State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
3911 Fish Hatchery Road
Fitchburg WI 53711-5397

Tony Evers, Governor

Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

May 3, 2024

File Ref: FID 111049180
Columbia County
Approval

Mr. Jeff Maxted
Alliant Energy Corporation
4902 North Biltmore Lane
Madison, WI 53718-2148

Subject: Conditional Plan of Operation Approval Modification, Initial Permitting of Coal Combustion Residuals (CCR) Landfill, Wisconsin Power and Light Company Columbia Energy Center Ash Disposal Facility, License #3025

Dear Mr. Maxted:

The Department of Natural Resources (department) is approving the proposed plan of operation modification for initial permitting of a coal combustion residuals (CCR) landfill for the Columbia Energy Center (COL) Ash Disposal Facility, subject to the conditions listed in the attached approval. There are attachments to this letter which include a project summary, the plan of operation approval modification, environmental monitoring tables, preventive action limit (PAL) and alternative concentration limit (ACL) tables, closure and long-term care cost estimate tables, and a summary of existing conditions.

Please include this approval in the written operating record and on the CCR Landfill publicly accessible internet site for the landfill in accordance with s. NR 506.17(2) and (3), Wis. Adm. Code. Provide notification to the department upon placing the documents on the internet site.

A condition of this approval requires that proof of financial responsibility for closure and long-term care be adjusted in accordance with ch. NR 520, Wis. Adm. Code. The revised proof of financial responsibility must be established based upon the approved costs contained herein and the requirements of ch. NR 520, Wis. Adm. Code. Please contact Dustin Sholly, owner financial responsibility specialist, at Dustin.Sholly@wisconsin.gov or 608-886-0154 if you have questions.

Please keep in mind that this approval does not relieve you of obligations to meet all other applicable federal, state and local permits, as well as zoning and regulatory requirements. If you have questions regarding this approval, please contact Tony Peterson at 715-491-8546 or anthony.peterson@wisconsin.gov or Tyler Sullivan at 608-516-3962 or tyler.sullivan@wisconsin.gov.

Sincerely,

Bridget Kelly
Waste and Materials Management Program Supervisor
South Central Region

cc: Eric Sandvig – EricSandvig@alliantenergy.com

Brian Clepper - BrianClepper@alliantenergy.com
Mark Huber - mhuber@scsengineers.com
Bill Phelps – DNR/DG (e-copy)
Kate Strom Hiorns – DNR/WA (e-copy)
Dustin Sholly – DNR/WA (e-copy)
Joe Lourigan – DNR/WA (e-copy)
Tony Peterson- DNR/WA (e-copy)
Tyler Sullivan - DNR/WA (e-copy)

PROJECT SUMMARY
PLAN OF OPERATION APPROVAL MODIFICATION
COAL COMBUSTION RESIDUALS (CCR) INITIAL PERMITTING

WISCONSIN POWER AND LIGHT COMPANY COLUMBIA ENERGY CENTER
ASH DISPOSAL FACILITY
LICENSE #3025

GENERAL INFORMATION

AUTHORIZED CONTACT: Mr. Eric Sandvig
Columbia Energy Center
W8375 Murray Road
Pardeeville, WI 53954

LICENSEE AND PROPERTY OWNER: The Columbia Energy Center (COL) is owned by Wisconsin Power and Light Company (WPL), Madison Gas and Electric Company, and Wisconsin Public Service Corporation. WPL operates the plant and the Ash Disposal Facility. The COL facility includes an active coal combustion residual (CCR) landfill.

SITE LOCATION: The CCR landfill is located in Section 27, T12N, R9W, Town of Pacific, Columbia County, Wisconsin.

CCR LANDFILL DESCRIPTION:

The initial plan of operation was approved on June 30, 1983, for a landfill approximately 62.5 acres in size with a design capacity of 6,045,000 cubic yards. The landfill design consists of two phases, Phase 1 and 2, which are further divided into Modules. Phase 1 consists of existing Modules 1 – 6 and Phase 2 consists of Modules 7 – 13.

Phase 1, Modules 1 through 3 are an existing CCR landfill as defined in 40 CFR 257.53 of the federal CCR Rule. Phase 1, Modules 4 through 6 and Phase 2, Modules 10 and 11 are a new CCR landfill that initiated construction after October 19, 2015. Phase 2, Module 12 (and 13, if constructed) will be included in the new CCR landfill. Construction of additional modules beyond Modules 12 and 13 is not currently planned prior to retirement of the Columbia Energy Center, which is currently scheduled to occur no later than June 1, 2026.

The modules and their current status are as follows:

- Phase 1, Module 1 – This module has received final cover over outer sideslope areas that will no longer receive additional CCR; intermediate cover has been placed over remaining areas.
- Phase 1, Module 2 – This module has received intermediate cover over a majority of the in-place CCR.
- Phase 1, Module 3 – This module has received intermediate cover over a majority of the in-place CCR.
- Phase 1, Module 4 – This module has received intermediate cover over areas of the in-place CCR.
- Phase 1, Module 5 – This module has received intermediate cover over areas of the in-place CCR.
- Phase 1, Module 6 – This module has received intermediate cover over areas of the in-place CCR.
- Phase 2, Module 10 – This module is currently being filled.
- Phase 2, Module 11 – This module is currently being filled.
- Phase 2, Module 12 – This module is currently proposed for approval. The module will be constructed and filled following approval.

- Phase 2, Module 13 – This module is currently proposed for approval. The module will be constructed and filled following approval.

INITIAL PERMITTING REQUIREMENTS

PERFORMANCE CRITERIA, s. NR 514.045(1)(b), Wis. Adm. Code:

Wetlands, s. NR 504.04(4)(a), Wis. Adm. Code:
Phase 1, Modules 1 through 6 are not located in wetlands. A wetland delineation conducted in 2017 identified one artificial wetland within the Phase 2, Module 10 and 11 area. The artificial wetland was not identified as a mapped wetland in state or federal resources, and it was not located adjacent to the Waters of the State. Also, the artificial wetland was not located adjacent to jurisdictional water defined in 40 CFR 120.2. Historically, the area of the artificial wetland was agricultural fields before COL activity. WPL received concurrence from the department that the artificial wetland was exempt from the permitting requirements of ch. NR 103, Wis. Adm. Code. Through the exemption process, the department and WPL determined that construction of Phase 2, Modules 10 and 11 would have no adverse impact on wetlands as provided in ch. NR 103, Wis. Adm. Code, and the artificial wetland was removed prior to construction of the Phase 2, Module 10 and 11 liner in 2022.

Run-off from the active portions of the CCR landfill is handled as contact water and is collected by a leachate collection system and internal swales, which route the contact water run-off to a lined contact water basin (leachate/surface water pond), preventing contact water from having an adverse impact on wetlands.

The South Sedimentation Basin is designed to collect storm water diverted from covered portions of the CCR landfill. The South Sedimentation Basin discharges to a wetland area to the south of the basin. The South Sedimentation Basin is sized to handle storm water from a 25-year, 24-hour storm event without overtopping the 100-year, 24-hour emergency spillway and to allow a 15-micron particle size to settle out during a storm event to prevent adverse impacts on downstream wetlands.

Storm water from the northeastern and northern parts of the CCR landfill, outside of the CCR landfill footprint, flow to swales south of Murray Road. The storm water from these swales is directed through a culvert under Murray Road, where the water infiltrates in a low spot on the north side of Murray Road. Storm water from these areas of the CCR landfill does not result in adverse impacts to wetlands.

Endangered or Threatened Species, s. NR 504.04(4)(b), Wis. Adm. Code:
In October 2022, an endangered resources review was renewed for the construction of Modules 10 and 11. The review indicated that one federally endangered species may be present in the surrounding area resulting in mowing and clearing requirements to ensure that the species, if present in the CCR landfill footprint, would not be affected by construction activities or operations. The CCR landfill adheres to these requirements to prevent the take of endangered or threatened species and these requirements will be utilized throughout the remainder of onsite landfill construction activities to minimize the potential for take of the species.

Surface water, s. NR 504.04(4)(c), Wis. Adm. Code:
Storm water runoff calculations were performed to demonstrate that the existing storm water sedimentation basin and proposed storm water management features included in the CCR landfill can accommodate and safely convey the runoff from a 25-year, 24-hour storm event during post closure conditions. Storm water that contacts waste is routed to a lined basin (leachate/surface water pond) and then hauled as needed to the plant

for management in accordance with the facility's Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

LOCATIONAL CRITERIA, s. NR 514.045(1)(c), Wis. Adm. Code:

Faults, s. NR 504.04(3)(g), Wis. Adm. Code:
Based on a review of the U.S. Geological Survey (USGS) Quaternary faults database and map, the CCR landfill is not located within 200 feet of the outermost damage zone of a fault that has had displacement in Holocene time. In s. NR 500.03 (103), Wis. Adm. Code, Holocene is defined as the most recent epoch of the Quaternary period extending from the end of the Pleistocene Epoch to the present. The USGS map shows that no faults are located in Wisconsin.

Seismic Impact Zones, s. NR 504.04(3)(h), Wis. Adm. Code:
The CCR landfill is not located in a seismic impact zone. Section NR 500.03(208), Wis. Adm. Code, defines a seismic impact zone as an area having a 10 percent or greater probability that the maximum expected horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10 g in 50 years. Based on a review of the USGS 2014 Long-Term Model National Seismic Hazard Map, the maximum expected horizontal acceleration for the majority of Wisconsin, including all of Columbia County, is less than 0.04 g, below the threshold for a seismic impact zone.

Unstable Areas and Differential Settling, ss. NR 504.04(3)(i) and NR 514.045(1)(c)1., Wis. Adm. Code:
The CCR landfill is not located in an area where on-site or local soil conditions may result in significant differential settling. On-site soils consist primarily of sands of alluvial and glacial origin overlaying sandstone bedrock. Based on the Standard Penetration Test (SPT) blow counts on the geologic cross sections provided in the December 14, 2022, plan of operation modification report (report), the soils are typically medium dense to very dense and therefore not susceptible to appreciable differential settlement under the CCR landfill loads.

Unstable Areas and Geologic or Geomorphologic Features, ss. NR 504.04(3)(i) and NR 514.045(1)(c)2., Wis. Adm. Code:
The CCR landfill is not located in an area where on-site or local geologic or geomorphologic features are unstable. The cross sections provided in the December 14, 2022, report show medium dense to very dense sands of alluvial and glacial origin overlaying sandstone bedrock. These geologic features provide a stable foundation for the CCR landfill. This assessment is confirmed by the slope stability analyses completed for Phase 1, Modules 1 through 4, Modules 5 and 6, and Phase 2, Modules 10 and 11 that indicate the slope stability safety factors are acceptable.

Unstable Areas and Human-made Features or Events, ss. NR 504.04(3)(i) and NR 514.045(1)(c)3., Wis. Adm. Code:
The CCR landfill is not located in an area with on-site or local human-made features (both surface and subsurface) that are unstable. The predominant native sands are overlain by sand fill in some areas of the site. The sand fill was placed in the CCR landfill area during excavation activities for construction of the generating station. Based on the SPT blow counts for the sand fill on the cross sections provided in the December 14, 2022, report, the fill is typically medium dense to very dense and therefore provides a stable base material where present below the CCR landfill. Groundwater or surface water movement is unlikely to cause instability. The CCR landfill is designed with adequate run-on and run-off control systems and is constructed above the water table.

FLOODPLAINS, s. NR 514.045(1)(d), Wis. Adm. Code:

The CCR landfill is not located within a floodplain. A Federal Emergency Management Agency (FEMA) flood insurance rate map is provided in Appendix A9 of the December 14, 2022, report.

CRITICAL HABITAT OF ENDANGERED OR THREATENED SPECIES, s. NR 514.045(1)(e), Wis. Adm. Code:

In October 2022, an endangered resources review was renewed for the construction of Modules 10 and 11. None of the areas affected by construction or operations of the CCR landfill were identified as critical habitat for endangered or threatened species. The endangered resources review indicated that one federally endangered species may be present in the surrounding area, resulting in mowing and clearing requirements to ensure that the species, if present in the landfill footprint, would not be affected by construction activities or operations.

Modules 12 and 13 will be mowed during the dormant season and will be continuously mowed to a height of six inches or less during the growing season until liner construction activities begin. Trees and brush will be cut above ground level during frozen ground conditions. Any grubbing/removal of stumps or other ground disturbing activities will be completed after May 1 to ensure all endangered species have left the area. The landfill will adhere to these requirements to prevent the take of endangered or threatened species and these requirements will be utilized throughout the remainder of onsite landfill construction activities to minimize the potential for take of the species.

LANDFILL DESIGN, s. NR 514.045(1)(f), Wis. Adm. Code:

Subbase Grades:
The high water table within the uppermost aquifer below the CCR landfill is at an approximate elevation of 789 to 790 feet above mean sea level (ft-msl), based on a review of water table observation well water levels near the CCR landfill, for the period from October 2012 to December 2022. The highest water level elevation measured at a well in the area of the CCR landfill was 789.71 ft-msl recorded at MW-5R, which is located near the southwest corner of Phase 1, Module 1. The highest water level elevation measured in a well in the area of Phase 2, Modules 10 and 11 was 788.21 ft-msl recorded at MW-86.

The lowest subbase elevation within Phase 1, Module 4 is approximately 801 ft-msl. The lowest subbase elevation within Phase 1, Modules 5 and 6 is approximately 802 ft-msl. Within Phase 2, Modules 10 and 11, the lowest subbase grade is approximately 794 ft-msl. Based on this information, the CCR landfill is located at least 5 feet above the uppermost aquifer.

Composite Liner design:
Phase 1, Modules 2 through 6, and Phase 2, Modules 10 and 11 liners have been constructed. Phase 2, Modules 12 and 13 are proposed to have a composite liner that consists of the following three layers from top to bottom:

- A 60-mil thick HDPE geomembrane
- A geosynthetic clay liner (GCL)
- Two feet of compacted clay soil with a hydraulic conductivity of no more than 1 x 10-7 cm/sec

The clay soil for Modules 12 and 13 liner will come from the New Haven clay borrow source and will meet the requirements of s. NR 504.06(2)(a), Wis. Adm. Code. The estimated remaining clay volume at the borrow source is approximately 99,181 cubic yards. The estimated clay volume remaining in the stockpile at the COL facility is

approximately 14,100 cubic yards. The total clay volume available including the clay borrow area and onsite stockpile is approximately 113,300 cubic yards. The estimated volume of clay required to build the remaining phases of landfill liner (Modules 12 and 13) and remaining final cover is approximately 97,000 cubic yards. This volume includes a contingency for clay shrinkage of 20 percent.

A review of chemical resistance documentation for high-density polyethylene (HDPE) geomembrane provided by geomembrane manufacturers indicates that the HDPE geomembrane is chemically resistant to the CCR and CCR-generated leachate. The chemical resistance assessment is also based on a review of Columbia leachate pond analytical test results from 2011 to 2020.

The GCL specified will include a polymer-enhanced bentonite clay that has appropriate chemical properties such that it maintains its function when in contact with the CCR leachate. Testing was performed to demonstrate that the GCL is compatible with the site generated CCR leachate.

Leachate Collection and Removal system:
The leachate collection and removal system consists of 6 inch diameter HDPE leachate collection pipes, leachate drainage layer, drainage filter, coarse aggregate bedding, and 32 ounce/square yard (oz/sy) geotextile cushion in the leachate collection trench.

The leachate collection and removal system will have a drainage filter that minimizes the movement of fine particles into the leachate collection pipes to prevent clogging. Filter calculations are provided in the documentation report for each module construction based on the specific gradation of material provided for coarse aggregate and drainage material. The leachate collection and removal system will have cleanout riser pipes to allow pipe cleaning and prevent long-term clogging. The leachate collection pipes will be cleaned a minimum of once per year.

Under current operations leachate from Phase 1, Modules 1 and 2 is conveyed by gravity to the leachate/surface water pond. Except for Module 1, the CCR landfill liner system includes a leachate drainage layer and perforated leachate collection piping. Module 1 has a screened bottom ash drainage layer and a single perforated drain on the east end of the module. The existing leachate collection lines and Module 1 perforated drain discharge to the leachate/surface water pond. Leachate and contact water from Phase 1, Modules 3 through 6 are conveyed to Modules 10 and 11 where the leachate and contact water are pumped to the leachate/surface water pond. Leachate from Module 3 flows through a leachate collection line into the Module 10 leachate collection line. Leachate from Modules 4, 5, and 6 flows through collection lines to the collection line in Module 11. WPL will pump leachate and contact water from the Module 10 and 11 leachate collection sumps to the leachate/surface water pond via the pumps, side slope risers, and permanent piping in Modules 10 and 11.

When Module 12 is constructed, leachate in Module 5 and 6 will be diverted to Module 12 via leachate collection piping. When Module 12 is constructed, the following leachate collection system modifications will be made:

- The leachate collection line in Module 5 will be connected to the leachate collection line in Module 12.
- The leachate collection header between Module 5 and Module 4 will be plugged to direct leachate from Module 5 into Module 12.
- Leachate from the Module 6 header will be diverted to Module 12.

After the modifications, leachate from Modules 4 and 11 will be conveyed by gravity to a leachate collection sump in Module 11. Leachate from Modules 5, 6, and 12 will be conveyed by gravity to a leachate collection sump in Module 12.

If Module 13 is constructed, leachate from Module 6 will be diverted to Module 13 with leachate from Module 5 continuing to flow to the Module 12. When Module 13 is constructed, the following leachate collection system modifications will be made:

- The leachate collection line in Module 5 will be connected to the leachate collection line in Module 12.
- The leachate collection header between Module 5 and Module 4 will be plugged to direct leachate from Module 5 into Module 12.
- The leachate collection line in Module 6 will be connected to the leachate collection line in Module 13.
- The leachate collection header between Module 6 and Module 5 will be plugged to direct leachate from Module 6 into Module 13.

After the modifications, leachate from Modules 4 and 11 will be conveyed by gravity to a leachate collection sump in Module 11. Leachate from Modules 5 and 12 will be conveyed by gravity to a leachate collection sump in Module 12. Leachate from Modules 6 and 13 will be conveyed by gravity to a leachate collection sump in Module 13.

The leachate/surface water pond, located to the east of Module 2, has a 30-mil PVC liner along the bottom and sides to approximately 797 ft-msl. Water in the leachate/surface water pond is periodically pumped into a truck and hauled to the generating station to be incorporated in process/industrial wastewater or applied to the active fill area for dust control.

To verify that the leachate/surface water pond provides at least 4 days of leachate storage capacity, the amount of leachate generated on a daily basis was calculated based on leachate generation rates provided in NR 512.12(3), Wis. Adm. Code. The leachate generation rate was calculated assuming all areas of Phase 1 without final cover are open, Phase 2 Modules 10 and 11 are open, and new Module 12 is open (i.e., 6 inches per year over the active area). The leachate volume generated over 4 days is approximately 55,500 gallons, which is significantly lower than the maximum leachate/surface water pond storage volume of 1,455,700 gallons.

The leachate/surface water pond capacity to manage contact water was evaluated and it showed that the leachate/surface water pond can contain contact water from 7.8 acres of open area during a 25-year, 24-hour storm event. Therefore, the filling sequence was developed to limit open area by use of interim cover and rain cover.

Following final closure of the CCR landfill, leachate will be diverted from the leachate/surface water pond to a 15,000-gallon underground leachate storage tank. Following final cover placement, the following leachate collection system modifications will be made:

- Leachate sumps will be installed on the leachate collection lines from Modules 1 and 2.
- Leachate pumps in the Module 1 and 2 sumps will pump leachate to the leachate storage tank.
- Leachate from the Modules 10, 11, 12, and potential 13 sumps will be pumped to the leachate storage tank.

Leachate in the storage tank will be hauled to a wastewater treatment plant, pending approval from the receiving facility.

Final Cover System:
The existing CCR landfill final cover consists of a composite cover with the following components, from bottom to top:

- Three-inch-thick grading layer
- GCL
- Forty-mil polyethylene geomembrane
- Twelve-inch-thick drainage layer (sand)
- Twelve-inch-thick rooting zone layer
- Six-inch-thick topsoil layer

The new CCR landfill final cover for remaining areas of Module 1 and Module 2 will consist of the following components, from bottom to top:

- 3-inch-thick grading layer
- 12-inch-thick capillary break/barrier soil
- 12-inch-thick clay barrier soil
- GCL
- 40-mil polyethylene geomembrane
- Geocomposite drainage layer or 12-inch-thick drainage layer (sand)
- 30-inch-thick rooting zone layer
- 6-inch-thick topsoil layer

Phase 1, Module 1 has received final cover on the outer sideslope areas that no longer receive CCR. The proposed final cover system within a small portion of Modules 1 and 2 will have a sand drainage layer instead of the geocomposite drainage layer. The sand drainage layer will be used when final cover is installed upslope of existing final cover with a sand drainage layer to avoid having a geocomposite drainage layer draining into a sand layer with a potentially different hydraulic conductivity.

The geocomposite drainage layer will have a minimum transmissivity of 8.55×10^{-4} m^2/sec unless drainage outlets are constructed within the final cover. For the converging flow areas in the final cover inside corners near Phase 2, Modules 10 and 11, a high capacity geocomposite drainage layer with a minimum transmissivity of 1.0×10^{-3} m^2/sec will be installed.

CCR LANDFILL PLANS, s. NR 514.045(1)(g), Wis. Adm. Code:

Fugitive Dust Control Plan, s. NR 514.07(10)(a), Wis. Adm. Code:
The fugitive dust control plan is included in Appendix C1 of the February 1, 2023, Addendum No. 1.

Measures for controlling fugitive dust include the following for minimizing CCR from becoming airborne at the CCR landfill:

- Establishing and enforcing a vehicle speed limit of 10 miles per hour (mph) or less. Reduced speeds minimize fugitive dust generated from vehicle traffic.

- Covering all open-bodied vehicles that are transporting CCR to minimize the generation of fugitive dust during transport of CCR.
- Minimizing fall distances when handling or transferring CCR. The facility uses best practices when handling CCR with end loaders, and other best management practices, 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.

The CCR fugitive dust control plan will be reviewed annually, and updated as necessary, in conjunction with preparation of the annual CCR fugitive dust control report required by s. NR 514.07(10)(a)(5), Wis. Adm. Code. The annual CCR fugitive dust control report will be included in the annual report in accordance with s. NR 506.20(3)(a), Wis. Adm. Code, and include a description of the actions taken by the owner or operator to control CCR fugitive dust, a record of all citizen complaints, and a summary of any corrective measures taken.

Run-On and Run-Off Control System Plan, s. NR 514.07(10)(b), Wis. Adm. Code:
The run-on and run-off control system plan is included in Appendix C2 of the February 1, 2023, Addendum No. 1.

Storm water run-on is controlled by berms and swales around the perimeter of the CCR landfill that divert storm water away from the CCR landfill. Run-off from areas outside existing CCR units and areas of the existing CCR units where final or intermediate cover is in place is diverted into the perimeter drainage swales, which drain to the South Sedimentation Basin. Intermediate swales/berms and downslope channels on the final cover help minimize erosion of the final cover and divert water to the perimeter drainage system, and ultimately to the South Sedimentation Basin.

Run-off from the active portions of the CCR landfill is handled as leachate and is collected by a leachate collection system and internal swales, which route the contact water run-off and leachate to the lined leachate/surface water pond. Intermediate cover will be added as CCR placement progresses to reduce contact water that is directed to the leachate/surface water pond. The contact water in the leachate/surface water pond is used for dust control or other actions within the active landfill or, if needed, is transported to the generating station where it may be discharged through Outfall 003 inside the plant in accordance the facility's Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

Run-off from areas outside existing CCR units and areas of the existing CCR units where final or intermediate cover is in place is diverted into the perimeter drainage swales, which drain to the South Sedimentation Basin or a low area north of the facility. Intermediate swales/berms and downslope channels on the final cover help minimize erosion of the final cover and divert water to the perimeter drainage system.

A temporary rain cover, as approved in the department's June 6, 2018 plan of operation approval modification, may be installed as needed over landfill liner not currently in use, to limit leachate and contact water production. Storm water collected on the rain cover will be diverted to perimeter swales, and ultimately to the sedimentation basin. The rain cover will be removed in sections to accommodate waste placement. As the rain

cover is removed, new diversion berms will be constructed to form the perimeter of a storm water containment area. The berms will prevent contact water from running onto the rain cover and will anchor or ballast the rain cover at the new limits. When the rain cover has been fully removed, run-off will be controlled by the limits of the developed modules, and all water inside the lined waste limits will be managed as leachate.

The run-on and run-off control plan will be reviewed at least every 5 years in accordance with s. NR 514.07(10)(b)(4), Wis. Adm. Code.

Closure Plan, s. NR 514.07(10)(c), Wis. Adm. Code:
The closure plan is included in Appendix F of the September 1, 2023, Addendum No. 2.

When CCR placement is completed in a CCR unit, or if early closure is required, the unit will be closed by covering the CCR with the final cover system described above. Prior to final cover system construction, the CCR surfaces will be graded and compacted to establish a firm subgrade for final cover construction. In addition, all required notifications will be submitted to the department, and WPL will obtain all additional necessary permits (for example, general permit coverage for construction storm water management).

The following table reflects the estimated maximum volume of CCR disposed on-site at the COL facility.

Area	Maximum Capacity (cy)
Phase 1, Modules 1-6, Phase 2, modules 10-13	3,630,075

The timing for completion of CCR placement in the units that are addressed in the closure plan will depend on CCR generation and disposal rates. Future CCR unit development will also impact the timing of closure. If early closure of all units is required, final cover will be placed in the active landfill areas shown below:

Areas Requiring Final Cover (acres)	
Phase 1, Modules 1-3	10.5
Phase 1, Modules 4-6	12.0
Phase 2, Modules 10-11	6.9
Phase 2, Modules 12-13	7.1
Total	36.5

CCR placement is anticipated to permanently end at this facility following retirement of the Columbia Generating Station by June 2026, as announced by WPL. Some CCR disposal activity may be necessary following retirement of Columbia as part of decommissioning efforts (for example, cleaning of ducts and other equipment that may contain CCR following retirement). Closure activities are expected to be complete by the end of 2027.

The initiation of closure activities will commence no later than 30 days after the known final receipt of CCR as required by ss. NR 506.083(2)(a) and (b), Wis. Adm. Code.

WPL will provide notification as follows:

- Intent to initiate closure
- Closure completion
- Availability of the written Closure Plan and any amendments

The closure plan will be modified when a new module is constructed, when there is a change in the operation of the CCR unit that affects the plan, or when unanticipated events warrant revision to the closure plan as required by s. NR 514.07(10)(c)(7), Wis. Adm. Code.

Long-term Care Plan, s. NR 514.07(10)(d), Wis. Adm. Code:
The long-term care plan is included in Appendix K of the September 1, 2023, Addendum No. 2.

Monitoring and Maintenance Activities	Frequency
Mowing	Semi-Annually
Inspections by Owner/Operator	Quarterly
Repair to Final Cover for Erosion Concerns	As needed, determined by inspection
Sedimentation Basin Cleaning	As needed, determined by inspection
Leachate Collection Line Cleaning	Annually
Environmental Monitoring (groundwater, leachate)	Semi-Annually
Leachate Collection Line Video Inspection	Every 5 years

The owner/operator will perform quarterly inspections of the landfill surface, leachate control system, and groundwater monitoring systems. If issues are noticed during the inspection, action will be taken to remedy the situation. Eroded areas will be repaired and reseeded. Repairs or replacement will be performed on the groundwater monitoring system as needed.

The leachate collection and removal system for the existing CCR landfill and future units will be maintained to meet state requirements including leachate collection line cleaning, leachate collection video inspection, and any needed repairs to the existing system. Leachate collection video inspections will occur at 5-year intervals, following the annual pipe cleaning required by s. NR 506.07(5)(c), Wis. Adm. Code. The video camera inspection will extend a minimum of 300 feet onto the base grades of each leachate collection line.

Currently, the contact information for COL during the post-closure/long-term care period is as follows:

Columbia Energy Center
Attn: Plant Manager
W8375 Murray Road
Pardeeville, WI 53954
(608) 742-0711
CCRProgram@alliantenergy.com

The final use of the CCR landfill will be privately owned green space. With this use, there will be no disturbance of the final cover or any other landfill-related components.

WPL will amend the long-term care plan if there is a change in operation of the CCR unit that affects the long-term care plan or, if after post-closure activities have started, unexpected events cause a revision of the plan.

GROUNDWATER MONITORING SYSTEM, s. NR 514.045(1)(h), Wis. Adm. Code:

CCR Groundwater Monitoring System Plan, ss. NR 507.15(3)(a) through (e), Wis. Adm. Code:
The CCR groundwater monitoring system plan is included in Appendix G of the September 1, 2023, Addendum No. 2.

The CCR groundwater monitoring system includes the following monitoring wells:

- Upgradient wells: MW-84A and MW-301
- Modules 1-3 downgradient wells: MW-302, MW-33AR, MW-34A
- Modules 4-6 downgradient wells: MW-309, MW-310, MW-311
- Modules 10-11 downgradient wells: MW-313, MW-314, MW-315

The uppermost aquifer unit at the site, as defined in s. NR 500.03(246m), Wis. Adm. Code, is the surficial sand and gravel aquifer. Materials comprising the uppermost aquifer at each location are sand, silty sand, poorly graded sand, and/or poorly graded sand with gravel. The thickness of unconsolidated deposits at the site varies from approximately 40 to 100 feet. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer. Sandstone bedrock underlying the sand and gravel aquifer is shown on the boring logs for MW-33BR and MW-34B, located adjacent to MW-33AR and MW-34A. The three water supply wells at the site (HC-1, HC-2, and HC-3) all obtain water from the sandstone aquifer. The other nearby private wells are cased within the sandstone aquifer, based on the logs that SCS Engineers (SCS) were able to locate through public records.

Groundwater elevation data from the CCR landfill have historically shown that local groundwater flow within the unconsolidated formation is generally to the west, toward the Wisconsin River, but an area of outward radial flow has been present around the pond complex located to the northwest of the CCR landfill. The two most recent groundwater flow maps, from April and October 2022, are included as Attachment D in the September 1, 2023, Addendum No. 2. The April 2022 flow map, showing a groundwater mound with radial outward flow around the Primary Ash Pond and Secondary Pond, is more typical of historical conditions around the pond complex. In October 2022, groundwater flow in the vicinity of the pond complex was affected by dewatering operations around the Secondary Pond related to pond closure. In the immediate area of the CCR landfill, groundwater flow is generally to the northwest. This information was used to select background and downgradient monitoring well locations.

The background wells (MW-84A and MW-301) are located to the southeast of the CCR landfill, upgradient from the CCR landfill. The Module 1-3 downgradient wells (MW-302, MW-33AR, and MW-34A) are located along the western edge of the landfill. The Module 4-6 downgradient wells (MW-309, MW-310, and MW-311) are located along the northern edge of the landfill and to the northwest. The Module 10-11 downgradient wells are located along the northern edge of Module 11. The downgradient wells were installed as close as practicable to the CCR unit boundaries considering the site layout and obstructions. Overhead power lines, a railroad right-of-way along the west side of the landfill, and steep grades in some areas restricted drilling locations immediately west and northwest of the landfill.

All downgradient CCR monitoring wells are screened within the sand and gravel aquifer. Horizontal well spacing between the CCR monitoring wells is similar to or less than the distance between monitoring wells in the pre-existing non-CCR monitoring program, which also monitors groundwater in the unconsolidated sand unit.

Monitoring wells MW-301 and MW-302 were constructed in 2015, monitoring wells MW-309 through MW-311 were constructed in 2018, and monitoring wells MW-313 through MW-315 were constructed in 2022. These wells were constructed with a casing, screen, filter pack, and seal in accordance with the requirements of ch. NR 141, Wis. Adm. Code. Monitoring wells MW-33AR, MW-34A, MW-84A, and M-4R were constructed between 1977 and 2003 to comply with the state-required groundwater sampling program. All of the wells have a bentonite seal in the annular space above the sampling depth. The length of the annular space seal for the pre-existing wells varies in accordance with the state monitoring well construction requirements in effect at the time of well construction. All of the pre-existing wells were included in the state-approved monitoring program.

Monitoring wells will be operated and maintained so that the devices perform to the design specifications throughout the life of the monitoring program. If additional monitoring wells are installed in the future, documentation will be performed and submitted as required by s. NR 507.15(3)(e), Wis. Adm. Code.

After construction of Module 12, additional wells will be installed downgradient of Module 12 for CCR monitoring program purposes. Existing CCR wells MW-313, MW-314, and MW-315 are located within the proposed footprint of Module 12, and the wells extend below the proposed subbase grades. WPL now plans to construct Phase 2, Module 12 in 2024, per a January 25, 2024, email from Alliant Energy. MW-313, MW-314, and MW-315 must be abandoned in order to construct Module 12. These wells will be abandoned according to the requirements of s. NR 141.25(2)(c), Wis. Adm. Code, prior to construction of Module 12.

After construction of Module 13 (if needed), additional wells would be installed downgradient of Module 13 for CCR monitoring program purposes.

Baseline Groundwater Quality, s. NR 507.15(3)(i), Wis. Adm. Code:
Baseline groundwater quality will be established for each CCR well in accordance with s. NR 507.18, Wis. Adm. Code. Baseline sampling at CCR wells during the initial permitting process under s. NR 514.045, Wis. Adm. Code, included additional sampling events at existing wells for constituents listed in s. NR 507 Appendix I, Tables 1A and 3, Wis. Adm. Code, such as manganese, that were not collected to meet background sampling requirements of the Federal CCR Rule because the parameters are not included Appendix III or IV to 40 CFR Part 257.

Baseline sampling of CCR wells associated with Modules 12 and/or 13 will be completed following installation of the wells. Preventive action limits (PALs) and, if applicable, alternative concentration limits (ACLs) for these wells will be submitted to the department following the completion of baseline sampling.

Baseline groundwater quality calculations for CCR wells associated with Modules 1 through 6 were calculated and proposed in accordance with s. NR 507.27, Wis. Adm. Code, and the department's guidance for calculating PALs and ACLs (PUB-WA-1105).

Groundwater quality standard exemptions in accordance with ss. NR 507.29 and NR 140.28, Wis. Adm. Code, were requested and are being granted for the following CCR wells and parameters associated with Modules 1 through 6:

- Boron at MW-33AR, MW-34A, and MW-302
- Chloride at MW-33AR, MW-309, and MW-310
- Nitrate + nitrite as N at MW-34A, MW-301, and MW-302
- Sulfate at MW-33AR and MW-34A

The department did not calculate and approve PALs and ACLs at CCR wells MW-313, MW-314, and MW-315 because WPL now plans to construct Phase 2, Module 12 in 2024, per a January 25, 2024, email from Alliant Energy. MW-313, MW-314, and MW-315 are in the Module 12 footprint and must be abandoned in order to construct Module 12.

In addition to establishing baseline groundwater quality and calculating and proposing PALs and ACLs at CCR wells, WPL calculated and proposed PALs and ACLs at non-CCR wells. Baseline groundwater quality calculations for non-CCR wells were calculated and proposed in accordance with s. NR 507.27, Wis. Adm. Code, and the department's guidance for calculating PALs and ACLs (PUB-WA-1105).

Groundwater quality standard exemptions in accordance with ss. NR 507.29 and NR 140.28, Wis. Adm. Code, were requested and are being granted for the following non-CCR wells and parameters:

- Arsenic at MW-92B
- Boron at MW-33BR and MW-34B
- Chloride at MW-37A and MW-86
- Nitrate + nitrite as N at MW-33BR, MW-34B, MW-83, and MW-92A

Detection Groundwater Monitoring, s. NR 507.15(3)(L), Wis. Adm. Code:
Detection monitoring will be performed at CCR wells on a semiannual basis.

The department will be informed in accordance with s. NR 507.26, Wis. Adm. Code, of any CCR well that purges dry, is damaged or obstructed, or in any way is rendered such that a sample was unable to be collected from the well during a scheduled sampling event when the sampling event data are submitted.

A notification and response in accordance with s. NR 507.30, Wis. Adm. Code, will be made when a groundwater standard at the point of standards application has been attained or exceeded at any CCR well. This response includes the establishment of an assessment monitoring program meeting the requirements under s. NR 508.06, Wis. Adm. Code, unless the exceedance is determined by the department to be from a source other than the CCR landfill, or that the groundwater standard exceedance resulted from error in sampling, analysis, or natural variation in background groundwater quality in accordance with s. NR 508.06 (2)(f)2, Wis. Adm. Code.

The point of standards application for a groundwater quality exceedance at a CCR well is 0 feet from the waste boundary. Future compliance monitoring wells will be located as close as practicable to the waste boundary. Factors that may require siting wells further from the waste boundary include overhead or buried utility lines, slopes, landfill haul roads or access roads, storm water management features, rail lines and rights-of-way, and other site-specific features.

Annual Groundwater Monitoring and Corrective Action Report, s. NR 507.15(3)(m), Wis. Adm. Code:
Annual groundwater monitoring and corrective action reports will be submitted in accordance with s. NR 507.15(3)(m), Wis. Adm. Code, for monitoring wells included in the CCR well monitoring program.

SAMPLING PLAN, s. NR 514.045(1)(i), Wis. Adm. Code:

Sampling Plan, ss. NR 507.15(3)(f), (g), (h), (j), (k), Wis. Adm. Code:
The sampling plan included in Appendix H of the September 1, 2023, Addendum No. 2 addresses the CCR groundwater monitoring system, as well as monitoring at non-CCR wells and other monitoring points.

Appropriate sampling and analytical methods are described in the sampling plan. Groundwater elevation data will be reported to the department semiannually in accordance with s. NR 507.26, Wis. Adm. Code. During each sampling event, depths to groundwater at all wells will be measured immediately prior to purging and within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction. The rate and direction of groundwater flow will be determined for each semiannual sampling event. Field pH, temperature, and specific conductance will be measured using a portable electronic meter. For samples collected using low-flow methods, field dissolved oxygen, oxidation/reduction potential, and turbidity will also be measured using a portable electronic meter. Monitoring wells will be sampled in an order that allows for efficient collection of all samples to avoid effects from temporal variations in groundwater flow. Pumps used for purging and sample collection at CCR monitoring wells, and all bailers used for sample collection at non-CCR wells, are dedicated to specific wells. Monitoring wells will be purged using either low-flow (CCR Wells) or non-low-flow (non-CCR wells) techniques as required by the applicable monitoring program.

All groundwater samples collected under the CCR monitoring program will be unfiltered (total analysis). Groundwater samples collected under the continuation of the site monitoring program that predated the requirements of s. NR 514.045, Wis. Adm. Code, will be filtered (dissolved analysis) or unfiltered (total analysis) as shown in Table 2 of Appendix H of the September 1, 2023, Addendum No. 2.

The department will be notified in writing if a groundwater standard at a point of standards application has been attained or exceeded.

RECORD KEEPING

All plan modifications, documentation reports, monitoring, annual reports, plans, notifications, and amendments will be placed in the facility's operating record and on Alliant Energy's CCR Rule Compliance Data and Information website as required by s. NR 506.17(3), Wis. Adm. Code.

CLOSURE AND LONG-TERM CARE COST ESTIMATES

Although WPL will be perpetually responsible, in accordance with s. 289.41(1m)(c), Wis. Stats., for the long-term care of this landfill, proof of owner financial responsibility is required for the closure of the most expensive area, and for long term care of the entire facility for a period of 40 years. Closure costs reflect the most expensive area to close, which includes 34 acres of the landfill when portions of Phase 1 and all of Phase 2 (Modules 10, 11, and 12) are open. The closure costs include the purchasing, hauling, placement and documentation testing of all the final cover materials including soils, membranes, fabrics, and topsoil; seeding, fertilizing, mulching and labor; the cost of preparing an engineering report documenting the work performed and a 10% contingency per s. NR 520.07(2), Wis. Adm, Code. Long-term care costs include land surface care; leachate pumping, transportation, monitoring and treatment; groundwater monitoring including sample collection and analysis; leachate line jetting and televising; annual cost of electricity for maintaining the closed site; and a 10% contingency per s. NR 520.07(3), Wis. Adm. Code.

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION FOR INITIAL PERMITTING OF COAL COMBUSTION RESIDUALS (CCR) LANDFILL FOR THE WISCONSIN POWER AND LIGHT (WPL) COLUMBIA ENERGY CENTER ASH DISPOSAL FACILITY (LICENSE #3025)

FINDINGS OF FACT

The Department of Natural Resources (department) finds that:

1. Wisconsin Power and Light Company (WPL) owns and operates a non-hazardous solid waste disposal facility located in Section 27, T12N, R9W, Town of Pacific, Columbia County, Wisconsin. This facility is jointly owned with Wisconsin Public Service Corporation and Madison Gas and Electric Company.

2. The department conditionally approved a plan of operation for the facility on June 30, 1983. The plan of operation was updated on November 2, 2000, January 28, 2011, and July 28, 2022, via plan of operation approval modifications.

3. On December 14, 2022, Alliant Energy Corporation, on behalf of WPL, submitted a plan of operation modification request to the department for the initial permitting of a CCR landfill. The review fee of $30,500 was received by the department on January 18, 2023.

4. The information submitted in connection with the modification request includes the following:

    a. A report titled “Plan of Operation Modification Request Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility (WDNR License #3025), Columbia Energy Center, Portage, WI” dated and received December 14, 2022.

    b. A report titled “Plan of Operation Modification Request - Addendum No. 1, Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility, License #3025, Columbia Energy Center, Portage, WI” dated and received February 1, 2023.

    c. A report titled “Plan of Operation Modification Request - Addendum No. 2, Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility, License #3025, Columbia Energy Center, Portage, WI” dated and received September 1, 2023.

    d. A report titled “Plan of Operation Modification Request - Addendum No. 3, Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility, License #3025, Columbia Energy Center, Portage, WI” dated and received November 3, 2023.

    e. A report titled “Plan of Operation Modification Request - Addendum No. 4, Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility, License #3025, Columbia Energy Center, Portage, WI” dated and received November 20, 2023.

f. A January 25, 2024, email from Alliant Energy regarding the construction of Phase 2, Modules 12 and 13. Alliant Energy plans to construct Module 12 in 2024; Module 13 may be constructed at the same time.

g. A report titled "Plan of Operation Modification Request - Addendum No. 5, Initial Permitting of CCR Landfill, Wisconsin Power and Light Company, Dry Ash Disposal Facility, License #3025, Columbia Energy Center, Portage, WI" dated and received February 21, 2024.

5. Additional documents considered in connection with the modification request include the following:

a. The department's June 30, 1983, plan of operation approval.

b. The department's October 8, 1984, plan of operation addendum approval.

c. The department's March 11, 1996, plan of operation modification approval, which modified landfill monitoring requirements and established an annual groundwater monitoring summary report requirement.

d. The department's January 19, 2000, no objection letter responding to an expedited plan modification request dated January 14, 2000. The no objection letter reduced the groundwater monitoring summary report requirement from annual to biennial.

e. The department's November 2, 2000, plan of operation 10-year update approval.

f. The department's January 28, 2011, plan of operation 10-year update approval.

g. The department's September 14, 2011, composite liner plan operation approval modification.

h. A report titled "Characterization of FGD Waste, Columbia Energy Center Ash Disposal Facility (License #3025)", dated October 2, 2014. The report contains a characterization analysis of flue gas desulfurization (FGD) waste.

i. The department's December 16, 2014, spray dry absorber waste plan operation approval modification, which modified landfill monitoring requirements.

j. The department's June 6, 2018, temporary rain cover plan of operation approval modification.

k. The department's July 28, 2022, plan of operation 10-year update approval.

l. A report titled "Biennial Groundwater Monitoring Report for 2021-2022, Columbia Energy Center Dry Ash and Ash Ponds Disposal Facilities, Wisconsin Power and Light Company, Portage, Wisconsin, License #3025 (Dry Ash) and #2325 (Ash Ponds)", dated January 31, 2023.

m. A November 30, 2023, email from SCS Engineers on behalf of Alliant Energy regarding laboratory analysis of lithium.

n. A December 21, 2023, email from SCS Engineers on behalf of Alliant Energy regarding department comments on environmental monitoring data.

o. A January 22, 2024, email from SCS Engineers on behalf of Alliant Energy regarding a nitrate + nitrite (as N) groundwater quality standard exemption request at MW-302.

p. A January 26, 2024, email from the department to SCS Engineers and Alliant Energy regarding ch. NR 140, Wis. Adm. Code, groundwater quality standard exemption requests.

q. A report titled "Annual CCR Landfill Report, Wisconsin Power and Light Company, Dry Ash Disposal Facility (WDNR License #3025), Columbia Energy Center, Portage, WI", dated and received January 31, 2024.

r. An internal department memo dated March 13, 2024, from the department's Drinking Water and Groundwater Program concurring with the request for exemptions from ch. NR 140, Wis. Adm. Code, groundwater quality standards for the parameters and wells below:

   i. Arsenic at well MW-92B
   ii. Boron at wells MW-33AR, MW-34A, MW-302, MW-33BR, and MW-34B
   iii. Nitrate + nitrite (as N) at wells MW-301, MW-33BR, MW-83, MW-92A, MW-34A, MW-302, and MW-34B
   iv. Chloride at wells MW-33AR, MW-309, MW-310, MW-37A, and MW-86
   v. Sulfate at wells MW-33AR and MW-34A

s. A memo to the Columbia Energy Center Ash Disposal Facility (license # 3025) file dated March 21, 2024, summarizing the department's evaluation of the preventive action limits (PALs) and alternative concentration limits (ACLs).

t. The department's Solid Waste Technical Guidance for PAL/ACL Calculations (guidance document WA 1105, 2007).

u. Groundwater monitoring data for the Columbia Energy Center Ash Disposal Facility contained in the department's Groundwater and Environmental Monitoring System (GEMS).

v. The department files for the Columbia Energy Center Ash Disposal Facility, License #3025.

6. Additional information considered in connection with the modification request include the following:

   a. A virtual public information meeting was held on December 18, 2023, to comply with s. NR 514.045(3), Wis. Adm. Code, regarding the initial permitting of CCR landfill. During this meeting the department received no oral comments from the public regarding the proposed plan modification.

   b. A 60-day public comment period was held between December 5, 2023, and February 3, 2024, to comply with s. NR 514.045(3), Wis. Adm. Code, regarding the initial permitting of a CCR landfill. The department received no written comments from the public regarding the proposed plan modification.

7. Additional facts relevant to the review of the plan of operation modification request include:

a. The initial permitting for CCR landfills plan modification is required in accordance with s. NR 514.045, Wis. Adm. Code to update the plan of operation to comply with the applicable requirements under chs. NR 500 to 520, Wis. Adm. Code, for CCR landfills.

b. CCR landfills are regulated under 40 CFR Part 257 A and D. Wisconsin updated chs. NR 500 – 520, Wis. Adm. Code to incorporate federal requirements related to CCR landfills in July 2022. Wisconsin intends to seek EPA approval for a partial permit program for CCR Landfills in Wisconsin. To obtain EPA approval of a partial permit program for CCR landfills, Wisconsin regulations are required to be as protective as the federal rule.

c. The uppermost aquifer unit at the site is the surficial sand and gravel aquifer. The thickness of unconsolidated deposits at the site varies from approximately 40 to 100 feet. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer. The three onsite water supply wells (HC-1, HC-2, and HC-3) all obtain water from the sandstone aquifer. The other nearby private wells are cased within the sandstone aquifer, based on the logs that SCS Engineers (SCS) was able to locate through public records.

d. Preventive action limits (PALs) are not required for pH or temperature, in accordance with s. NR 507.27(1), Wis. Adm. Code.

8. The department considered the following information pertaining to the request for groundwater quality exemptions:

a. WPL has requested an exemption from ch. NR 140, Wis. Adm. Code, groundwater quality standards for arsenic, beryllium, boron, chloride, manganese, molybdenum, nitrate + nitrate (as N), sulfate, and thallium in accordance with s. NR 140.28(1), Wis. Adm. Code, to allow for approval of this plan of operation for initial permitting where a preventive action limit (PAL) or an enforcement standard (ES) adopted under ss. NR 140.10 or 140.12, Wis. Adm. Code has been attained or exceeded.

The department considered the following information while reviewing the need for exemptions to groundwater standards at this facility:

i. Baseline groundwater monitoring data and supporting information provided in the following addendums:

1. September 1, 2023, Addendum No. 2
2. November 3, 2023, Addendum No. 3
3. November 20, 2023, Addendum No. 4
4. February 21, 2024, Addendum No. 5

ii. Well construction details, boring logs, well location plan sheets, and water table maps provided in the September 1, 2023, Addendum No. 2.

iii. The landfill design specifications provided in the September 1, 2023, Addendum No. 2.

iv. Groundwater sample data collected from around the Columbia Energy Center Ash Disposal Facility that is available in GEMS dating back to 1984.

v. Information in the department's files relating to groundwater conditions at the Columbia Energy Center Ash Disposal Facility.

b. The department finds the following related to the design of the landfill and substances associated with the Columbia Energy Center Ash Disposal Facility that exceed ch. NR 140, Wis. Adm. Code, groundwater quality standards, including arsenic, boron, nitrate + nitrite (as N), chloride, and sulfate:

i. To minimize any incremental increase in contamination from the Columbia Energy Center Ash Disposal Facility, the facility is designed to contain and collect leachate. Phase 1, Module 1 includes a screened bottom ash drainage layer and a single perforated drain on the east end of the module. Phase 1, Module 2 through 6 and Phase 2, Modules 10 and 11 include 2-foot-thick compacted clay liner overlain by a geosynthetic clay liner and 60-mil geomembrane and a leachate collection system. Phase 1, Modules 1 through 6 and Phase 2, Modules 10 and 11 include a composite final cover system. These design features will limit increases of contaminants in the groundwater.

ii. In accordance with s. NR 504.05(1), Wis. Adm. Code, the department considers landfills designed in substantial conformance with these design criteria to be designed to achieve the lowest possible concentration of these substances in the groundwater which is technically and economically feasible.

iii. The Columbia Energy Center Ash Disposal Facility will not cause the concentrations of the substances with baseline or detection sample concentrations between the PAL and the ES to attain or exceed the ES for these substances at a point of standards application because of the facility design.

iv. The anticipated increase in the concentrations of these substances does not present a threat to public health or welfare because of the landfill design.

v. The anticipated incremental increase in the concentrations of the substances with baseline or detection sample concentrations above the ES will not attain or exceed the PAL because of the landfill design.

vi. Based on an examination of site conditions, the department finds that the groundwater concentrations of arsenic, boron, nitrate + nitrite (as N), chloride, and sulfate in the site area were found at concentrations exceeding the ch. NR 140, Wis. Adm. Code groundwater quality standards.

c. Based on an examination of the groundwater quality data for the Columbia Energy Center Ash Disposal Facility and the information in findings of fact 8.a and 8.b above, the department finds the requested groundwater quality exemptions to be warranted for the following wells and substances:

i. **Preventive action limit (PAL)** exemptions for substances of **public welfare concern and nitrate + nitrite (as N)** in accordance with s. NR 140.28(3)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Chloride	MW-33AR
Sulfate	MW-33AR, MW-34A
Nitrate + nitrite (as N)	MW-301, MW-33BR, MW-83, MW-92A
Notes: - Baseline or detection sample concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for nitrate + nitrite (as N) in s. NR 140.10, Wis. Adm. Code.	

ii. **PAL** exemptions for substances of **public health concern (other than nitrate + nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Arsenic	MW-92B
Boron	MW-33AR, MW-34A, MW-302, MW-33BR, MW-34B
Notes: - Baseline or detection sample concentrations attain or exceed the **PAL** but are below the ES in **two or more** sample rounds at the monitoring wells. - PALs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code.	

iii. **Enforcement standard (ES)** exemptions for substances of **public welfare concern and nitrate + nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Chloride	MW-309, MW-310, MW-37A, MW-86
Nitrate + nitrite (as N)	MW-34A, MW-302, MW-34B
Notes: - Baseline or detection sample concentrations attain or exceed the **ES** in at least **one** or more sample rounds at the monitoring wells. - ESs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for nitrate + nitrite (as N) in s. NR 140.10, Wis. Adm. Code.	

d. Chapter NR 140, Wis. Adm. Code groundwater quality standard exemptions were requested in the September 1, 2023, Addendum No. 2, the November 3, 2023, Addendum No. 3, and the February 21, 2024, Addendum No. 5.

e. The department finds the requested groundwater quality exemptions are not warranted for the following wells and substances:

i. Non-CCR wells:

1. PAL exemption for arsenic at well MW-86 – Arsenic has been sampled semiannually at MW-86 since 1996. Arsenic has been detected below the ch. NR 140 PAL (1 ug/L) since April 2010, and was detected above the ch. NR 140 PAL twice before 2010 (October 2009, 1.3 ug/L, and October 2002, 1 ug/L). Based on the concentrations detected since April 2010, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for arsenic at MW-86.

2. PAL exemption for arsenic at well MW-92A – Arsenic has been sampled semiannually at MW-92A since 1996. Arsenic has been detected below the ch. NR 140 PAL (1 ug/L) since April 2010, and was detected above the ch. NR 140 PAL twice before 2010 (October 2009, 1.5 ug/L, and October 2002, 1 ug/L). Based on the concentrations detected since April 2010, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for arsenic at MW-92A.

3. PAL exemption for molybdenum at well MW-33BR – Molybdenum has been sampled semiannually at MW-33BR since 2011. Molybdenum exceeded in the ch. NR 140 PAL (8 ug/L) in the samples collected from April 2011 to April 2016. Since October 2016, molybdenum has not been detected above the ch. NR 140 PAL. Based on the concentrations detected since October 2016, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for molybdenum at MW-33BR.

4. PAL exemption for sulfate at well MW-33BR – Sulfate has been sampled semiannually at MW-33BR since April 2003. Sulfate exceeded the ch. NR 140 PAL (125 mg/L) in the samples collected from April 2003 to October 2012. Since April 2013, sulfate has not been detected above the ch. NR 140 PAL. Based on the concentrations detected since April 2013, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for sulfate at MW-33BR.

ii. CCR wells:

1. Exemptions at wells MW-313, MW-314, and MW-315 – WPL completed baseline sampling and proposed PALs and ACLs for CCR wells MW-313, MW-314, and MW-315, however, the department did not calculate and approve PALs and ACLs at these wells because WPL now plans to construct Phase 2, Module 12 in 2024, per a January 25, 2024, email from Alliant Energy. MW-313, MW-314, and MW-315 are located in the Module 12 footprint and must be abandoned in order to construct Module 12.

   WPL requested groundwater quality exemptions for manganese at MW-313 and MW-315 and nitrate + nitrite (as N) at MW-313 and MW-314 due to elevated concentrations of those parameters at those wells.

   The initial manganese concentrations at MW-313 and MW-315 were elevated but decreased over several rounds of sampling and appear to have stabilized below the health PAL (60 ug/L). Manganese can be elevated during the early stages of sampling at a monitoring well due to

drilling and installation activities and tends to stabilize after several rounds of samples have been collected. A similar trend in manganese concentrations is apparent in background CCR monitoring well MW-301, which is located upgradient from the CCR landfill.

Nitrate + nitrite (as N) concentrations at MW-313 and MW-314 may be associated with agricultural land use. Nitrate + nitrite (as N) concentrations at these wells are generally higher than concentrations detected in recent CCR material leach testing and at the leachate pond (LP-1), indicating the CCR landfill may not be the primary source of nitrogen. Exemptions for nitrate + nitrite (as N) were requested and are being granted for monitoring wells MW-301 and MW-92A, which are located to the east or southeast (upgradient) of the CCR landfill. Detected concentrations at downgradient wells, such as MW-313 and MW-314, are similar to concentrations at upgradient wells MW-301 and MW-92A. Nitrate + nitrite (as N) concentrations at these upgradient wells have ranged from "not detected" to 9.1 mg/L. Nitrate + nitrite (as N) concentrations at MW-313 and MW-314 have ranged from 0.11 mg/L to 8.1 mg/L.

2. PAL exemption for beryllium at well MW-310 – Beryllium was detected above the ch. NR 140 PAL (0.4 ug/L) in the April 23, 2018 (0.72 ug/L), and June 23, 2018 (0.59 ug/L), baseline samples collected from MW-310. The April 23, 2018, and June 23, 2018, beryllium detections were "J"-flagged, as they were detected at a concentration between the laboratory's limit of detection (LOD) and limit of quantitation (LOQ). The LOD is the lowest concentration level that can be determined to be statistically different from a blank, and the LOQ is the level above which quantitative results may be obtained with a specified degree of confidence. Beryllium was either not detected or not detected above the ch. NR 140 PAL in the other six baseline samples collected from MW-310. Based on the baseline monitoring results, ch. NR 140, Wis. Adm. Code, groundwater quality exemptions are not warranted for beryllium at MW-310.

3. PAL exemption for nitrate + nitrite (as N) at well MW-33AR – Nitrate + nitrite (as N) has been sampled semiannually at MW-33AR since April 2015. Nitrate + nitrite (as N) was detected above the ch. NR 140 PAL (2 mg/L) in the samples collected from April 2015 to April 2017. Nitrate + nitrite (as N) has not been detected above the ch. NR 140 PAL in any samples collected since April 2018. Based on the concentrations detected since April 2018, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for nitrate + nitrite (as N) at MW-33AR.

4. PAL exemption for manganese at well MW-301 - Manganese was detected above the ch. NR 140 public health PAL (60 ug/L) in the first baseline sample collected from MW-301 (280 ug/L), and above the ch. NR 140 public welfare PAL (25 ug/L) in the second, third, and fourth baseline samples (47.2 ug/L, 28.1 ug/L, and 28 ug/L, respectively) collected from MW-301. Since then, manganese concentrations appear to have decreased and stabilized below the ch. NR 140 public welfare PAL. Based on the most recent baseline monitoring results, a ch. NR 140, Wis. Adm. Code, groundwater quality exemption is not warranted for manganese at MW-301.

5. PAL exemptions for thallium at wells MW-309 and MW-310 – Thallium was detected above the ch. NR 140 PAL (0.4 ug/L) in the following baseline samples collected from CCR well MW-309:

a. April 23, 2018, sample (0.83 ug/L),
b. June 23, 2018, sample (0.57 ug/L),
c. July 23, 2018, sample (0.42 ug/L)

Thallium was detected above the ch. NR 140 PAL in the following baseline samples collected from CCR well MW-310:

a. April 23, 2018, sample (0.73 ug/L),
b. June 23, 2018, sample (0.9 ug/L),
c. July 23, 2018, sample (0.44 ug/L)

The April 23, 2018, June 23, 2018, and July 23, 2018, thallium detections at MW-309 and MW-310 were "J"-flagged, as they were detected at a concentration between the laboratory's LOD and LOQ. The LOD is the lowest concentration level that can be determined to be statistically different from a blank, and the LOQ is the level above which quantitative results may be obtained with a specified degree of confidence. Thallium was either not detected or not detected above the ch. NR 140 PAL in the other six baseline samples collected from MW-309 and MW-310, respectively. Based on the baseline monitoring results, ch. NR 140, Wis. Adm. Code, groundwater quality exemptions are not warranted for thallium at MW-309 and MW-310.

9. The department considered the following information with respect to the review of PALs and ACLs:

   a. The PALs for indicator parameters and the ACLs established in this approval are based on at least 8 sample results for each substance at each monitoring well.

   b. The PALs for indicator parameters established in this approval are equal to the mean background water quality plus 3 standard deviations or the mean background water quality plus the minimum increase specified in Table 3, ch. NR 140, Wis. Adm. Code, whichever is greater.

   c. The ACLs established in this approval are equal to the mean background water quality plus 2 standard deviations.

   d. The calculated PALs and ACLs were rounded up to 2 significant figures.

   e. The indicator parameter PALs, ACLs, and special conditions set forth below are needed to assure that an increase in the concentration of arsenic, boron, nitrate + nitrite (as N), chloride, and sulfate does not cause an increased threat to public health or welfare or inhibit compliance with ch. NR 500 through 538, Wis. Adm. Code.

10. The department considered the following information while reviewing the proposed removal of non-CCR monitoring wells MW-91AR and MW-91B from the monitoring program:

    a. MW-91AR and MW-91B are located within the approved landfill limits but outside the current extent of waste placement, as depicted on Figure 2 of Appendix G of the September 1, 2023, Addendum No. 2.

b. MW-91A/MW-91AR and MW-91B have been sampled at their location at least semiannually since 1989 (MW-91A was last sampled in October 2002 and MW-91AR was first sampled in April 2003).

c. With the exception of the October 2020 and 2021 sampling events, boron concentrations typically exceed the ES (1,000 ug/L) at MW-91B. Boron concentrations at MW-91AR have decreased and are typically detected below the PAL (200 ug/L); however, the ES was exceeded in October 2020 at MW-91AR.

d. With the exception of the October 2020 sampling event, molybdenum concentrations typically exceed the ES (40 ug/L) at MW-91B. Molybdenum concentrations typically exceed the PAL (8 ug/L) at MW-91AR and exceeded the ES in October 2020.

e. Continued monitoring of MW-91AR and MW-91B is necessary to evaluate potential groundwater impacts at those locations.

11. The department considered the following information while reviewing the proposed changes to the non-CCR groundwater monitoring parameter list.

a. Removal of chloride from the parameter list for non-CCR monitoring wells.

i. Chloride has been sampled semiannually at non-CCR monitoring wells since 2015, and prior to that was included in sampling events in the 1980s.
ii. Concentrations of chloride in non-CCR monitoring wells have generally been stable since 2015. MW-86 generally detects chloride above the ch. NR 140 enforcement standard (ES) of 250 mg/L. MW-37A occasionally detects chloride above the PAL (125 mg/L) and detected chloride above the ES once in 2018. No other PAL or ES exceedances of chloride have been detected at non-CCR monitoring wells since it was added to the monitoring program in 2015.
iii. MW-86 is located adjacent to Highway 51, and MW-37A is located adjacent to Murray Road, so these wells may be impacted by road salt application.
iv. Chloride is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.
v. Chloride will continue to be sampled at onsite water supply wells HC-1, HC-2, and HC-3. Chloride will be sampled as a detection monitoring parameter at CCR monitoring wells in accordance with ch. NR 507 Appendix 1, Table 1A, Wis. Adm. Code.

b. Removal of nitrate + nitrite (as N) from the parameter list for non-CCR monitoring wells.

i. Nitrate + nitrite (as N) has been sampled semiannually at non-CCR monitoring wells since 2015 and concentrations have generally been stable since that time. PAL (2 mg/L) exceedances of nitrate + nitrite (as N) are typical at some non-CCR monitoring wells.
ii. Nitrate + nitrite (as N) concentrations in groundwater may be associated with agricultural land use. Common sources of nitrogen in groundwater include nitrogen fertilizers, manure, septic systems and sewage treatment practices. Nitrate + nitrite (as N) concentrations in some non-CCR monitoring wells are higher than concentrations detected in recent CCR material leach testing and at the leachate pond (LP-1), indicating the landfill may not be the primary source of nitrogen in groundwater near the landfill.

iii. Nitrate + nitrite (as N) is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.
iv. Nitrate + nitrite (as N) will continue to be sampled at onsite water supply wells HC-1, HC-2, and HC-3.

c. Removal of aluminum from the parameter list for non-CCR monitoring wells.

i. Aluminum has been sampled semiannually at non-CCR monitoring wells since 2015. Concentrations of aluminum at non-CCR monitoring wells are typically non-detect.
ii. No ES (200 ug/L) exceedances of aluminum have been detected at non-CCR monitoring wells since it was added to the monitoring program in 2015.
iii. Since 2019, there have been aluminum PAL (40 ug/L) exceedances at multiple non-CCR monitoring wells, but the detections are isolated and not confirmed in subsequent sample rounds and appear to be anomalous.
iv. Aluminum is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

d. Removal of barium from the parameter list for non-CCR monitoring wells.

i. Barium has been sampled semiannually at non-CCR monitoring wells since 1996 and concentrations have generally been stable since that time.
ii. No ES (2,000 ug/L) or PAL (400 ug/L) exceedances of barium have been detected at non-CCR monitoring wells since it was added to the monitoring program in 1996.
iii. Barium is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

e. Removal of cadmium from the parameter list for non-CCR monitoring wells.

i. Cadmium has been sampled semiannually at non-CCR monitoring wells since 2011. Concentrations of cadmium at non-CCR monitoring wells are typically non-detect.
ii. No ES (5 ug/L) exceedances of cadmium have been detected at non-CCR monitoring wells since it was added to the monitoring program in 2011.
iii. Cadmium exceeded the PAL (0.5 ug/L) at MW-34B in 2017 and 2022, but those exceedances were not confirmed in subsequent sample rounds.
iv. Cadmium is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

f. Removal of chromium from the parameter list for non-CCR monitoring wells.

i. Chromium has been sampled semiannually at non-CCR monitoring wells since 1996 and concentrations have generally been stable since that time.
ii. No ES (100 ug/L) exceedances of chromium have been detected at non-CCR monitoring wells since it was added to the monitoring program in 1996.
iii. Chromium exceeded the PAL (10 ug/L) at MW-91AR in 2004 and 2009, but those exceedances were not confirmed in subsequent sample rounds.
iv. Chromium is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

g. Removal of mercury from the parameter list for non-CCR monitoring wells.

   i. Mercury has been sampled annually at non-CCR monitoring wells since 2011. Concentrations of mercury at non-CCR monitoring wells are typically non-detect.
   ii. No ES (2 ug/L) or PAL (0.2 ug/L) exceedances of mercury have been detected at non-CCR monitoring wells since it was added to the monitoring program in 2011.
   iii. Mercury is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

h. Removal of selenium from the parameter list for non-CCR monitoring wells.

   i. Selenium has been sampled semiannually at non-CCR monitoring wells since 2011.
   ii. Selenium was detected above the ES (50 ug/L) at MW-91AR in 2011 and 2012 but concentrations have decreased and have been detected below the PAL (10 ug/L) since 2013.
   iii. Selenium was detected above the ES at MW-91B prior to 2016 but concentrations have decreased and have been detected below the PAL since 2018.
   iv. Selenium concentrations at non-CCR monitoring wells (other than MW-91AR and MW-91B) have been detected below the PAL since selenium was added to the monitoring program in 2011.
   v. Selenium is not a required groundwater monitoring parameter for landfills accepting fly or bottom ash waste in ch. NR 507 Appendix 1, Table 2, Wis. Adm. Code.

12. The department considered the following information while reviewing the proposed changes to the lysimeter monitoring parameter list.

    a. Aluminum concentrations at lysimeter LS-1 are typically detected above the ES (200 ug/L). Continued sampling of aluminum at the landfill's lysimeters is necessary to detect potential impacts from aluminum.

    b. Chromium concentrations at lysimeter LS-1 are typically detected above the PAL (10 ug/L). Continued sampling of chromium at the landfill's lysimeters is necessary to detect potential impacts from chromium.

    c. Selenium concentrations at lysimeter LS-1 were detected above the PAL (10 ug/L) prior to 2019 and have been detected below the PAL since 2019. Selenium concentrations at LS-1 appear to be trending up towards the PAL since May 2020. Continued sampling of selenium at the landfill's lysimeters is necessary to detect potential impacts from selenium.

13. Granting the exemptions that are set forth below will not inhibit compliance with Wisconsin solid waste management standards in chs. NR 500 through 538, Wis. Adm. Code.

14. The special conditions set forth below are needed to assure that the sites are operated and maintained in an environmentally sound manner. If the special conditions are complied with, the proposed modifications will not inhibit compliance with the standards set forth in the applicable portions of chs. NR 500-538, Wis. Adm. Code.

CONCLUSIONS OF LAW

1. The department has the authority under s. 289.30(6), Wis. Stats., to modify a plan of operation approval if the modification would not inhibit compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.

2. The department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.

3. The department has authority under ss. NR 140.28 and NR 507.27, Wis. Adm. Code, and ss. 160.19(8) to (10), Wis. Stats., to grant exemptions to groundwater quality standards and to establish corresponding alternative concentration limits.

4. The department has authority under s. NR 140.20, Wis. Adm. Code, and s. 160.15(3), Wis. Stats., to establish preventive action limits for groundwater indicator parameters at waste disposal facilities.

5. The conditions of approval set forth below are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.

6. In accordance with the foregoing, the department has the authority under s. 289.30(6), Wis. Stats., to issue the following conditional plan of operation modification approval.

GRANTS OF EXEMPTION

1. The Columbia Energy Center Ash Disposal Facility has demonstrated circumstances which warrant an exemption to the groundwater standards in ch. NR 140, Wis. Adm. Code, as specified in s. NR 140.28, Wis. Adm. Code, for the wells and substances listed below. The exemption allows the department to approve a CCR landfill at a location where a PAL or ES adopted under ss. NR 140.10 or 140.12, Wis. Adm. Code, has been attained or exceeded in the baseline monitoring sampling results. Refer to Finding of Facts 8.a – 8.c for additional information. This exemption is granted under the authority of ss. NR 140.28 and NR 507.27, Wis. Adm. Code and ss. 160.19(8) to (10), Wis. Stats. as noted above. The following exemptions to the specified NR 140 groundwater quality standards are hereby granted and apply only to the Columbia Energy Center Ash Disposal Facility and do not apply to any other present or past facility or activity:

    a. **Preventive action limit (PAL)** exemptions for substances of **public welfare concern and nitrate + nitrite (as N)** in accordance with s. NR 140.28(3)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Chloride	MW-33AR
Sulfate	MW-33AR, MW-34A
Nitrate + nitrite (as N)	MW-301, MW-33BR, MW-83, MW-92A

b. **PAL** exemptions for substances of **public health concern (other than nitrate + nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Arsenic	MW-92B
Boron	MW-33AR, MW-34A, MW-302, MW-33BR, MW-34B

c. **Enforcement Standard (ES)** exemptions for substances of **public welfare concern and nitrate + nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

Substance:	**Monitoring Wells:**
Chloride	MW-309, MW-310, MW-37A, MW-86
Nitrate + nitrite (as N)	MW-34A, MW-302, MW-34B

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The department hereby approves the proposed modifications for the initial permitting of a CCR landfill for the WPL Columbia Energy Center Ash Disposal Facility, subject to ch. NR 500-538, Wis. Adm. Code, and the following conditions:

1. The landfill owner or operator shall place all of the following on the landfill's publicly accessible internet site and shall do so in accordance with the requirements specified in s. NR 506.17(3), Wis. Adm. Code.

    a. The landfill's annual report required under s. NR 506.20(3), Wis. Adm. Code.

    b. The landfill's notification required by s. NR 506.084(2)(b), Wis. Adm. Code related to the end of the long-term care proof period.

    c. All notifications required for CCR landfills in addition to those specified under s. NR 506.17(3)(d), Wis. Adm. Code.

    d. A copy of the affidavit for the deed notation required under s. NR 506.083(4), Wis. Adm. Code.

2. The landfill owner or operator shall notify the department when the information required under s. NR 506.17(3)(d), Wis. Adm. Code and Condition 1. above have been placed on the landfill's publicly accessible internet site.

3. The annual report required by s. NR 506.20(3), Wis. Adm. Code, shall also include the following:

    a. The leachate line video camera inspection required by s. NR 506.07(5)(c), Wis. Adm. Code.

    b. The following information pertaining to the non-CCR well environmental monitoring program:

i. a summary of groundwater sampling results (including lysimeter and water supply well data) that exceed any approved PAL or ACL or ch. NR 140, PAL or ES (where ACLs are not approved), and an assessment of the cause and significance of the exceedances.
ii. an assessment of any increasing concentration trends of monitored parameters in groundwater over the past 4 or more sampling events.
iii. a groundwater elevation contour map with a summary of any significant change in flow patterns compared to previous flow patterns, unless otherwise approved by the department in writing.
iv. a summary of the status and condition of all environmental monitoring devices including:
    1. a list of all monitoring devices that did not function properly or were damaged.
    2. a description of repairs, replacements, or modifications completed to regain function of the monitoring device.
v. a summary of anticipated significant monitoring device activities for the upcoming year, such as installations or abandonments.

This condition supersedes condition 6 of the department's March 11, 1996, environmental monitoring plan of operation approval modification for license #3025, however, the condition remains active for license #2325.

4. The landfill owner or operator shall maintain procedures within the fugitive dust control plan for logging citizen complaints received by the landfill involving CCR fugitive dust events at the facility throughout the active life of the landfill.

5. The two-foot barrier layer soils used for final cover shall meet the requirements of s. NR 504.07(4)(a)12, Wis. Adm. Code.

6. The landfill owner or operator shall notify the department in writing 30 days prior to beginning to haul leachate to an offsite wastewater treatment facility. The notification shall include the name of the wastewater treatment facility and a copy of the leachate treatment agreement.

7. Environmental monitoring shall be performed during both the active life and after closure in accordance with the schedules provided in the environmental monitoring tables of Attachment #1.

   This condition supersedes condition 10 of the department's July 28, 2022, approval.

8. The ch. NR 140, Wis. Adm. Code, preventive action limits (PALs) and alternative concentration limits (ACLs) for the groundwater monitoring points shall be those listed in Attachment #2.

9. The PALs and enforcement standards (ESs) for all other substances not identified in Attachment #2 shall be as specified in ch. NR 140, Wis. Adm. Code, unless specifically approved by the department in writing.

10. Proof of financial responsibility for closure and long-term care shall be adjusted in accordance with ch. NR 520, Wis. Adm. Code. The proof of financial responsibility shall be established based upon the approved closure and long-term care cost estimates included in attachment #3.

11. Vegetative cover shall be maintained on all areas of final cover to prevent erosion. The final cover vegetation shall be mowed to prevent the growth of tall weeds and woody vegetation.

Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

This approval is based on the information available to the department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the department may ask you to provide further information relating to this activity. Likewise, the department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing department decisions.

To seek judicial review of the department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the department to file your petition with the appropriate circuit court and serve the petition on the department. The petition shall name the Department of Natural Resources as the respondent.

Dated: ___May 3, May 3, 2024_____

DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Bridget Kelly
Waste and Materials Management Program Supervisor
South Central Region

Tony Peterson
Waste Management Engineer
Southeast Region

Tyler Sullivan, P.G.
Waste Management hydrogeologist
South Central Region

Attachment # 1 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
Environmental Monitoring Tables

Table 1 - Detection Groundwater Monitoring

Monitoring Pt.	DNR ID#	WUWN	Sampling & Reporting[1] Frequency	Parameter Codes	Parameters
CCR wells					
Background Wells			Sample	04189	Elevation, Groundwater (feet above mean sea level)
MW-84A	38	CK843	Semiannually	00010	Field Temperature (^{0}C)
MW-301	100	VY701	April and October	00094	Field Conductivity @ 25^{0}C (umho/cm)
Modules 1-3				00400	Field pH (standard units)
MW-33AR	63	PE223		00410	Alkalinity, total (mg/L as $CaCO_3$)
MW-34A	20	CK825		00900	Hardness, total (mg/L as $CaCO_3$)
MW-302	102	[^<57		00916	Calcium, total (mg/L)
Modules 4-6				00940	Chloride, total (mg/L)
MW-309	104	VR111		00945	Sulfate, total (mg/L)
MW-310	106	VR110		00951	Fluoride, total (mg/L)
MW-311	108	VR112		01022	Boron, total (mg/L)
Modules 10-11				70300	Total Dissolved Solids (mg/L)
MW-313[2]	110	WC188			
MW-314[2]	112	WC199			
MW-315[2]	114	PM289			
Modules 12 and/or 13					
Future wells to be installed[2]					
Non-CCR wells					
MW-33BR	65	PE224	Sample	04189	Elevation, Groundwater (feet above mean sea level)
MW-34B	21	CK826	Semiannually	00010	Field Temperature (^{0}C)
MW-37A	22	CK827	April and October	00094	Field Conductivity @ 25^{0}C (umho/cm)
MW-83	59	NH171		00400	Field pH (standard units)
MW-84B	39	CK844		00946	Sulfate, dissolved (mg/L)
MW-86	41	CK846		01000	Arsenic, dissolved (ug/L)
MW-91AR	61	PE222		01020	Boron, dissolved (mg/L)
MW-91B	50	CL281		01060	Molybdenum, dissolved (ug/L)
MW-92A	55	LO570		22413	Total Hardness, dissolved (mg/L as $CaCO_3$)
MW-92B	57	LO571		39036	Alkalinity, dissolved (mg/L)
MW-93A	67	WC185			

Notes

1. Unless specifically stated, reporting is typically within 60 days after the end of the specified monitoring period, per s. NR 507.26(3), Wis. Adm. Code. CCR wells may require a notification within 60 days of completing sampling and analysis, per s. NR 507.15(3)(k), Wis. Adm. Code.

2. MW-313, MW-314, and MW-315 will be abandoned prior to construction of Module 12. After construction of Module 12 and Module 13 (if needed), additional downgradient wells will be installed for CCR monitoring program purposes.

3. The color, odor and turbidity shall be recorded for all samples in accordance with ss. NR 507.17(1)(b) and 507.26(1), but do not need to be reported into GEMS.

4. Field Blank (DNR ID # 997) data are also required to be submitted electronically, per s. NR 507.26(3), Wis. Adm. Code

5. Groundwater samples collected at CCR wells must be unfiltered.

Attachment # 1 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
Environmental Monitoring Tables

Table 2 - Water Supply Well Monitoring

Monitoring Pt.	DNR ID#	WUWN	Sampling & Reporting[1] Frequency	Parameter Codes	Parameters
Water Supply Wells					
HC-1	1	CK806	Sample	00010	Temperature, of water taken in field ^{0}C
HC-2	2	CK807	Semiannually	00094	Field Conductivity @ 25^0 C(umho/cm)
HC-3	3	CK808	April and October	00400	Field pH (standard units)
				00410	Alkalinity, total (mg/L)
				00620	Nitrate Nitrogen (Nitrate + Nitrite as N), total (mg/L)
				00900	Hardness, total (mg/L as $CaCO_3$)
				00940	Chloride, total (mg/L)
				00945	Sulfate, total (mg/L)
				01002	Arsenic, total (ug/L)
				01022	Boron, total (mg/L)
				01062	Molybdenum, total (ug/L)

Notes

1. Unless specifically stated, reporting is typically within 60 days after the end of the specified monitoring period, per s. NR 507.26(3), Wis. Adm. Code.

2. The color, odor and turbidity shall be recorded for all samples in accordance with ss. NR 507.17(1)(b) and 507.26(1), but do not need to be reported into GEMS.

Attachment # 1 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
Environmental Monitoring Tables

Table 3 - Leachate Monitoring

Monitoring Pt.	DNR ID#	Sampling & Reporting[1] Frequency	Parameter Codes	Parameters
Leachate Monitoring Points				
LP-1 Leachate Collection Tank[2]	600	Sample Monthly Report Semiannually	00032	Leachate Volume Pumped (1000s of gallons)
		Sample Semiannually April and October	00094	Field Conductivity @ 25°C (umho/cm)
			00150	Total Suspended Solids (mg/L)
			00310	BOD (5 day @ 20°C (mg/L)
			00400	Field pH (standard units)
			00410	Alkalinity, total (mg/L as $CaCO_3$)
			00900	Hardness, total (mg/L as $CaCO_3$)
			00940	Chloride, total (mg/L)
			00945	Sulfate, total (mg/L)
			00951	Fluoride, total (mg/L)
			01012	Beryllium, total (ug/L)
			01022	Boron, total (mg/L)
			01027	Cadmium, total (ug/L)
			01037	Cobalt, total (ug/L)
			01051	Lead, total (ug/L)
			01055	Manganese, total (ug/L)
			01059	Thallium, total (ug/L)
			01062	Molybdenum, total (ug/L)
			01097	Antimony, total (ug/L)
			01132	Lithium, total (ug/L)
			01147	Selenium, total (ug/L)
			11503	Radium 226+228, total in water (pCi/L)
			71900	Mercury, total (ug/L)
			74010	Iron, total (mg/L)
		Sample Annually October	SVOCs (ug/L) Using EPA Solid Waste Method 8270 (NR 507, appendix IV)	
Leachate Head Wells				
LH-2	502	Sample Monthly Report Semiannually	00031	Leachate Depth (feet)
LH-5	505		99423	Leachate Elevation (feet above mean sea level)
LH-6	506			
LH-10A	507			
LH-10B	508			
LH-11A	509			
LH-11B	510			

Notes

1. Unless specifically stated, reporting is typically within 60 days after the end of the specified monitoring period, per s. NR 507.26(3), Wis. Adm. Code.

2. At a later date, the leachate collection system will be converted to discharge all leachate to the Leachate Collection Tank.

3. The color, odor and turbidity shall be recorded for all samples in accordance with ss. NR 507.17(1)(b) and 507.26(1), but do not need to be reported into GEMS.

4. Leachate samples may not be filtered.

Attachment # 1 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
Environmental Monitoring Tables

Table 4 - Lysimeter Monitoring

Monitoring Pt.	DNR ID#	Sampling & Reporting[1] Frequency	Parameter Codes	Parameters
Lysimeters				
LS-1	4	Sample	00010	Temperature, of water taken in field ^{0}C
LS-3R	53	Semiannually	00094	Field Conductivity @ 25^{0}C (umho/cm)
		April and October	00400	Field pH (standard units)
			00410	Alkalinity, total (mg/L as $CaCO_3$)
			00625	Nitrogen, Kjeldahl, total (mg/L as N)
			00900	Hardness, total (mg/L as $CaCO_3$)
			00940	Chloride, total (mg/L)
			00945	Sulfate, total (mg/L)
			01002	Arsenic, total (ug/L)
			01022	Boron, total (mg/L)
			01034	Chromium, total (ug/L)
			01062	Molybdenum, total (ug/L)
			01105	Aluminum, total (ug/L)
			01147	Selenium, total (ug/L)
			74064	Lysimeter Discharge (in gallons)

Notes

1. Unless specifically stated, reporting is typically within 60 days after the end of the specified monitoring period, per s. NR 507.26(3), Wis. Adm. Code.

2. The color, odor and turbidity shall be recorded for all samples in accordance with ss. NR 507.17(1)(b) and 507.26(1), but do not need to be reported into GEMS.

Attachment #2 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
PAL and ACL Tables

Table 1 - CCR Well Preventive Action Limits (PALs)

Wells	DNR ID#	WUWN	Alkalinity, Total (mg/L) GEMS ID#: 00410	Calcium, Total (mg/L) GEMS ID#: 00916	Hardness, Total (mg/L) GEMS ID#: 00900	Specific Conductance (umhos/cm) GEMS ID#: 00094	Total Dissolved Solids (mg/L) GEMS ID#: 70300	Lithium, Total (ug/L) GEMS ID#: 01132
MW-84A	38	CK843	460	100	490	830	530	1.0
MW-301	100	VY701	690	160	720	1200	650	1.3
MW-33AR	63	PE223	310	150	390	1400	850	3.0
MW-34A	20	CK825	310	91	410	810	540	1.0
MW-302	102	VY702	420	120	450	900	610	5.3
MW-309	104	VR111	490	180	1200	4300	2100	1.7
MW-310	106	VR110	400	80	670	2000	990	1.7
MW-311	108	VR112	380	90	400	740	510	1.1

Attachment #2 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
PAL and ACL Tables

Table 2 - CCR Well Alternative Concentration Limits (ACLs)

Wells	DNR ID#	WUWN	Boron, Total (mg/L) GEMS ID#: 01022	Chloride, Total (mg/L) GEMS ID#: 00940	Sulfate, Total (mg/L) GEMS ID#: 00945	Nitrite + Nitrate (as N), Total (mg/L) GEMS ID#: 00630
MW-301	100	VY701				2.8
MW-33AR	63	PE223	0.92	190	200	
MW-34A	20	CK825	0.25		160	12
MW-302	102	VY702	0.84			13
MW-309	104	VR111		820		
MW-310	106	VR110		330		

Attachment #2 for WPL Columbia Energy Center Ash Disposal Facility - CCR
Initial Permitting Plan of Operation Approval Modification
License # 3025
PAL and ACL Tables

Table 3 - Non-CCR Well PALs

Wells	DNR ID#	WUWN	Alkalinity, Total Filtered (mg/L) GEMS ID#: 39036	Hardness, Total Filtered (mg/L) GEMS ID#: 22413	Specific Conductance (umhos/cm) GEMS ID#: 00094
MW-33BR	65	PE224	340	350	990
MW-34B	21	CK826	290	330	850
MW-37A	22	CK827	420	580	1800
MW-83	59	NH171	260	260	680
MW-84B	39	CK844	440	440	800
MW-86	41	CK846	510	650	2600
MW-92A	55	LO570	520	560	1100
MW-92B	57	WC185	590	610	960

Attachment #2 for WPL Columbia Energy Center Ash Disposal Facility - CCR Initial Permitting Plan of Operation Approval Modification
License # 3025
PAL and ACL Tables

Table 4 - Non-CCR Well ACLs

Wells	DNR ID#	WUWN	Arsenic, Dissolved (ug/L) GEMS ID#: 01000	Boron, Dissolved (mg/L) GEMS ID#: 01020	Chloride, Dissolved (mg/L) GEMS ID#: 00941	Nitrite + Nitrate (as N), Dissolved (mg/L) GEMS ID#: 00631
MW-33BR	65	PE224		0.70		7.2
MW-34B	21	CK826		0.77		14
MW-37A	22	CK827			280	
MW-83	59	NH171				3.3
MW-86	41	CK846			510	
MW-92A	55	LO570				7.5
MW-92B	57	WC185	3.3			

Attachment 3
Table 1. Closure Cost Estimate
Alliant Energy - Columbia Energy Center - Ash Disposal Facility
Plan of Operation Modification Addendum, Module 12 Scenario
License #3025

Total Area of Closure (acres): 34.0

Major Cost Item	Unit	2023 Unit Cost	Quantity	Total Estimated Cost[1]
Closure and Post Closure Document Revisions				
Pre-closure Construction Documents	Lump Sum	$50,000	1	$50,000
Site Preparation, Earthwork, and Final Grading				
Mobilization	Lump Sum	$500,000	1	$500,000
Subgrade Preparation - Grading Top 1 foot	Acre	$5,500	34.0	$187,165
Erosion Control				
Silt Fence	Linear Foot	$3.60	5,400	$19,440
Final Cap Construction (Final Cover System, Sand Drainage Layer, Portions of Modules 1 and 2)				
Remove Temporary Intermediate Cover (2.5 feet)	Cubic Yards	$6.30	2,300	$14,490
Grading Layer Placement - Place from Onsite (0.25 feet)	Cubic Yards	$23.00	300	$6,900
Lower Barrier Layer (Onsite Sand) (1.0 foot)	Cubic Yards	$7.70	1,000	$7,700
Upper Barrier Layer (Clay) (1.0 foot)	Cubic Yards	$18.00	1,000	$18,000
GCL Installation - Purchase and Install	Square Feet	$1.05	25,000	$26,250
40-mil LLDPE Geomembrane - Purchase and Install	Square Feet	$0.90	25,000	$22,500
Drainage Layer (1.0 foot)	Cubic Yards	$54.00	1,000	$54,000
Rooting Zone - Place from Onsite (1.0 foot)	Cubic Yards	$9.60	1,000	$9,600
Topsoil - Purchase, Import, and Place (0.5 feet)	Cubic Yards	$38.00	500	$19,000
Intermediate Drainage Piping	Linear Foot	$6.00	500	$3,000
Seed, Fertilizer, Mulch	Acre	$9,400	0.6	$5,264
Erosion Mat	Acre	$13,500	0.6	$7,560
Final Cap Construction (Final Cover System, Geocomposite, North of Module 1)				
Remove Temporary Intermediate Cover (2.5 feet)	Cubic Yards	$6.30	72,800	$458,640
Grading Layer Placement - Place from Onsite (0.25 feet)	Cubic Yards	$23.00	13,500	$310,500
Lower Barrier Layer (Onsite Sand) (1 foot)	Cubic Yards	$7.70	54,000	$415,800
Upper Barrier Layer (Clay) (1 foot)	Cubic Yards	$18.00	54,000	$972,000
GCL Installation - Purchase and Install	Square Feet	$1.05	1,460,000	$1,533,000
40-mil LLDPE Geomembrane - Purchase and Install	Square Feet	$0.90	1,460,000	$1,314,000
Geocomposite drainage layer	Square Feet	$1.65	1,460,000	$2,409,000
Rooting Zone - Place from Onsite (2.5 feet)	Cubic Yards	$9.60	135,000	$1,296,000
Topsoil - Purchase, Import, and Place (0.5 feet)	Cubic Yards	$38.00	27,000	$1,026,000
Intermediate Drainage Piping	Linear Foot	$19.00	2,200	$41,800
Seed, Fertilizer, Mulch	Acre	$9,400	33.5	$314,618
Erosion Mat	Acre	$13,500	33.5	$451,845
Access Road over Final Cover				
Geotextile Separator	Square Feet	$0.50	25,000	$12,500
Breaker Run (1 foot)	Cubic Yards	$42.00	1,000	$42,000
Base Aggregate (0.5 feet)	Cubic Yards	$48.00	500	$24,000

Table 1. Closure Cost Estimate
Alliant Energy - Columbia Energy Center - Ash Disposal Facility
Plan of Operation Modification Addendum, Module 12 Scenario
License #3025

Total Area of Closure (acres): 34.0

Major Cost Item	Unit	2023 Unit Cost	Quantity	Total Estimated Cost[1]
Storm Water Management				
Diversion Berms	Linear Foot	$12.30	7,900	$97,170
Down Slope Flumes	Linear Foot	$208.00	1,600	$332,800
Energy Dissipators	Each	$13,300.00	6	$79,800
Drop Structure Manhole	Each	$5,000.00	1	$5,000
Perimeter Toe Drain Collection Pipe, Outlet Pipe, and Stone	Linear Foot	$19.00	5,800	$110,200
Probable Construction Cost				***$12,197,542***
Engineering and Technical Services				
Final Cover Construction Documentation and Administration and Compliance Certifications (Assumed 15% of Construction, Large Closure Area)	Lump Sum	$1,822,200	1	$1,822,200
Legal, Financial, and Administrative Services				
All legal, financial, and administrative services (Assumed 2.5% of Construction, Large Closure Area)	Lump Sum	$303,700	1	$303,700
			Subtotal:	$14,323,400
			Contingency (10%):	$1,432,300
			Total Estimated Closure Cost:	**$15,755,700**

Notes:
1. Costs are based on experience with similar projects.
2. The total worst-case closure cost applies to Phase 1 and Modules 10, 11, and 12.
Closure of Phase 1 includes the remaining portions of Modules 1-6, which do not have final cover.

Attachment 3
Table 2. Long-Term Care Cost Estimate
Alliant Energy - Columbia Energy Center - Ash Disposal Facility

Plan of Operation Modification Addendum, Module 12 Scenario
License #3025

Major Cost Item	Unit	2023 Unit Cost	Quantity	Average Cost per Year[1]	Cost Source and Quantity Notes
General Care					
Repair erosion/reseed	Acre	$10,400	2.0	$20,800	Assumes 5% of the total closure area
Mowing	Acre	$200	79.6	$16,000	39.8 acres per event, and two events per year.
Maintenance of Drainage Features - Annually	Lump Sum	$5,000	1	$5,000	Assumes 1 discharge location is repaired per year and Sedimentation Basin Cleaning 1 per 10 years
Perimeter Roads - Annually	Lump Sum	$2,000	1	$2,000	Allowance
Leachate Management System Operation and Maintenance					
Leachate Line Cleaning and Televising	Linear Feet	$0.38	5,900	$2,300	Estimated unit cost from experience; quantity from existing and proposed piping in Phase 1 and 2; cleaning performed every year and televising every 5 years. Unit rate has been annualized.
Operation and Maintenance	Lump Sum	$5,000	1	$5,000	Estimated cost
Inspections					
Annual Inspection by PE	Lump Sum	$5,000	1	$5,000	Assumes one site visit and PE-certified Inspection Report per year.
Environmental Monitoring					
Groundwater Monitoring - Sampling and Expenses	Lump Sum	$17,000	1	$17,000	Assumes two rounds of groundwater sampling at CCR and non-CCR monitoring points under approved state monitoring program.
Groundwater Monitoring - Laboratory	Lump Sum	$9,600	1	$9,600	Assumes two rounds of groundwater sampling at CCR and non-CCR monitoring points under approved state monitoring program.
Well Maintenance, Repair, and Replacement	Lump Sum	$14,000	1	$14,000	Assumes replacement of one well every other year during the post-closure care period plus annual maintenance and repairs (minor).
Annual Reporting					
Data Management and Reporting to WDNR	Lump Sum	$48,100	1	$48,100	Assumes semiannual reporting and annual for CCR and non-CCR wells
Legal, Financial, and Administrative Services					
All legal, financial, and administrative services (Assumed 10% of Annual Costs)	%	10%	1	$14,480	
			Annual Long-Term Care Subtotal:	$159,300	
			Contingency (10%):	$16,000	
			Annual Long-Term Care Cost:	$175,300	
			40-Year Post-Closure Cost (40 x Annual Long-Term Care Cost):	**$7,012,000**	

Assumptions/Notes:
1. Costs are based on experience with similar projects or RSMeans construction cost data.

Attachment 4
Approval Condition Status Summary Table Columbia Energy Center Ash Disposal Facility (#3025)

Condition No.	Description	Status	Comments
September 30, 1980 Feasibility Approval			
1	Approval for disposal of fly ash and bottom ash; does not apply to fly ash and scrubber sludge	Superseded	
2	Submit final engineering plans for no more than a 10-year operation period	Superseded (10/8/84; C3)	
3	Abandon private and commercial wells within 1,200 feet of modules prior to disposal in that module	Active	
4	Submit groundwater monitoring plan	Superseded by subsequent plan mods	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
5	Requires design adjustments as necessary to maintain maximum site life of 31 years	Superseded	
6	Where filling will not occur for 6 months or more must have 2-foot intermediate soil cover; for 1 year or more, intermediate cover must be seeded	Superseded (10/8/84; C13)	
7	Contaminated water must be utilized as part of disposal operation or circulated through a treatment process prior to discharge	Comparable code	
8	Control dust	Comparable code	
9	Addresses stockpiling locations	Inactive	
10	Address requirements in NR 180.13 in POO	Comparable code	Addressed in 2010 POO Update
11	Operation of the site	Comparable code	
12	Final cover to include 6 inches of topsoil	Comparable code	
13	Protect wetland areas to the south	Comparable code	
June 30, 1983 Plan of Operation Approval			
1	Site development in accordance with POO	Superseded (1/11/91, Cond. A)	
2	Approval limited to disposal of solid waste in Phase I, Module 1	Alternative proposed	
3	Establish ash handling procedures	Superseded (10/8/84; Cond. 8)	

Condition No.	Description	Status	Comments
June 30, 1983 Plan of Operation Approval (continued)			
4	Maintain facility in compliance with Feasibility approval and no significant impact on environment	Active	
5	Requires ash handling and evaluation plan be submitted before start-up	Superseded	
6	Initial site construction	Inactive	
7	Construct sedimentation basin in accordance with plans	Inactive	Existing basin construction has been approved; new basin construction will be in accordance with 2010 POO Update
8	Backfilling requirements for areas receiving waste	Comparable code	
9	Abandon wells within 1,200 feet of disposal operations	Comparable code	
10	Prior to each phase being licensed, inspection by WDNR and proof of financial responsibility required	Comparable code	
11	Contaminated water must be utilized as part of disposal operation or circulated through a treatment process prior to discharge	Superseded (10/8/84; Cond. 11)	
12	Do not fill in areas where ice has formed; remove ice from active disposal area	Superseded (10/8/84; Cond. 12)	
13	Confine active area to smallest practical area	Superseded (10/8/84; Cond. 13)	
14	Slope and seed all bare soil areas not part of daily operations	Active	
15	Addressed locations of new monitoring wells to be installed	Inactive	
16	Addressed lysimeter locations and design	Inactive	
17	Addressed groundwater monitoring program	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
18	If 0.95 level of significant difference in water quality is found, notify WDNR in writing within 5 days of evaluation and retest within 10 days	Superseded (10/8/84; Cond. 16)	
19	Inform WDNR within 5 days of resampling and undertake investigative action if significant difference confirmed	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod

Condition No.	Description	Status	Comments
June 30, 1983 Plan of Operation Approval (continued)			
20	Addressed groundwater table monitoring requirements	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
21	Close facility in accordance with POO approval, addendums, ch. NR 180.13(12)	Superseded/ Comparable code	Closure in accordance with 2010 POO Update
22	As reach final grades, place 3 feet sandy soils and 6 inches topsoil on side slopes	Alternative proposed	
23	Get WDNR approval for off-site topsoil sources	Inactive	
24	Module 1 final cover slopes: 2% top, 4H:1V sideslopes	Comparable code	
25	Requires long-term care	Comparable code	
26	Addressed long-term care requirements	Comparable code	
27	Addressed minimum proof of net worth	Comparable code	
October 8, 1984 Plan of Operation Addendum Approval			
1	Confirmed Condition 1 of POO Approval unless sufficient testing performed	Superseded (1/11/91, Cond. a)	
2	Assigned Carl Diehls as person responsible for daily operation	Inactive	
3	Update POO every 10 years to reflect current solid waste disposal requirements and practices	Active	
4	Establishes stabilized ash permeability criteria	Inactive	
5	Department reserves right to revoke feasibility approval and conditions of approval	Comparable code	
6	Addresses pilot program for field densities	Inactive	
7	Addressed intentional omission of letter from POO approval	Inactive	
8	Modified timeframe for condition 3 of POO Approval	Inactive	
9	Modified condition 8 of POO Approval from requiring 95% to 90% Modified proctor	Comparable code	
10	Clarifies condition 9 of POO Approval	Comparable code	
11	Leachate must be treated. Denied 1000umhos/cm max conductivity for releasing leachate to environment.	Comparable code	

Condition No.	Description	Status	Comments
October 8, 1984 Plan of Operation Addendum Approval (continued)			
12	Snow and ice must be removed before placing ash for structural reasons	Active	
13	Smallest active area possible. 2' of cover if inactive for +1yr, seeded as soon as possible, remove before use	Active	
14	Well/Lysimeter location corrections. Leak test modified.	Inactive	
15	Annual metal tests dropped except wells HC1, HC2, HC3. Maintains quarterly sampling of 8 indicator parameters.	Inactive/ Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
16	0.95 level of significance changed to 0.01	Inactive	
17	Moisture content test plots to be separate, not contiguous (5' separation)	Inactive	
18	All test plots finished by October 1984	Inactive	
19	Two extra test plots in winter by WPL to compare winter operations	Inactive	
20	Field permeability tests req'd, 3/test plot	Inactive	
21	Lysimeter req'd under 6 original test plots and design suggestions	Inactive	
22	Leachate testing req'd for lysimeters	Inactive	
23	Undisturbed samples needed for permeability tests	Inactive	
24	Placement report to evaluate handling procedures, QC, test data, and suitability to be reported	Inactive	
25	Department and Inspection req'd	Inactive	
February 26, 1985 Construction Documentation & Plan Modification Approval			
1	Site construction documentation changes are approved by WDNR	Inactive	
2	Access road relocation approved	Inactive	
3	Phase 1 area reduction approved (west)	Inactive	
4	Sedimentation basin drainage re-routing approved, no erosion	Inactive	
5	Module 1 drainage field corrected, reported for licensing	Inactive	
6	Abandoned wells MW-1, MW-3A, and MW-3B to be documented	Inactive	
7	Lysimeter location correction	Inactive	
8	GW Monitoring well location & intent (#25)	Inactive	
9	Three background water samples req'd on lysimeters before licensing	Inactive	

Condition No.	Description	Status	Comments
February 26, 1985 Construction Documentation & Plan Modification Approval (continued)			
10	Monitor water quality on well-by-well basis over time	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
11	Background samples also report water quality parameters (color, odor, turbidity, precision, accuracy)	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
12	Report any reason for not completing four replicate samples/year	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
13	C20 not modified until proposed alternatives for MWs are submitted	Inactive	
14	MW Prefixes, C20 modification. Water levels must be determined for 2nd quarter, missing or lost can be substituted with nearby wells, MW-62 to be replaced.	Inactive	
15	Include MW37A, MW37B, MW81 in water table monitoring program	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
16	All wells included in licensing to be found and protected. Abandoned wells reported correctly.	Inactive	
17	Well information form to be completed for all existing wells and map of all monitoring points be submitted by 6/1/88	Inactive	
18	Certified property deed 11/24/1984 accepted.	Inactive	
February 19, 1987 POO Conditional Approval			
1	GWM results reported to DNR, NR 140	Superseded	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
July 10, 1987 Plan Modification Approval			
-	Reduced ash/earthwork quantities for Module 5 of Phase 1	Superseded	New phasing plan in 2000 POU

Condition No.	Description	Status	Comments
December 21, 1988 Plan Modification Approval			
1	Module 3 approved, 2, 4-16 still needed	Superseded by new phasing plan	
2	Module 3 documented with NR 516	Comparable code	
3	No ash into Module 3 until approved by DNR	Comparable code	
4	MW-82 nest relocated. New nest will have: water table observation, piezometer.	Inactive	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
5	2 new GWM locations & piezometer @ MW-85	Inactive	Monitoring currently performed in accordance with 3/11/96 Plan Mod and 1/19/00 Plan Mod
6	Background water quality defined at new and relocated wells by NR 508.14	Inactive	
7	Abandon wells MW25, MW82A, MW82B. Grout boreholes	Inactive	
8	Replacement, additional, and abandoned well construction complete by 12/30/1989.	Inactive	
9	All well work per NR 508. Report submitted to DNR by 2/15/1989.	Inactive	
July 13, 1990 Construction Documentation Approval			
-	South portion, Phase 1, Module 3 approved	Inactive	
January 11, 1991 Plan Modification Approval			
(a)	Test Burn coal information to be submitted 60 days prior to disposal	Active	
(b)	Test Burn ash cannot be placed in initial 2' base layer	Active	
(c)	Long-term disposal of similar ash possible given DNR approval	Active	
(d)	Test burn ash to be approved before disposal in normal ash landfill	Active	
August 16, 1994 Plan Modification Approval			
1	Preconstruction report to DNR 2 weeks prior to construction activities	Comparable code	
2	Inform DNR engineer 1 week prior to construction events	Superseded	
3	Ash on geomembrane placement procedure	Inactive	
4	Double layer of bentonite blanket around culvert piping where exits lined area	Inactive	

Condition No.	Description	Status	Comments
August 16, 1994 Plan Modification Approval (continued)			
5	Bentonite mat and geomembrane in open channel to lined pond	Inactive	
6	Geomembrane test requirements	Comparable code	
7	Geomembrane welding test requirements	Comparable code	
8	Document all seams/connections/tests	Comparable code	
9	QA personnel requirements	Comparable code	
10	Construction Documents submitted to DNR within 90 days of completion of Module 1	Inactive	
March 11, 1996 Plan Modification Approval			
1	Within 120 days, install wells, staff gauges, and piezometers in Module 1	Inactive	
2	GW monitoring modifications	Active	Monitoring currently performed in accordance with 3/11/96,1/19/00, and 1/28/11 Plan Mods
3	GW monitoring modifications: schedule, quality points, parameters, water level points (Ash Landfill)	Superseded	Monitoring currently performed in accordance with 7/28/2022 Plan Mod
4	WPL to submit results w/in 60 days of sampling	Superseded by 1/28/11 Plan Mod	
5	Inactive/abandoned wells reported by June 1996	Inactive	
6	GWM summary received Jan 31st each year	Superseded	Superseded by CCR initial permitting plan mod
7	Preventive action limits from WPL to be proposed, and alternatives requested	Comparable Code	
8	Plan modification required before additional module or phase construction	Inactive	2010 Plan of Operation Update includes proposed design
March 29, 1996 Construction Documentation Approval			
-	Culvert in NE corner, semiannual inspection	Inactive	
January 19, 2000 Expedited Plan Modification			
-	Dissolved iron no longer required parameter. Reporting/submittal changes.	Active	

Condition No.	Description	Status	Comments
November 2, 2000 Plan of Operation Update Approval			
1	POU submitted every 10 yrs.	Inactive	
March 29, 2010 Final Cover Construction Documentation Approval			
	Approved construction documentation for 3.1 acres of final cover construction	Inactive	
January 28, 2011 Plan of Operation Update Approval			
	Approved the POU and proposed modifications in the November 12, 2010 POU and December 23, 2010 Addendum No. 1 to the 2010 POU	Active	
1	This approval is limited to a 10-year period beginning on the date of this approval.	Active	
2	A minimum geotextile mass per unit areas of 1,100 grams per square meter (from calculations provide in the report) shall be used to protect the geomembrane beneath the leachate collection pipes from puncture.	Active	
3	The drainage blanket material shall have a minimum hydraulic conductivity of 1 x 10^{-2} cm/sec greater per NR 504.06(5)(tm), Wis. Adm. Code.	Active	
4	The geosynthetic clay liner component of the composite liner shall meet the requirements of NR 504.06(7), Wis. Adm. Code.	Active	
5	The geomembrane component of the composite liner shall have a nominal geomembrane thickness of 60 mils per NR 504.06(3)(a), Wis. Adm. Code.	Active	
6	The constructed liner geomembrane shall be subjected to leak location testing conducted in accordance with NR 516.07(2)(d), Wis. Adm. Code.	Active	
7	The leachate collection lines shall be cleaned per NR 506.07(5)(c), Wis. Adm. Code.	Active	
8	The Department's environmental engineer assigned to the site shall be informed a minimum of one week prior to each of the construction events listed below, in order to allow a Department representative to observe the work. A fee shall be paid to the Department for each required inspection in accordance with s. NR 520.04(5), Wis. Adm. Code. The inspection fees shall be paid at the	Superseded by 7/28/22 Plan Mod	

Condition No.	Description	Status	Comments
	time the construction documentation review fee is submitted to the Department. Liner a. Placement of the geosynthetic clay liner (GCL). b. Placement of the geomembrane over the GCL. c. Installation of the leachate collection pipe and pipe boots. d. Placement of drainage blanket material over the geomembrane. Final Cover e. Placement and compaction of the grading layer below the GCL. f. Placement of the GCL. g. Placement of the geomembrane over the GCL. h. Placement of the drainage layer and drain pipe over the geomembrane This condition supersedes Condition 2 of the Department's August 16, 1994 approval.		
9	Prior to acceptance of FGD wastes (SDA ash) WPL shall characterize the waste streams and submit the results to the Department for approval to dispose of this material at the site. The waste characterization shall include, at a minimum, the requirements of NR 506.09, Wis. Adm. Code, the ASTM water leach test or other appropriate leach test, and total elemental analysis (metals). The submittal shall also include a discussion of waste handling and disposal procedures for the material. The results of the characterization may require changes to the landfill liner system, final cover system, leachate disposal, landfill operations and/or environmental monitoring.	Active	
10	Fly ash generated at the Nelson Dewey plant in Cassville is approved for disposed at this facility. If the waste stream generated by the Nelson Dewey facility changes, prior to acceptance WPL shall characterize	Active	

Condition No.	Description	Status	Comments
	the waste stream and submit the results to the Department for approval to dispose of this material at the site. The waste characterization shall include, at a minimum, the requirements of NR 506.08, Wis. Adm. Code, the ASTM water leach test or other appropriate leach test, and total elemental analysis (metals). The results of the characterization may require changes to the landfill liner system, final cover system, leachate disposal, landfill operations and/or environmental monitoring.		
11	Environmental monitoring during both the active and the post-closure perpetual-care periods shall be performed in accordance with the tables in the attached project summary. WPL shall document and submit all results of the environmental monitoring covered in this approval to the Waste and Materials Management Program in accordance with s. NR 507.26, Wis. Adm. Code. This monitoring program supersedes the monitoring programs described in previous approvals.	Superseded	
12	Revised proof of financial responsibility for closure and long term care shall be provided to the Department by April 1, 2011, in accordance with ch. NR 520, Wis. Adm. Code. The proof of financial responsibility shall be established based upon the approved costs contained in the attached tables.	Inactive	Completed
May 2, 2011, WDNR Clay Liner Recommendation			
	The Department recommends that WPL place 2 feet of clay below the GCL and follow the clay specifications contained in NR 504.06(2)(a), Wis. Adm. Code. The clay borrow source should be investigated as specified in NR 504.075 (5), Wis. Adm. Code.	Active	

Condition No.	Description	Status	Comments
September 14, 2011 Plan of Operation Modification Approval			
	Approved addition of 2 feet of clay to the approved composite liner system and two commercial clay borrow sites	Active	
1	A geologist, geological engineer or soils technician shall be at the clay borrow sources at all times that clay is to be excavated from the sources to identify the liner quality clay.	Active	
2	The clay liner shall be constructed and documented in accordance with NR 516, Wis. Adm. Code.	Active	
3	The Department's environmental engineer assigned to the site shall be informed a minimum of one week prior to each of the construction events listed below, in order to allow a Department representative to observe the work. A fee shall be paid to the Department for each required inspection in accordance with s. NR 520.04(5), Wis. Adm. Code. The inspection fees shall be paid at the time the construction documentation review fee is submitted to the Department. a. Clay placement	Superseded by 7/28/23 Plan Mod	
February 13, 2012 Liner Construction Documentation Approval			
	Phase 1, Module 2 Construction Documentation approval	Inactive	
1	WPL shall evaluate the leachate/surface water pond capacity prior to Phase 1, Module 3 liner construction to determine if changes are necessary in landfill operations to accommodate the lower pond liner elevation. This evaluation shall be submitted to the Department a minimum of 60 days prior to beginning Phase 1, Module 3 construction.	Inactive	Completed

Condition No.	Description	Status	Comments
December 16, 2014 Plan of Operation Approval Modification			
	Acceptance of Spray Dryer Absorber (SDA) in Module 2/Composite Lined Areas	Active	
1	The SDA waste disposal shall be limited to the areas of the landfill that have a composite liner system as approved in the Department's September 14, 2011 plan of operation approval modification and January 28, 2011 plan of operation approval.	Active	
2	WPL shall submit a report to the Department within 180 days of the date of this approval that includes: how the moisture content limits the range of compaction; what compaction methods work; and what test methods will be used to determine that the target densities have been achieved. The report shall also address the effects of seasonal conditions on densities.	Inactive	
3	Environmental monitoring during both the active and the post-closure perpetual-care periods shall be performed in accordance with the attached tables. WPL shall document and submit all results of the environmental monitoring covered in this approval to the Waste and Materials Management Program in accordance with s. NR 507.26, Wis. Adm. Code. This condition supersedes condition 11 of the Department's January 28, 2011 approval.	Superseded by 7/28/23 Plan Mod	
February 20, 2015 Expedited Plan Modification for SDA Byproduct			
	Acceptance of SDA material in Module 1 – rescinds Condition 1 of Department's December 14, 2014 plan of operation approval modification.	Active	

Condition No.	Description	Status	Comments
November 13, 2015 Plan of Operation Approval			
	New Haven Clay Borrow Source Approved	Active	
1	At all times during clay excavation, a 25-foot setback shall be maintained between the clay borrow area disturbance and the boundary of the delineated wetlands except in the area of the access road.	Active	
2	Any accumulated sediment shall be removed from the silt fences and any repairs necessary to the silt fencing shall be made as soon as practicable after each rain event.	Active	
3	A geologist, geological engineer or soils technician shall be at the clay borrow sources at all times that clay is to be excavated from the sources to identify the liner quality clay.	Active	
4	Alliant Energy shall notify the Department's waste management engineer assigned to this site a minimum of 1 week prior to beginning each of the construction events listed below for the purpose of allowing the Department to inspect the work. A fee shall be paid to the Department for each required inspection in accordance with s. NR 520.04(5), Wis. Adm. Code. The inspection fees shall be paid at the time the construction documentation review fee is submitted to the Department. a. Clay excavation activities at the borrow source for Phase 1.	Active	
July 1, 2016 Plan of Operation Approval Modification			
	Rain Cover System	Active	
1	WPL shall evaluate the leachate/surface water pond capacity prior to Phase 1, Module 4 liner construction to determine if changes are necessary in landfill operations or design to accommodate the additional leachate to be generated by Phase 1, Module 4. The evaluation and proposed operational/design modifications shall be submitted to the Department a	Inactive	Completed

Condition No.	Description	Status	Comments
	minimum of 90 days prior to beginning Phase 1, Module 4 construction.		
August 22, 2016 Phase 1, Module 3 Liner Construction Documentation Approval			
	Approved construction of Phase 1, Module 3 Liner	Inactive	
January 25, 2017 2016 Final Cover Construction Documentation Approval			
	Approved construction of 2.8 acres of final cover in Phase 1, Module 1 and 2	Inactive	
June 6, 2018 Rain Cover System, Plan of Operation Approval Modification			
1	For future modules, the preconstruction report shall contain the storm water calculations performed to determine if a rain cover is needed or not.	Active	
2	If a rain cover is required in a module, the preconstruction report shall contain the rain cover product identification, material properties, and installation recommendations from the manufacturer.	Active	
3	If a rain cover is required in a module, the installed limits of the rain cover shall be surveyed and provided along with photographic documentation of the installation in the construction documentation report for each module, or as an addendum to the construction documentation report.	Active	
July 13, 2018, New Haven Clay Borrow Monitoring Well Abandonment Exemption			
--	Approved use of bentonite chips for abandonment of MW-26P	Inactive	
September 14, 2018 Phase 1, Module 4 Liner Construction Documentation Approval			
	Approved construction documentation for approx. 4.2 acres of liner of Module 4, also included installation of three CCR groundwater monitoring wells, restoration of Phase 1 excavation at New Haven clay borrow source per the nonmetallic mining reclamation permit from Adams County, abandonment of MW-26 and MW-26P	Inactive	
1	A report shall be submitted to the department within 10 days of completion of the removal of the Phase 1, Module 3/Module 4 berm geomembrane and the connection of the north/south leachate collection pipe. The work shall be completed prior to any waste placement in Phase 1, Module 4.	Inactive	Completed

Condition No.	Description	Status	Comments
March 13, 2020 No Objection to the Expedited Plan Modification, 10-Year Plan of Operation Update Extension			
	The expedited plan modification was requested under s. NR 514.09(1)(a)10, Wis. Adm. Code, regarding a 1-year extension to Condition 1 of the department's January 28, 2011 plan of operation approval modification. The extension would provide WPL with additional time to consider operational and regulatory changes that are anticipated in 2020. WPL will continue to operate the landfill in accordance with all other conditions of the January 28, 2011 approval, as amended and updated by subsequent approvals from the department.	Superseded	
March 19, 2021 No Objection to the Expedited Plan Modification, Disposal of Filter Bags and Plan of Operation Update Extension			
	Approval to dispose Pulse Jet Fabric Filter (PJFF) bags in the landfill during an upcoming maintenance outage at the plant. The PJFF bags are used to capture particulate matter (scrubber byproduct solids) within the Air Quality Control System (AQCS) baghouse. Landfill operators will create a disposal area within the center of the module and will landfill the waste in consolidated area to prevent future leachate migration and stability concerns. Operators would spray water during transfer of the waste into the disposal area, as needed, to minimize fugitive dust.	Active	
	Extension would be in addition to the 1-year extension previously approved by the department on March 13, 2020. WPL will continue to operate the landfill in accordance with all other conditions of the January 28, 2011 approval, as amended and updated by subsequent approvals from the department.	Active	

Condition No.	Description	Status	Comments
November 30, 2021 Conditional Plan of Operation Approval Modification for Updated Closure and Long-Term Care Costs			
	Approval of the requested modification to the plan of operation for updated closure and long-term care costs		
1	Revised proof of financial responsibility for closure and long-term care shall be established in accordance with ch. NR 520, Wis. Adm. Code, within 120 days of the date of this approval. The proof of financial responsibility shall be established based upon the approved closure and long-term care cost estimates included in the attached Tables 1 and 2.	Active	
2	Revised closure and long-term care costs shall be included in the 10-year plan of operation update which is due by January 28, 2024. The costs shall reflect changes to leachate collection and management due to the closure of the primary ash pond where the leachate is currently managed.	Active	
December 10, 2021 Phase 1, Modules 5 and 6 Liner Construction Documentation Approval			
	Approved construction of Phase 1, Modules 5 and 6 Liner	Inactive	
July 28, 2022 Conditional Plan of Operation Approval Modification for the 10-year Update			
1	All leachate pumps and flow recording devices shall be maintained to ensure that leachate is pumped out of the landfill as required and the reported flows are accurate.	Active	
2	In case of leachate extraction pump malfunction, the pump shall be repaired or replaced in a timely manner to allow for gravity drainage of leachate in accordance with s. NR 506.07(5), Wis. Adm. Code.	Active	
3	WPL shall submit abandonment documentation for the leachate head wells in Modules 3 and 4 (LH-3 and LH-4); documentation is due to the department within 90 days of being abandoned.	Completed	

Condition No.	Description	Status	Comments
July 28, 2022 Conditional Plan of Operation Approval Modification for the 10-year Update (continued)			
4	WPL shall install two leachate headwells per module for Modules 10 and 11 per NR 504.09(2)(i), Wis. Adm. Code.	Completed	
5	WPL shall submit leachate tank manufacture installation instruction and pump performance criteria per NR 514.07(13), Wis. Adm. Code prior to tank installation.	Active	
6	WPL shall submit an operational plan which addresses the care and maintenance of the tanks and pumps, by February 1, 2023. The plan shall also address the means to monitor the tank and manholes secondary containment systems.	Completed	
7	WPL shall submit construction documentation for the installation of leachate manholes, leachate forcemain and leachate storage tank, per s. NR 516.04, Wis. Adm. Code.	Active	
8	WPL shall submit the design for the construction of Module 12 liner or submit a proposal for removal of the liner runout from Module 11 and timing of construction of the north berm for Module 11, by February 1, 2023.	Completed	
9	The Department's waste management engineer assigned to this site shall be notified a minimum of one week prior to beginning each of the construction events listed below for the purpose of allowing the department to inspect the work. A fee shall be paid to the department for each required inspection in accordance with s. NR 520.04(5), Wis. Adm. Code. The inspection fees shall be paid at the time the construction documentation review fee is submitted to the department. Liner Construction Events a. Sub-base grade excavation and storm water controls b. Clay placement	Active	

Condition No.	Description	Status	Comments
	c. Geocomposite clay liner/geomembrane deployment d. Sump construction/side slope riser placement e. Drainage blanket placement/leachate line installation f. Leak location survey and/or repairs Final Cover Construction Events g. Geosynthetic clay liner installation h. Geomembrane cap installation/seaming i. Drainage layer installation (sand or geocomposite) j. Rooting zone and topsoil placement Other Construction Events k. Leachate forcemain/Modules 2 and 3 manholes l. Leachate storage tanks and secondary containment structures This condition supersedes condition 8 of the department's January 28, 2011, approval and condition 3 of the department's September 14, 2011, approval.		
10	Environmental monitoring shall be performed in accordance with the attached Table 1. WPL shall document and submit all results of the environmental monitoring covered in this approval in accordance with s. NR 507.26, Wis. Adm. Code. This condition supersedes condition 3 of the department's December 16, 2014, approval.	Superseded	
11	Proof of financial responsibility for closure and long-term care shall be adjusted in accordance with ch. NR 520, Wis. Adm. Code, within 60 days of the date of this approval. The proof of financial responsibility shall be established based upon the approved closure and long-term care cost estimates included in the attached Tables 2 and 3.	Inactive	

Condition No.	Description	Status	Comments
May 30, 2023 Phase 2, Modules 10 and 11 Liner Construction Documentation Approval			
1	Within 30 days of completion, a letter documenting the installation of the following items shall be submitted to the department for concurrence: a. Installation of an electrical transformer and underground utility east of Module 10 to power the leachate collection pumps. b. Installation of the leachate collection pump system, including force main piping, vaults, and electrical components. c. Installation of telemetry and transducers to leachate headwells in Phase 2, Modules 10 and 11.	Active	