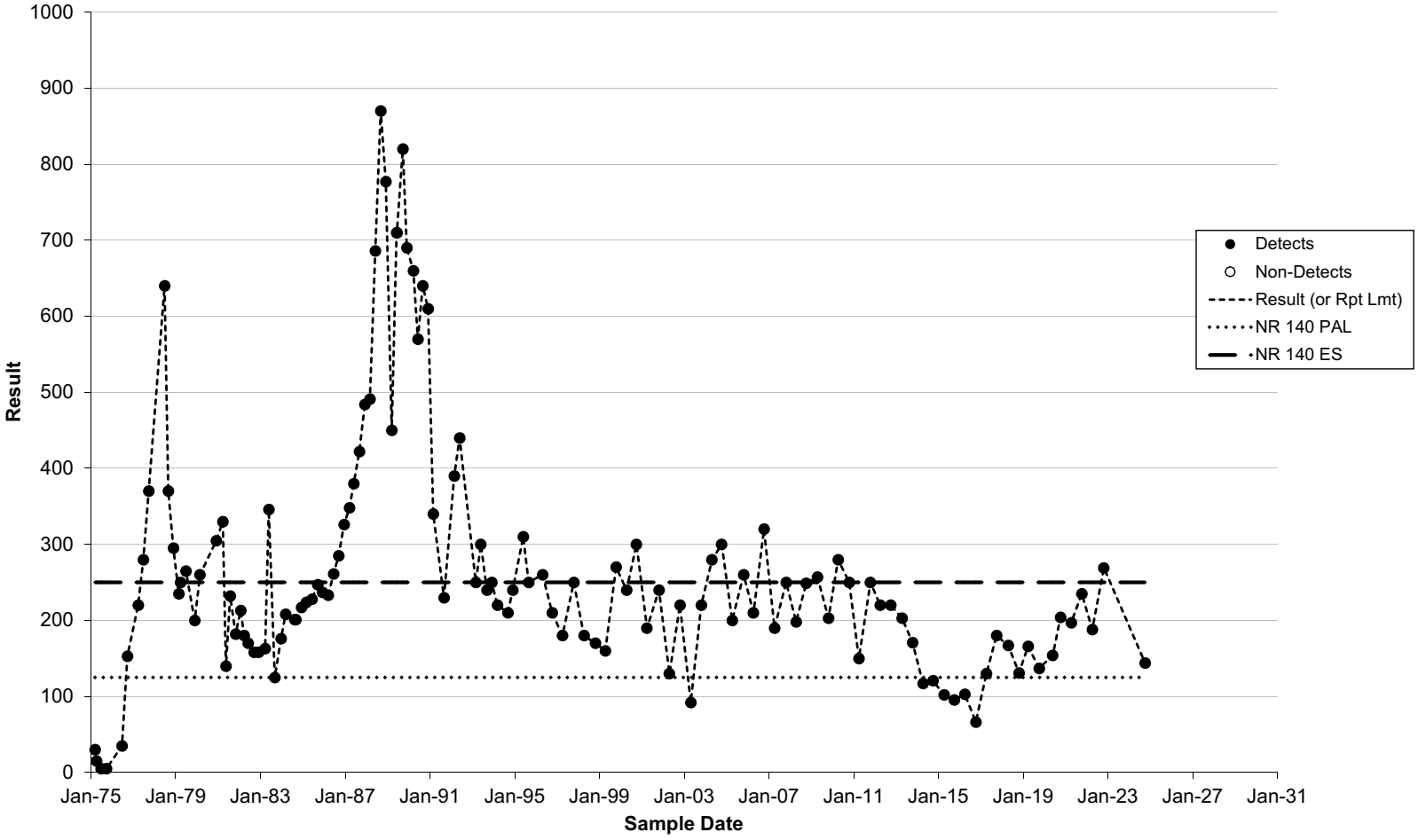
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-220R/MW-220RR - Boron, dissolved (mg/l as B)



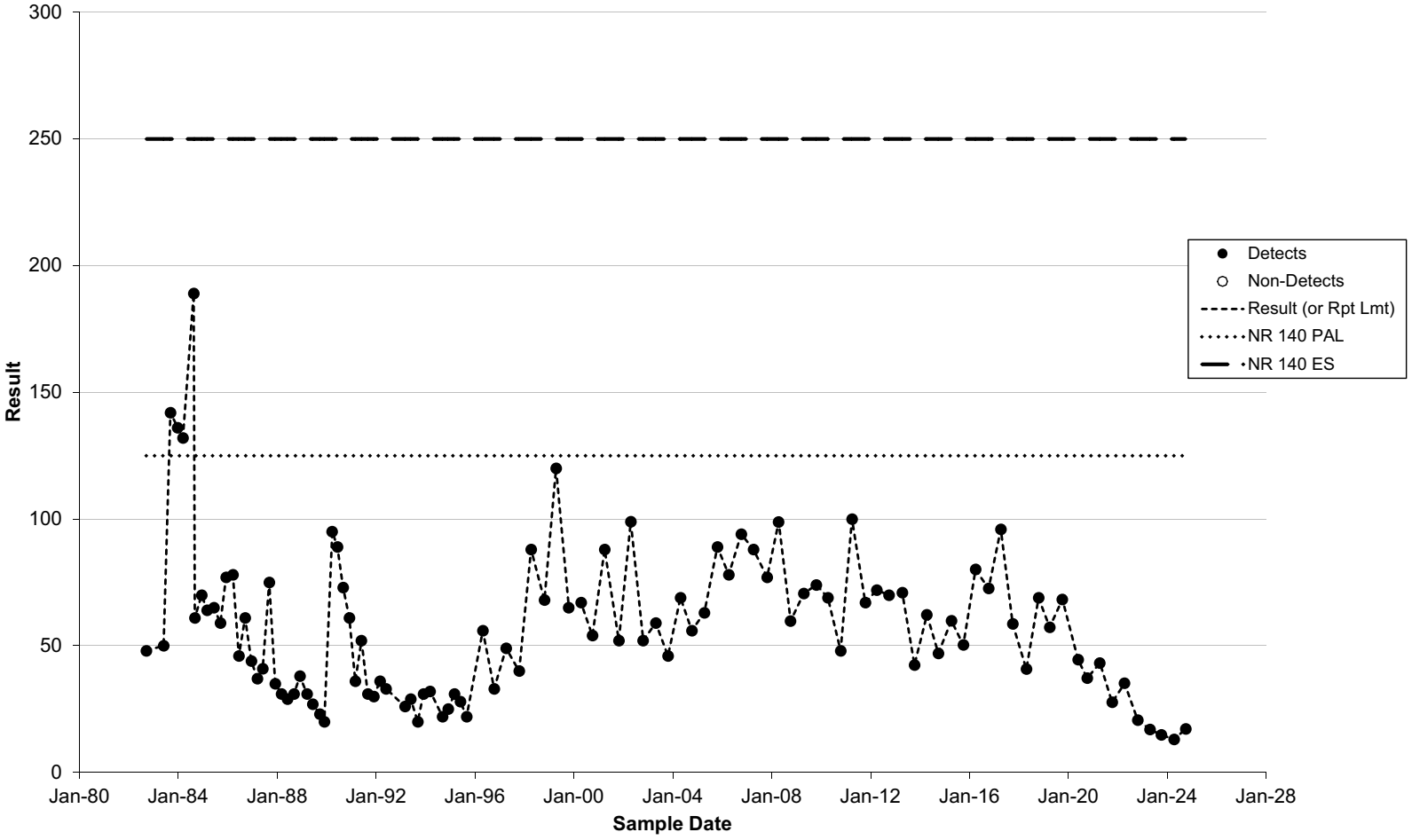
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
M-3 - Sulfate (mg/L as SO4)



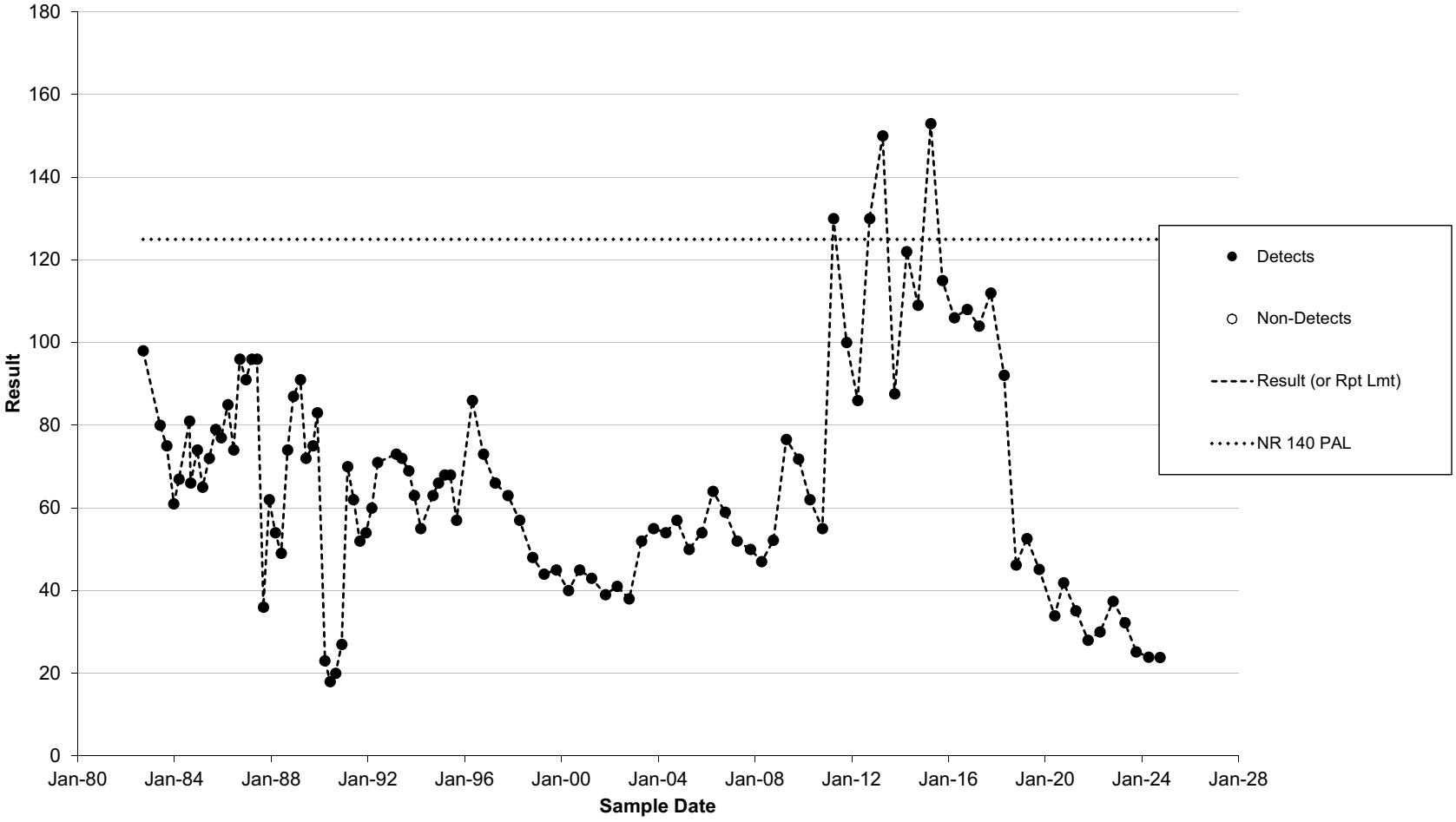
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
M-4R - Sulfate (mg/L as SO4)



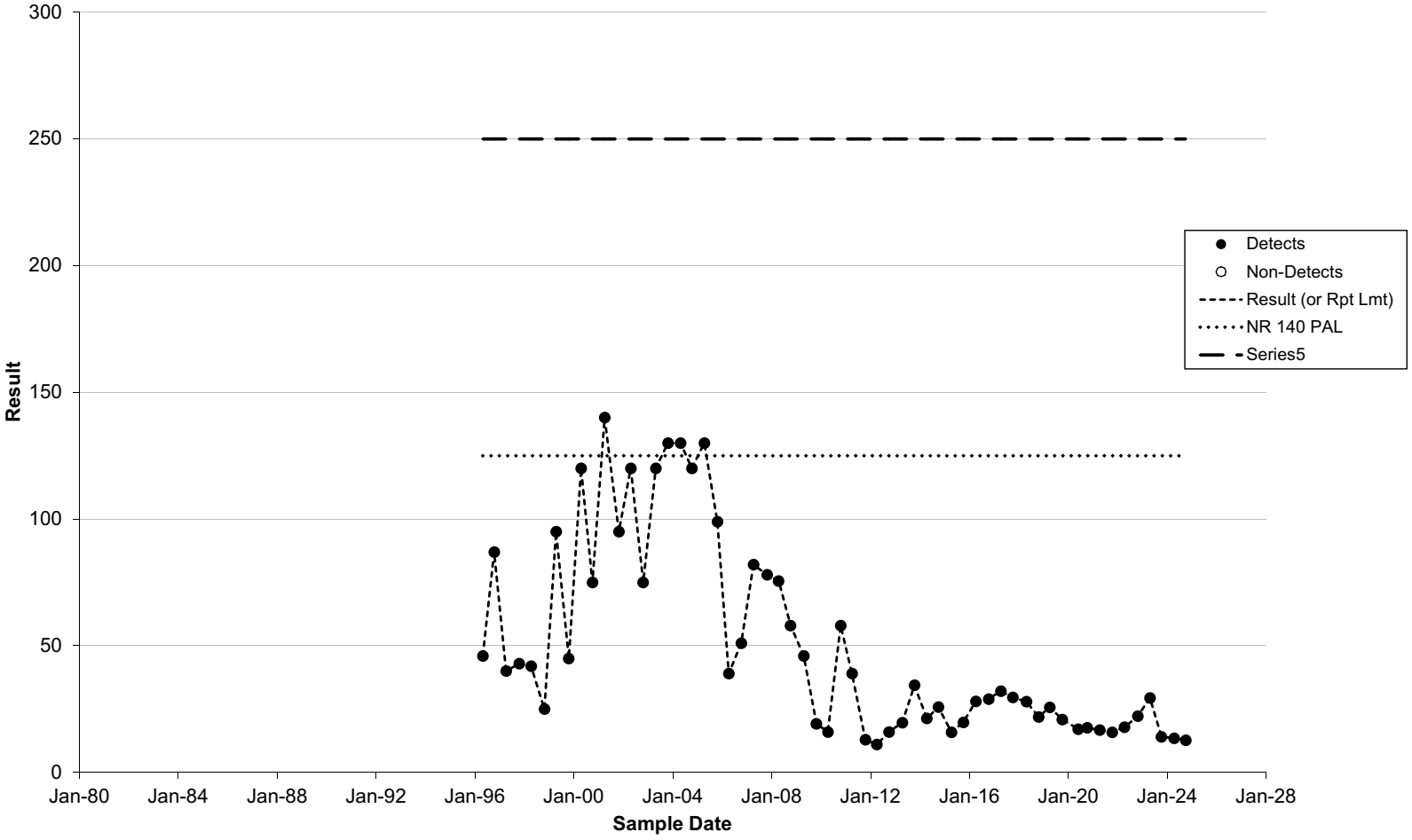
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-39A - Sulfate (mg/L as SO4)



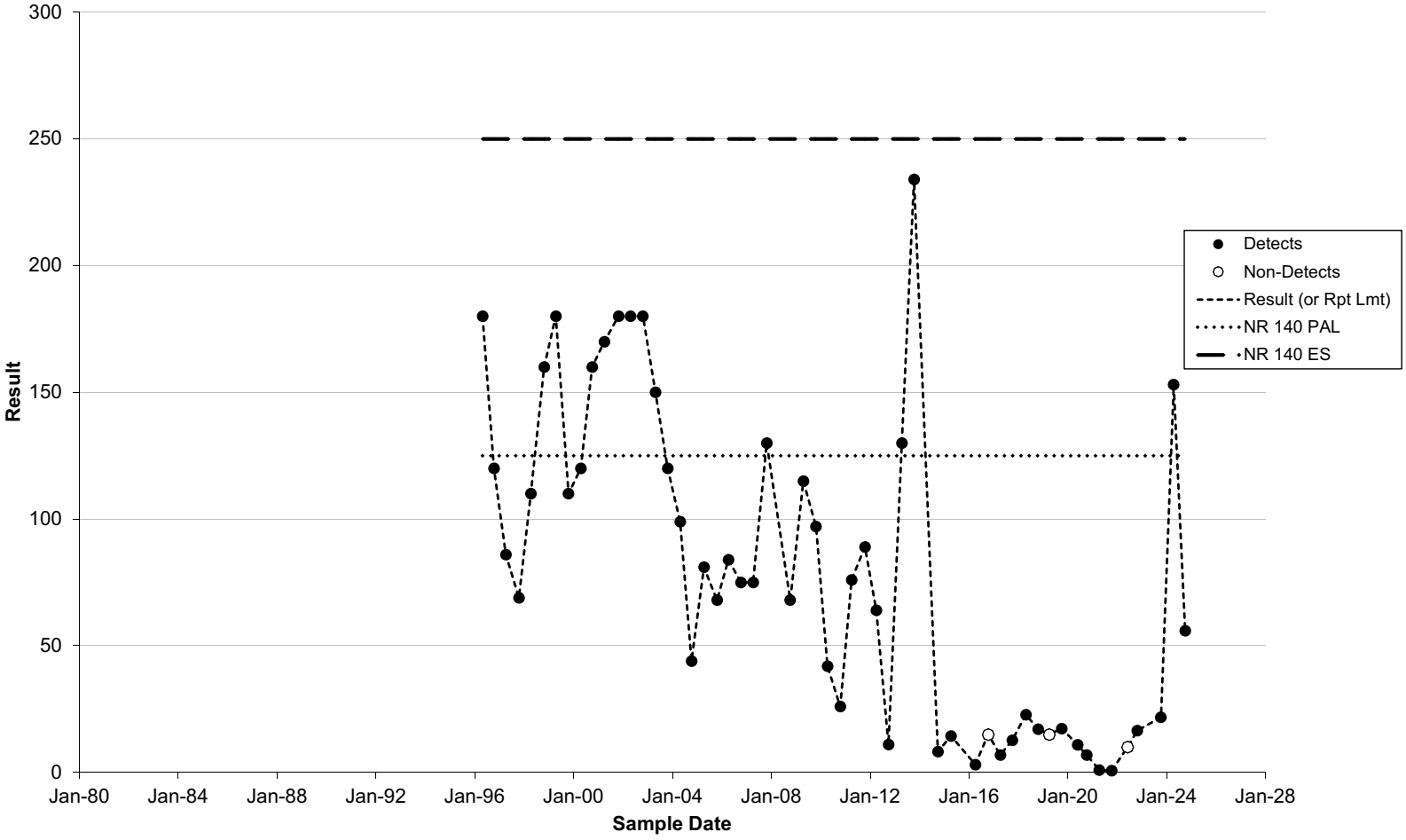
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-39B - Sulfate (mg/L as SO4)



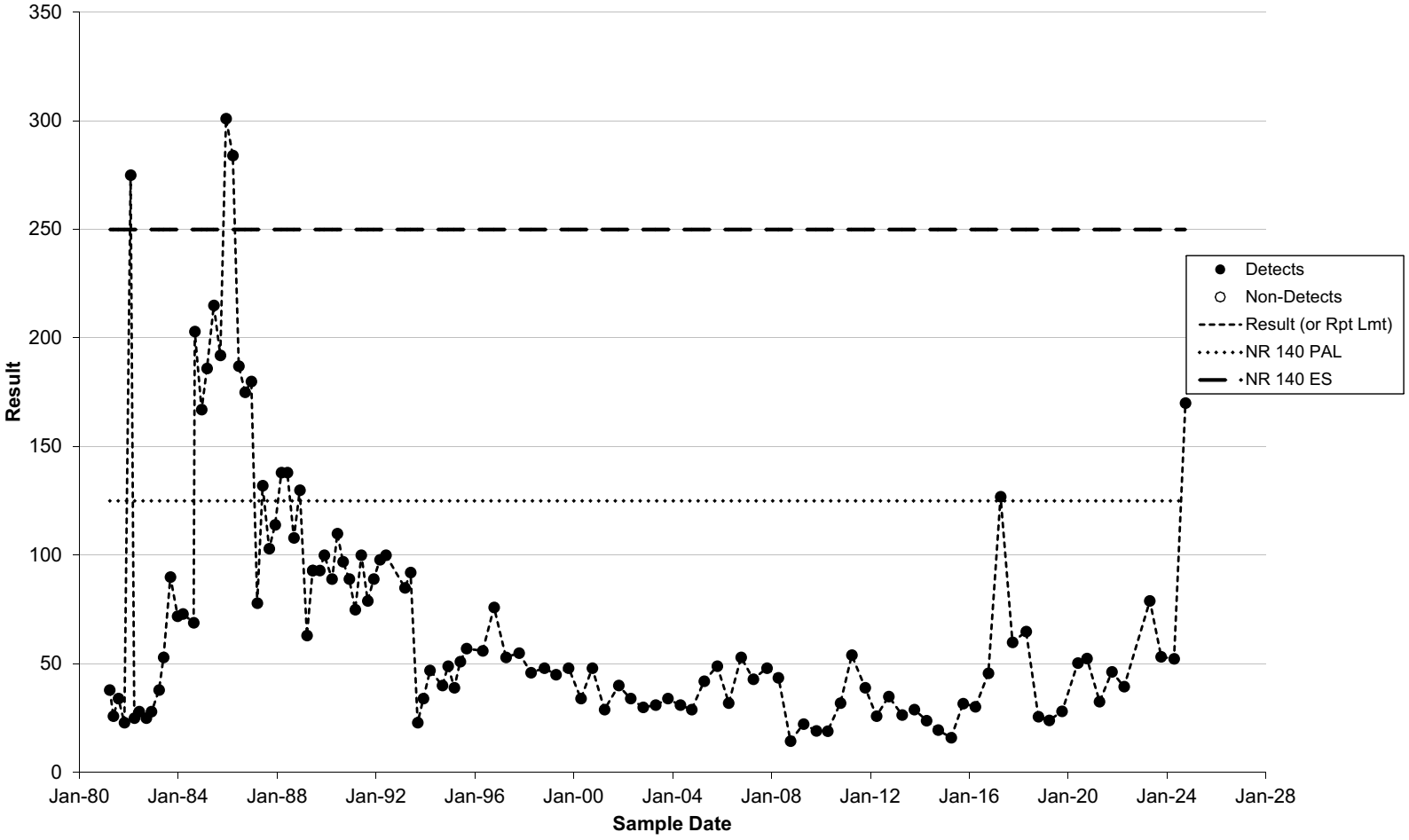
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-48B - Sulfate (mg/L as SO4)



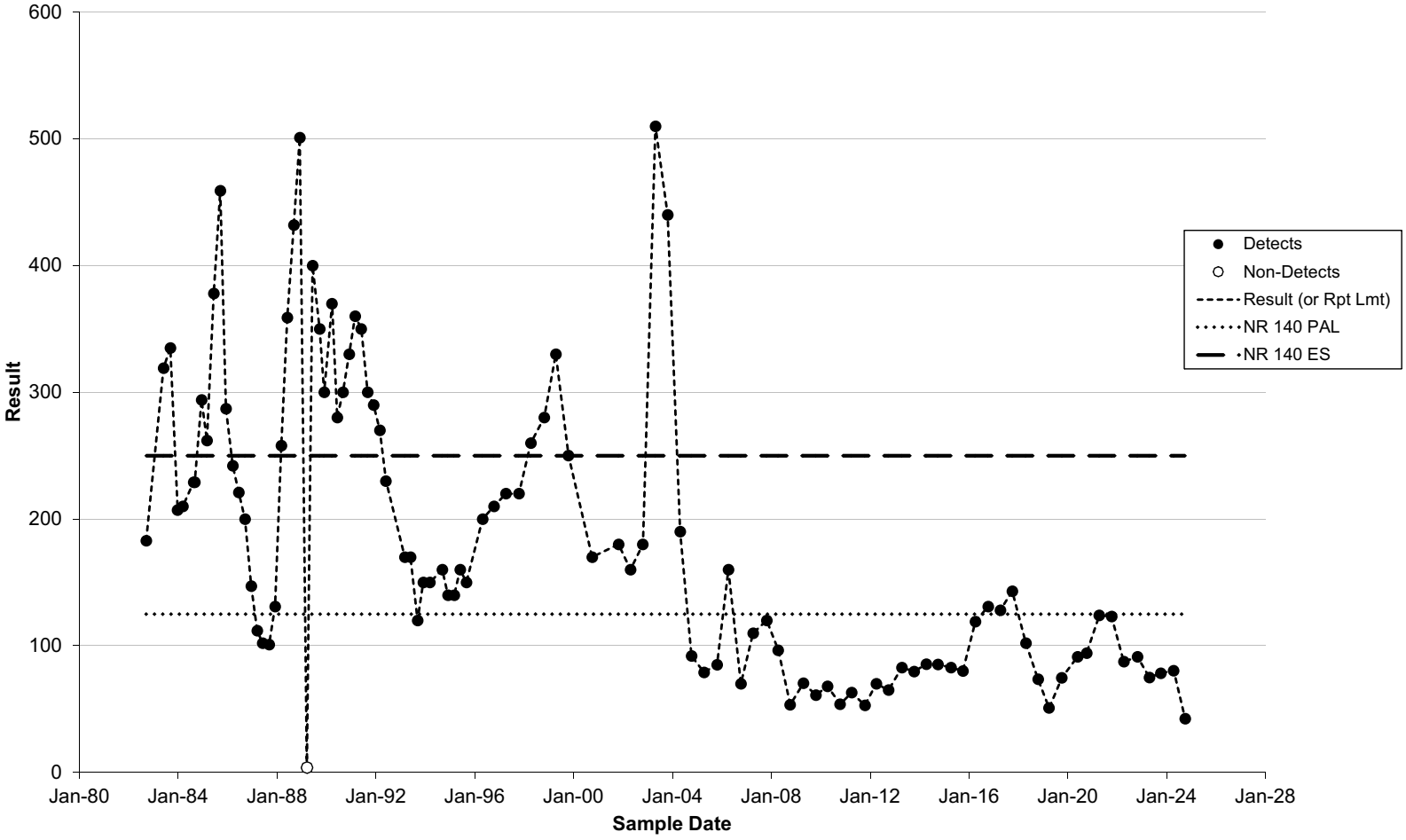
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-57 - Sulfate (mg/L as SO4)



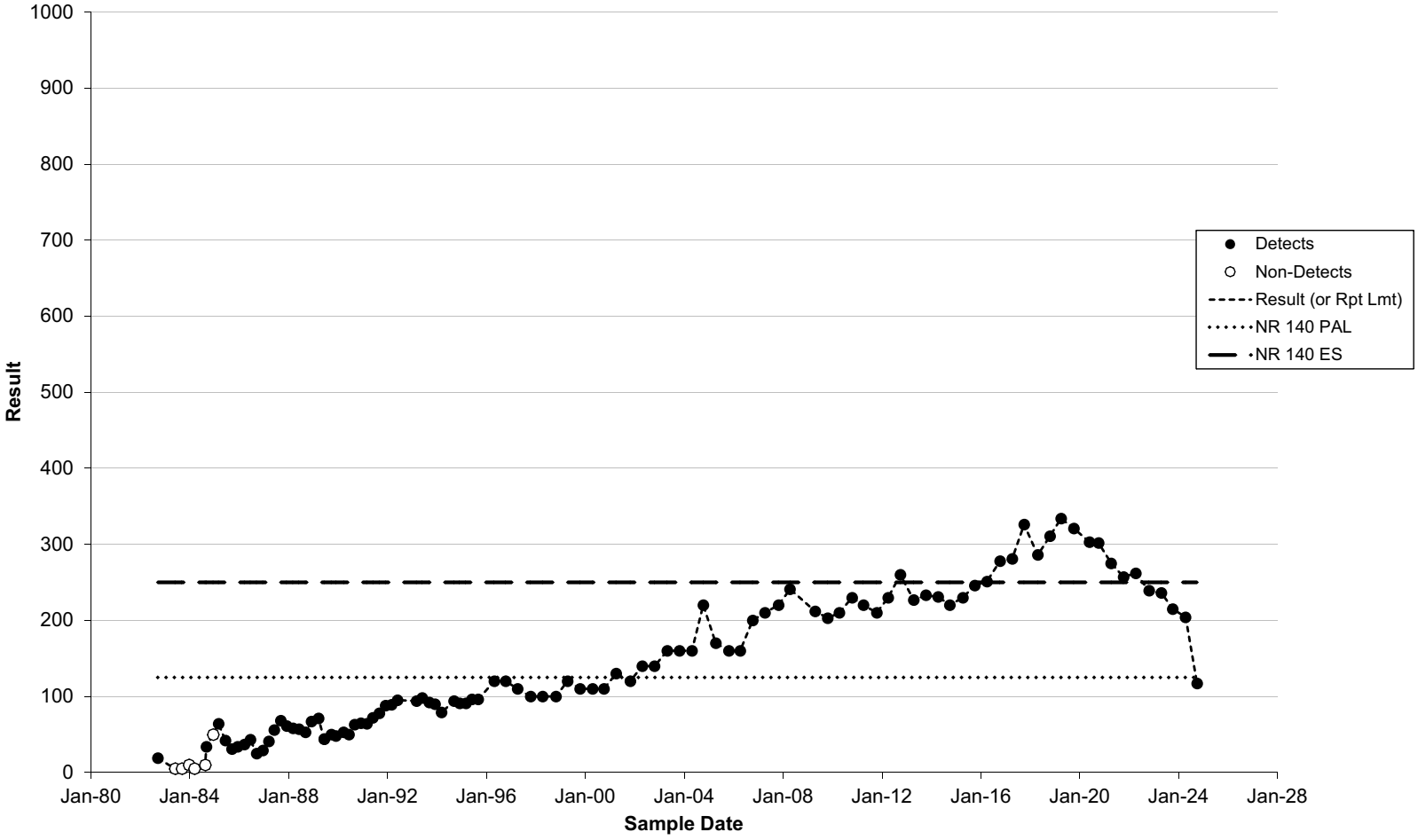
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
W59 (W-2) - Sulfate (mg/L as SO4)



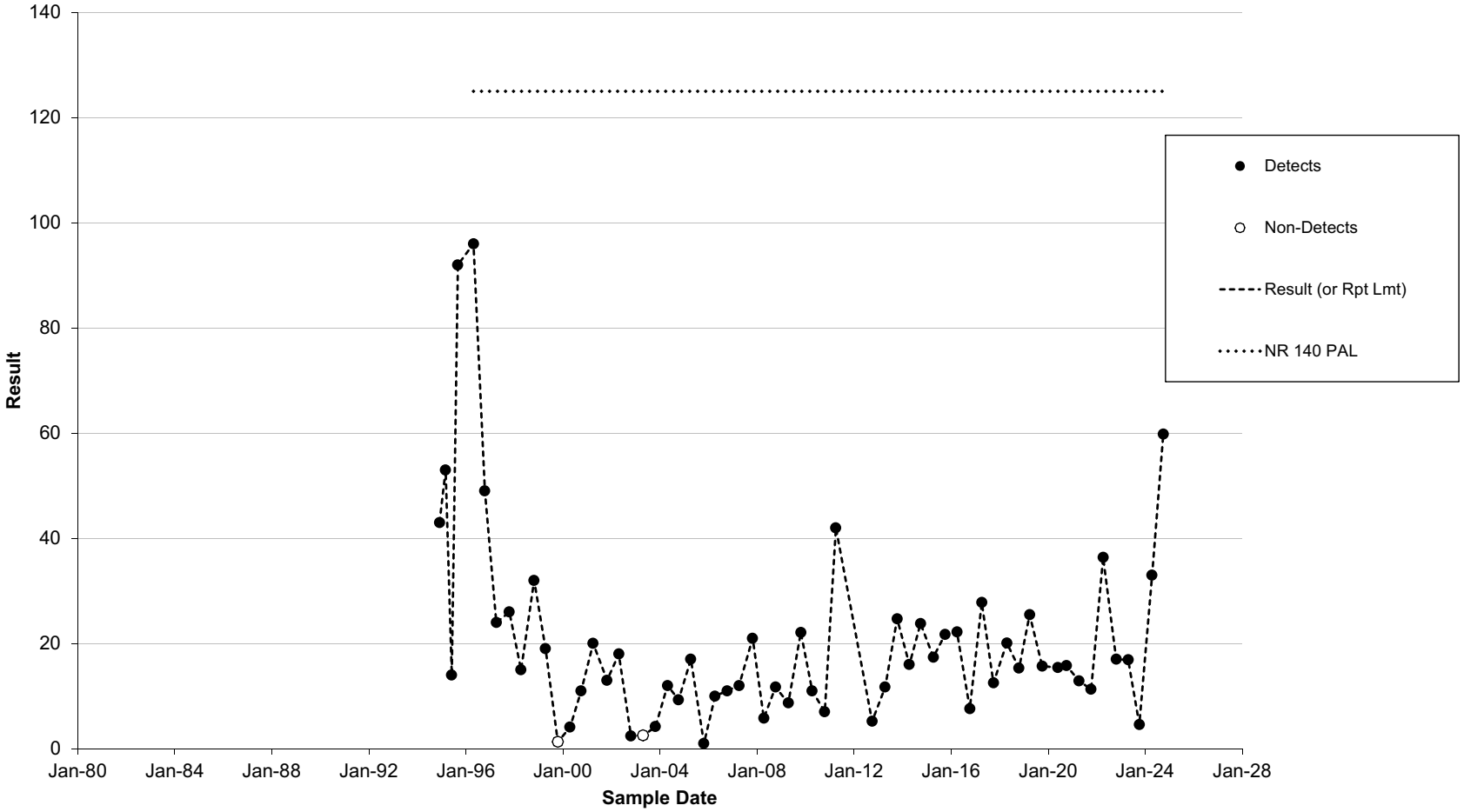
Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
W-216/MW-216R - Sulfate (mg/L as SO4)



Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-217 - Sulfate (mg/L as SO4)



Wisconsin Power & Light Company
Columbia Ash Ponds Disposal Facility
MW-220R/MW-220RR - Sulfate (mg/L as SO4)



Leachate Pipe Cleaning and Inspection Report

Alliant Energy
4902 North Biltmore Lane
P.O. Box 77007
Madison, WI 53707-1007

1-800-ALLIANT (800-255-4268)
alliantenergy.com

October 30, 2024

Submitted via electronic mail.

Mr. Antony Peterson
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: **Annual Leachate Piping Jetting**
Dry Ash Disposal Facility (WDNR License #3025)
WPL-Columbia Energy Center
Portage, WI

Dear Mr. Peterson,

On behalf of Wisconsin Power and Light Company (WPL), Alliant Energy is submitting the attached landfill leachate jetting report for 2024. The jetting and video Work was conducted October 16-17, 2024, by Superior Jetting under the supervision of SCS field staff. In accordance with NR506.07(5)(g) a Customer Service Report provides a summary, descriptions, and observations during the Work. Also attached are Pipeline Inspection Reports for each leachate line and includes information on the owner, line size, construction material, general observations, and a few photos. As mentioned, these lines were video recorded in digital format and the file size is rather large and cannot be transmitted over e-mail. I will provide you with the video recordings in an acceptable media format later. Thank you very much for your consideration. If you have any questions regarding this information, please call me at (608) 742-0713.

Regards,

Brian M Clepper

Lead GENCO Environmental Specialist

CC: J Maxted
E Sandvig

Customer Service Report

Customer:	Alliant Energy	**Report Number:**	1692
Contact:	Joe Stone	**Date(s):**	10/16 &
	SCS Engineers		10/17/2024
Address:	W8375 Murray Road	**Page:**	1 of 2
	Pardeeville, WI 53954	**On-Site Hours:**	15.5
		Mob. Hours:	10.0

Description: Jet and Televise leachate collection system

Jetting Summary

Leachate Pipe	Length Jet (ft.)	Comments
Module 2W	525	Slow jetting beyond 300’
Module 3W	800	
Module 4W	700	
Module 5W	600	
Module 6NE	550	
Module 6N(Header)	550	
Module 11E	800	
Module 10E	800	
Module 2E	400	
Module 2S(Header)	450	
Module 1E	400	

Customer Service Report

October 16, 2024 **Arrived On-Site: 7:00 am**

- Jet Module 2 West to the distance indicated above. Slow jetting past 300'.
- Jet Module 3 West to the distance indicated above. No problems encountered.
- Jet Module 4 West to the distance indicated above. No problems encountered.
- Jet Module 5 West to the distance indicated above. No problems encountered.
- Jet Module 6 North to the distance indicated above. No problems encountered.
- Jet Module 6 Northeast to the distance indicated above. No problems encountered.
- Jet Module 11 East to the distance indicated above. No problems encountered.
- Jet Module 10 East to the distance indicated above. No problems encountered.
- Jet Module 2 East to the distance indicated above. No problems encountered.
- Jet Module 2 South to the distance indicated above. No problems encountered.
- Televised leachate pipes with "Jet-Cam" equipment. USB flash drive containing video files provided to SCS engineers.

Left Site: 6:00 pm

October 17, 2024 **Arrived On-Site: 7:00 am**

- Televised leachate pipes with "Jet-Cam" equipment. USB flash drive containing video files provided to SCS engineers.
- Jet Module 1 East to the distance indicated above. No problems encountered.

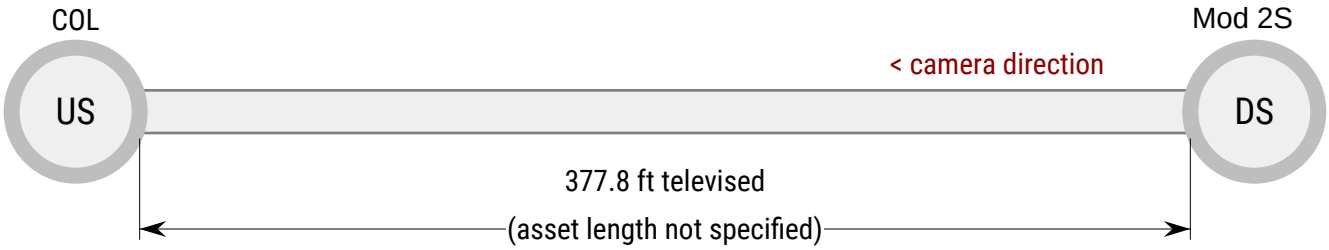
Left Site: 11:30 am

Superior Jetting, Inc.
P.O. Box 357, Zimmerman, MN 55398
Phone/Fax: (763) 631-3133

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 15:13
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
377.8	GO	General Observation					Begin Inspection
000.0	GO	General Observation					end inspection

< flow >

camera direction >

Mod 2S

Snapshots

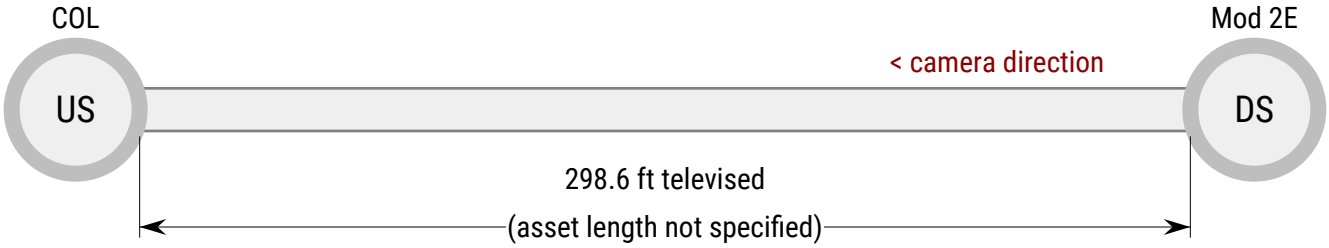
General Observation at 000.0 ft | end inspection

General Observation at 377.8 ft | Begin Inspection

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

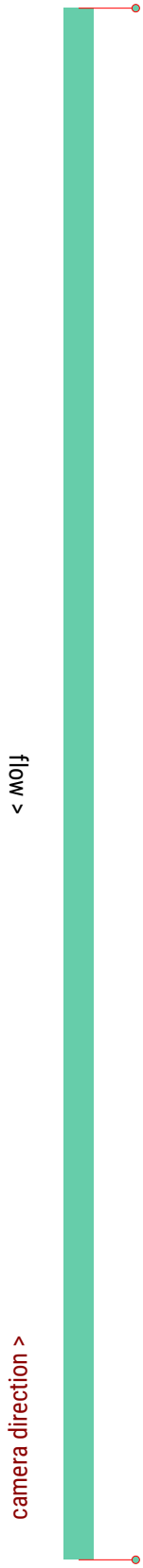
Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 14:42
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
298.6	GO	General Observation					Begin Inspection. Jet-cam could not advance.
000.0	GO	General Observation					end inspection



Mod 2E

Snapshots

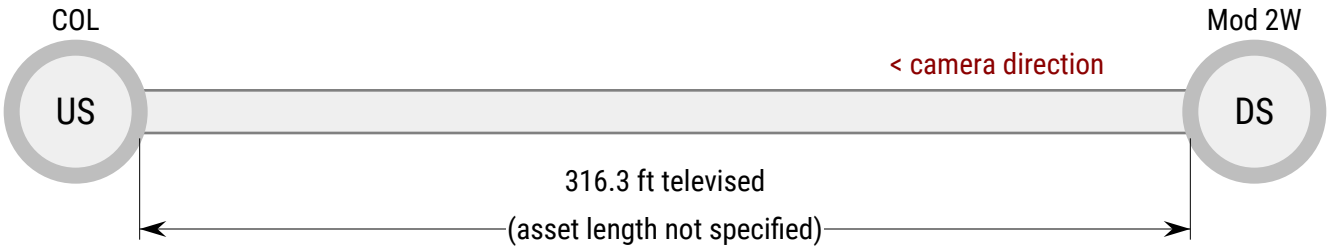
General Observation at 000.0 ft | end inspection

General Observation at 298.6 ft | Begin Inspection. Jet-cam could not advance.

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	Superior Jetting
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	17-Oct-2024 09:13
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
316.3	GO	General Observation					Begin Inspection. Jet-cam cannot advance
000.0	GO	General Observation					End Inspection

< flow >

camera direction >

Mod 2W

Snapshots

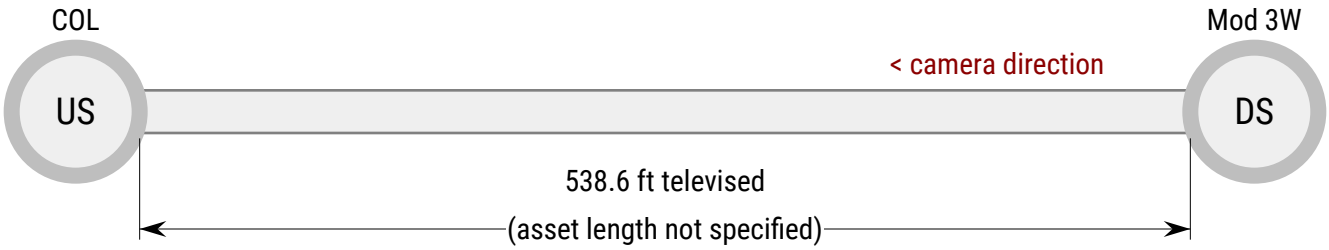
General Observation at 000.0 ft | End Inspection

General Observation at 316.3 ft | Begin Inspection. Jet-cam cannot advance

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	Superior Jetting
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	17-Oct-2024 08:46
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
538.6	GO	General Observation					Begin Inspection. Jet-cam cannot advance.
000.0	GO	General Observation					End Inspection

< flow >

camera direction >

Mod 3W

Snapshots

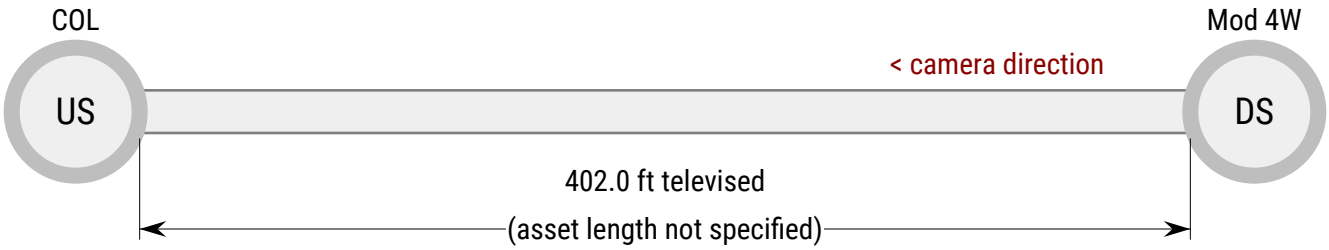
General Observation at 000.0 ft | End Inspection

General Observation at 538.6 ft | Begin Inspection. Jet-cam cannot advance.

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

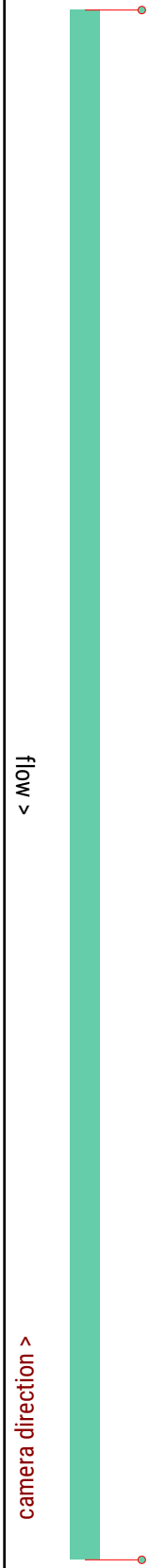
Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	Superior Jetting
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	17-Oct-2024 08:19
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
402.0	GO	General Observation					Begin Inspection. Jet-cam cannot advance
000.0	GO	General Observation					end inspection



Mod 4W

Snapshots

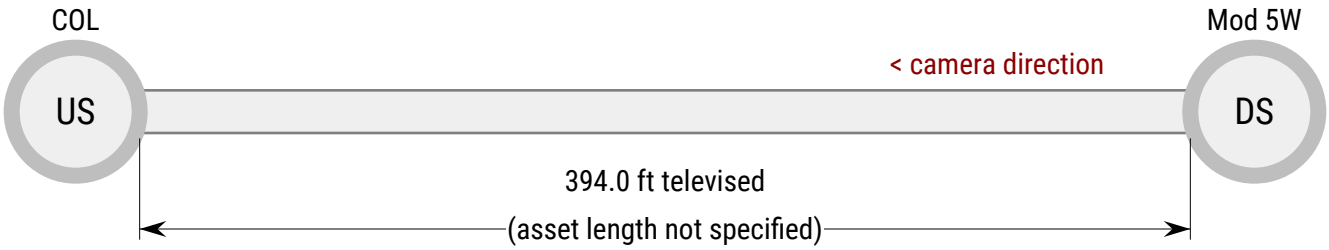
General Observation at 000.0 ft | end inspection

General Observation at 402.0 ft | Begin Inspection. Jet-cam cannot advance

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	Superior Jetting
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	17-Oct-2024 07:38
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
394.0	GO	General Observation					Begin Inspection. Jet-cam cannot advance
000.0	GO	General Observation					end inspection

< flow >

camera direction >

Mod 5W

Snapshots

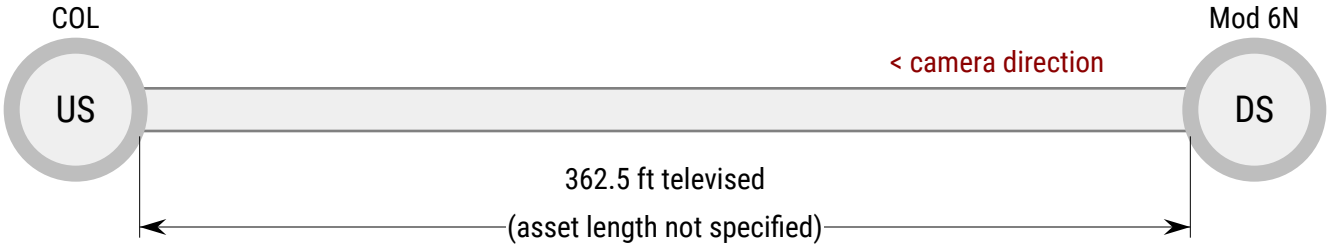
General Observation at 000.0 ft | end inspection

General Observation at 394.0 ft | Begin Inspection. Jet-cam cannot advance

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 16:59
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
362.5	GO	General Observation					Begin Inpsection. Jet-cam cannot advance. Camera underwater
000.0	GO	General Observation					end inspection

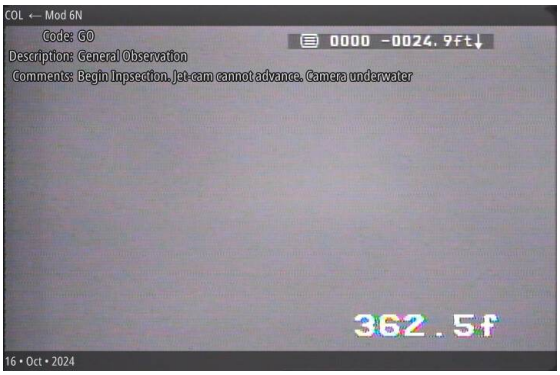
< flow >

camera direction >

Mod 6N

Snapshots

General Observation at 000.0 ft | end inspection

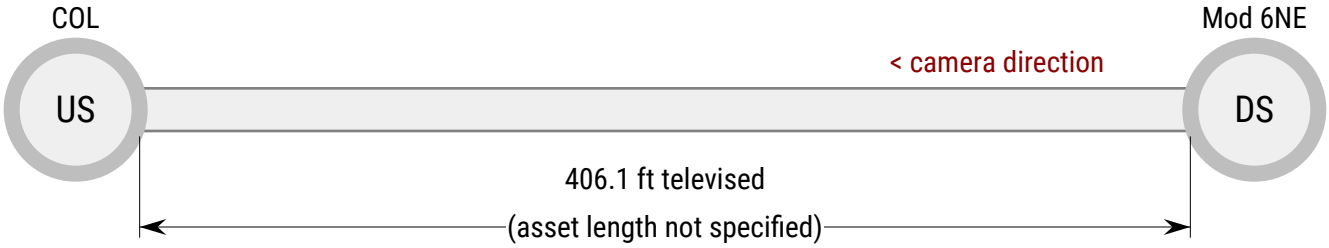


General Observation at 362.5 ft | Begin Inpsection. Jet-cam cannot advance. Camera underwater

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 17:37
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
406.1	GO	General Observation					Begin Inspection. Jet-cam cannot advance.
000.0	GO	General Observation					end inspection

< flow >

camera direction >

Mod 6NE

Snapshots

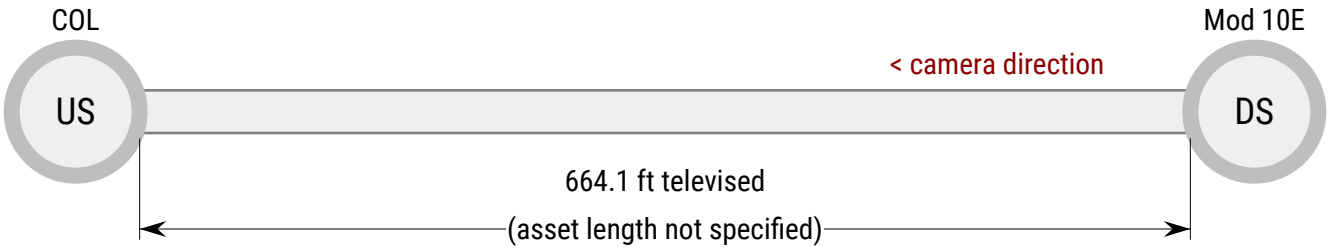
General Observation at 000.0 ft | end inspection

General Observation at 406.1 ft | Begin Inspection. Jet-cam cannot advance.

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 15:47
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
664.1	GO	General Observation					Begin Inpsection. Jet-cam cannot advance
306.4	GO	General Observation					camera underwater
050.4	GO	General Observation					camera out of water
000.0	GO	General Observation					end inspection

< flow >

camera direction >

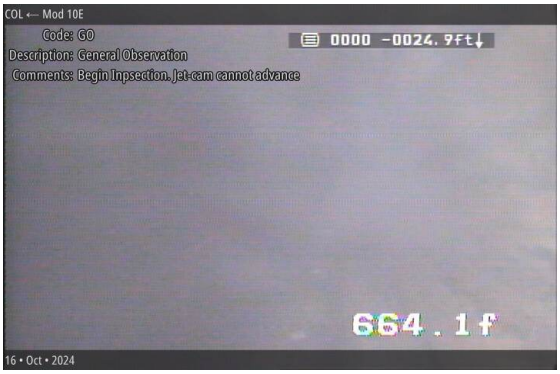
Mod 10E

Snapshots

General Observation at 000.0 ft | end inspection

General Observation at 050.4 ft | camera out of water

General Observation at 306.4 ft | camera underwater

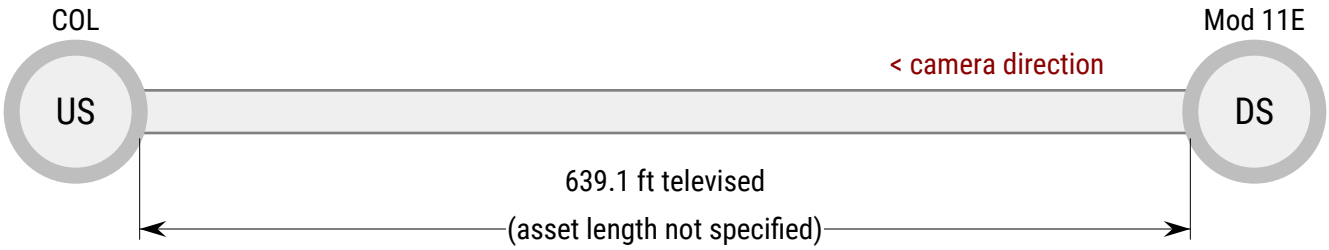


General Observation at 664.1 ft | Begin Inpsection. Jet-cam cannot advance

Superior Jetting, Inc.
PO Box 357
Zimmerman, MN 55398

Pipeline Inspection Report

Overview



Asset

Owner:	Alliant Energy
Upstream MH Depth:	
Downstream MH Depth:	
Size:	6 in
Material:	Plastic – HDPE
Lined:	True
Sewer Use:	
Asset Comments:	

Location

Street Name:	
City:	

Inspection

Customer:	
Project:	
Work Order:	na
Surveyed By:	na
Purpose:	
Pre-Cleaning:	
Ground Saturation:	
Media Date/Time:	16-Oct-2024 16:25
Comments:	

Observations

COL

Feet	Code	Description	Severity	Clock	Measurements	⚠	Comments
639.1	GO	General Observation					Begin Inspection. Jet-cam cannot advance. Camera underwater
562.3	GO	General Observation					camera out of water
486.9	GO	General Observation					camera underwater
058.9	GO	General Observation					camera out of water
000.0	GO	General Observation					end inspection

< flow >

camera direction >

Mod 11E

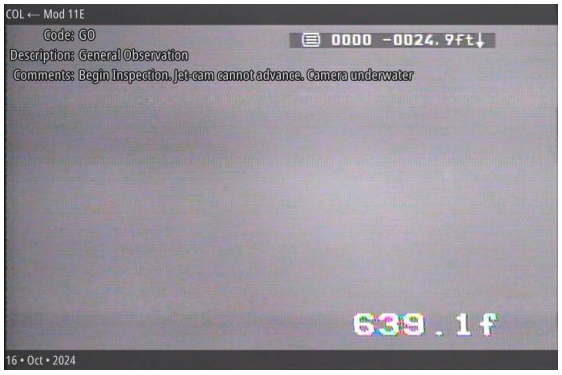
Snapshots

General Observation at 000.0 ft | end inspection

General Observation at 058.9 ft | camera out of water

General Observation at 486.9 ft | camera underwater

General Observation at 562.3 ft | camera out of water



General Observation at 639.1 ft | Begin Inspection. Jet-cam cannot advance. Camera underwater