PART 3: Mining Operations Plan

3.1 General Description of Operations.

3.1.1 Describe the type of operation (surface, underground or carbon recovery) and method of mining procedures (surface, room and pillar or longwall). **[1780.11(a)/1784.11(a)]**

Coal Processing / Coarse and Fine Refuse Disposal

3.1.2 Describe the major equipment to be employed and how such equipment will be used in the different aspects of the mining operation. **[1780.11(a)/1784.11(a)]**

Coarse refuse is moved by beltline to an existing staging area at the south end of Cell 1where it is loaded and moved by truck to the perimeter embankment of Cell 5. Coarse Refuse placed in lifts is compacted by sheepsfoot roller or dozers to meet construction specifications. Reclamation operations will employ a fleet of pans, dozers, trucks and excavators to move soil materials for final covering of the impoundment.

3.1.3 Provide an estimation of the anticipated annual coal production and anticipated total coal production by tonnage once the mine is at full operational capacity. Define the annual progression of mining on the Operations Map. For underground mines, show annual progression of surface disturbance for support facilities. **[1780.11(a)/1784.11(a)]**

Annual production is projected at 2.9 MT. At current plant recovery the production will generate annually 663,000 tons (253 ac ft) Coarse Refuse and 352,000 tons (269 ac ft) Fine Refuse.

3.2 Description of Mine Facilities. Provide a narrative that explains the construction, modification, use maintenance and removal of the following structures and facilities as applicable to the proposed operations. If not applicable to this permitting action, indicate such. **[1780.11(b)/1784.11(b)]**.

3.2.1 Dams, Embankments, and other impoundments. List all such structures, their use, maintenance practices and whether they will be retained permanently or removed as applicable. Please note that an impoundment includes incised structures. **[1780.11(b)/1784.11(b)]**

Cell 5 Refuse Impoundment MSHA ID: 1211-IL08-02546-08

3.2.2 Coal storage, coal preparation and cleaning facilities, loading and transportation areas. **[1780.11(b)/1784.11(b)]**

Not Applicable

3.2.3 Water treatment facilities including but not limited to, sediment ponds, chemical treatment of discharge, and any special water treatment facilities beyond sediment ponds. **[1780.11(b)/1784.11(b)]**

Not Applicable

3.2.4 Air pollution control facilities **[1780.11(b)/1784.11(b)]**

Not Applicable

3.2.5 Buried Pipelines. Are pipelines proposed to be buried within the permit boundary? **[1816.133/1817.133]**

☐ YES ☒ NO

If YES, locate pipeline corridors on the operations map. Provide a description of the pipeline operation including but not limited to: the material to be transported, the type, diameter and wall thickness of the pipe and the depth of burial to the top of pipe. Indicate whether the pipe is to be removed when no longer needed. It is recommended that pipeline burials follow the Illinois Department of Agriculture guidelines if they are intended to be left in place permanently. IDOA guidelines for different types of pipelines may be found at:
https://www2.illinois.gov/sites/agr/Resources/LandWater/Documents/pipelinestandardspolicies.pdf#search=pipeline
https://www2.illinois.gov/sites/agr/Resources/LandWater/Documents/waterandsewerlines.pdf

3.3 Signs and Markers. All signs and markers required to be posted shall be easily seen and read, uniform in design and made of durable material. Signs and markers shall also be maintained and retained in place throughout the life of specific mining activity. Boundary or buffer markers shall be spaced to be visible from one to another. Describe the signs and markers in terms of material type, color, and wording to be used for the following boundary(s) and/or protected feature(s). If not applicable to this permitting action, indicate as such. **[1816.11(a)/1817.11(a)]**.

3.3.1 Permit Perimeter markers (Include incremental bond areas, unaffected areas, uncontrolled properties, pending archeological areas, and areas of lateral support) **[1816.11(d)/1817.11(d)]**

Permit Markers are in place as specified in the original permits #426, #225, #160 and #53

3.3.2 Stockpile Markers **[1816.11(f)/1817.11(f)]**

Stockpile Markers are in place as specified in the original permits #426, #225, #160 and #53

3.3.3 Stream buffer zones [**1816.57(b)/1817.57(b)]**

Not Applicable

3.3.4 Prohibited or limited areas identified on Table 2.3: Areas Prohibiting or Limiting Mining Operations **[1816/1817.11(d)]**

Not Applicable

3.4 Soil and Overburden Handling and Protection.

3.4.1 Describe how each type of overburden (soil horizons, glacial drift and consolidated material) will be handled with regards to different types of mining equipment. **[1780.18(b)(7)/1784.13(b)(7)]**

Not Applicable

3.4.2 If toxic materials have been identified as occurring in the overburden, describe how these materials will be segregated and handled to insure proper disposal. This includes, shaft and slope cuttings, excavation of incised portions of ponds, ditches, stream diversions or refuse disposal areas. **[1780.11(b)/1784.11(b); 1780.18(b)(7)/1784.13(b)(7)]**

Not Applicable

3.4.3 Locate all soil horizon storage areas and/or root medium stock piles on the Operations Map and describe measures to be employed to prevent or minimize exposure of soil stockpiles to excessive water

and wind erosion, unnecessary compaction and contamination by undesirable materials. **[1780.11(b)(2)/1784.11(b)(2); 1780.14(b)(5)/1784.23(b)(5)]**

See Map 6SF, Operations Plan [Surface Facilities]. Topsoil and other soil material stockpiles will be sloped to achieve controlled runoff and prevent excessive eroding of the soil. The piles will then be seeded with cover crops, grasses, and/or legumes to minimize exposure to excessive water and wind erosion. Mulch, chemical binders or other stabilization techniques will be used, as required for the protection of side slopes on the stockpiles. Signs will be posted to identify the topsoil piles. Excess traffic will be minimal, other than that used in stockpiling and seeding. Attempts will be made to prevent excessive compaction through careful placement of soil materials using the available equipment. Controlled handling of soil material will guard against contamination by undesirable materials.

3.4.4 Describe methods and treatment measures to be used on exposed areas where topsoil has been removed to prevent excess air and water pollution. **[1816.95/1817.95]**

All surface water runoff from within the disturbed area will pass through approved sediment control structures and meet NPDES effluent limitations at discharge. Fugitive dust arising within areas where topsoil has been removed will be controlled by applying water, as necessary.

3.5 Lateral Support. For excavations locate all areas on the Operations Map where lateral support removal will approach the minimum distance allowed. State the minimum width of lateral support to be left in appropriate areas, including adjacent landowners, road right-of-way's, pipelines and power line easements. Account for highwall sloping when such slopes are to be incorporated into the proposed reclamation plan. **[1816.99]**

Not Applicable

3.6 Surface Mining Near Underground Mining. If surface mining activities are to be conducted within 500 feet of an underground mine describe the measures to be employed to comply with the requirements of 62 Ill. Adm. Code 1780.27 and 1816.79

Not Applicable

3.7 Existing Structures. The definition of an "existing structure" is a structure used in connection with surface coal mining and reclamation operations for which construction began prior to June 1, 1982. Are existing structures proposed to be used in connection with or to facilitate the surface coal mining and reclamation operations? **[1701.APP.A]**

☐ YES ☒ NO

If YES, complete the following:

3.7.1 Use of Existing Structures. Provide a list of all of the existing structures to be used **[1780.12/1784.12]**

3.7.2 Provide the location of all existing structures on the Operations Map and provide the following information for each existing structure to be used: **[1780.12(a)/1784.12(a)]**

- Plans of the structure detailing its current, pre-mining condition.
- Approximate dates, beginning and completion for construction of the structure.
- A showing that the structure meets the performance standards of 62 Ill. Adm. Code 1810 through 1828. The showing shall include monitoring data or other substantiating evidence.

3.7.3 Modification or Reconstruction of Existing Structures. Provide a plan for each existing structure to be modified or reconstructed for use in connection, or to facilitate coal mining and reclamation operations. The plan shall include the following information: **[1780.12(b)/1784.12(b)]**

- Design specifications for reconstruction or modification of the structure to meet the design and performance standards of 62 Ill. Adm. Code 1810 through 1828,
- A schedule for reconstruction or modification of the structure showing dates for beginning and completing interim steps as well as final reconstruction,
- Provisions for monitoring the structure during and after modification to ensure that the performance standards of 62 Ill. Adm. Code 1810 through 1828 are met, and
- A showing that the risk of harm to the environment or to public health or safety is not significant during the period of modification or reconstruction.

3.8 Transportation Facilities.

3.8.1 Which, if any of the following facilities, are to be constructed, used, modified or maintained within the proposed permit area?

☐ Roads
☐ Conveyors
☐ Rail Systems

3.8.2 For all roads proposed, indicate the classification of each as either Primary or Ancillary in accordance with 62 Ill. Adm. Code 1816.150/1817.150 below: **[1816.150(a)/1817.150(a)]**

Road Identification	Road Classification (Primary or Ancillary)
Not Applicable	

3.8.3 For each transportation facility, provide a detailed description of their design, construction and maintenance that includes the following information: **[1780.37/1784.24]**

3.8.3.1 A general description of each road, conveyor, or rail system to be constructed, used, or maintained within the proposed permit area. **[1780.37(a)(6)/1784.24(a)(6)]**

3.8.3.2 Specifications for each road width, existing grade line, proposed road gradient, road surface, road cut, fill embankment, culvert, bridge, drainage ditch, and drainage structure. Provide information as Attachment 3.8.3.2. **[1780.37(a)(1)/1784.24(a)(1)]**

3.8.3.3 Provide a report of appropriate geotechnical analysis, where the Department's approval is required for alternative specifications, or for steep cut slopes. This report shall be included as Attachment 3.8.3.3. **[1780.37(a)(2)/1784.24(a)(2); 1816.150/1817.150]**

3.8.3.4 A description of measures to be taken to obtain the Department's approval for alteration or relocation of a natural drainageway. **[1780.37(a)(3)/1784.24(a)(3); 1816.150/1817.150]**

3.8.3.5 A description of measures, other than use of a rock headwall, to be taken to protect the inlet end of a ditch relief culvert. **[1780.37(a)(4)/1784.24(a)(4); 1816/1817.150]**

3.8.3.6 The drawings and specifications for each proposed ford of a perennial or intermittent stream that is used as a temporary route. **[1780.37(a)(5)/1784.24(a)(5); 1816.151(c)(2)/1817.151(c)(2)]**

3.8.3.7 A description of the plans to remove and reclaim each road that will not be retained under an approved post-mining land use, and the schedule for this removal and reclamation. **[1780.37(a)(7)/1784.24(a)(7)]**

3.8.3.8 A discussion of the removal/construction/or relocation of powerlines related to transportation facilities and structures associated with roads. **[1780.11(b)(3)/1784.11(b)(3)]**

3.8.4 Primary Roads. If any roads identified in Part 3.8.2 are classified as primary, provide the design criteria and construction procedures used for each primary road proposed. Design calculations and/or drawings shall be included as attachments to this part. **[1816.151/1817.151]**

Not Applicable

3.8.5 Are any roads constructed to facilitate surface coal mining operations proposed to be permanent? **[1816.150(b)/1817.150(b)]**

☐ YES ☐ NO

If YES, locate on the Post-Mining Land Use/Capability Reclamation Map and include appropriate discussion on how modifications will be accomplished, including the removal and disposition of any excess road material.

Not Applicable

3.9 Non-Coal Mine Waste Material.

3.9.1 Identify all non-coal waste material to be disposed within the permit area, including but not limited to, grease, lubricants, paints, flammable liquids, garbage, tires, abandoned mining machinery, lumber and

other hazardous and/or combustible materials generated during coal mining operations. **[1780/1784.11(b)(4)]**

Not Applicable

3.9.2 Describe how each non-coal waste will be stored on site, disposed on site or removed from the site. Also, describe the measures to be employed to ensure that all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard are disposed in a safe manner. Indicate on the Operations Map the location of each non-coal waste storage area. **[1780.14(b)(5)/1784/23(b)(5); 1816.89/1817.89].**

Not Applicable

3.10 Coal Preparation.

3.10.1 Will processing of coal take place within the proposed permit area? **[1780.11(b)(3)/1784.11(b)(3)]**

☒ YES ☐ NO

If YES, locate processing facilities on the Operations Map and give a general description of the coal processing operation at this facility. **[1780.14(b)(4)/1784.23(b)(4)].**

See Map 6SF, Operations Plan [Surface Facilities]. Preparation Plant located on adjacent Permit #53

If NO, and coal preparation plants are not located within the permit area, the applicant shall explain where coal processing would occur. The applicant is required to possess or obtain a separate permit for coal preparation plants that are not located within the proposed permit area**. [1785.21; 1827]**

Not Applicable

3.10.2 Will in-situ processing activities be conducted? **[1785.22]**

☐ YES ☒ NO

If YES, provide information to assure compliance with 62 Ill. Adm. Code 1785.22 and 1828. **[1785.22; 1828]**

Not Applicable

3.10.3 Provide an annual estimation of the volume of both coarse and fine coal waste streams generated. **[1780/1784.11(b)(4)]**

Annual production is projected at 2.9 MT. At current plant recovery the production will generate annually 663,000 tons (253 ac ft) Coarse Refuse and 352,000 tons (269 ac ft) Fine Refuse.

3.10.4 Describe the processing water (fresh water/make-up water) and slurry line circuitry. Incorporate flow diagrams as necessary. Provide locations of all processing water transport lines and slurry transport lines on the Operations Map. **[1780.11(b)/1784.11(b)]**

Slurry will be pumped from the preparation plant to Cell 5. Decant water will discharge from Cell 5 via a drop inlet primary spillpipe and return in a closed circuit either via pipeline or open channel to the recirculation pond. Designs for the discharge structure are provided in Attachment 3.12.2.1 MSHA Appendices A and D. Designs for the return water ditch CDD Cell5-1 are included in Attachment IV.7.F of Permit #426.

3.10.5 What safeguards are provided to prevent the discharge of slurry fines and untreated slurry water during emergency situations (e.g. power outages, mechanical equipment breakdown, plant shutdowns, etc.)? Indicate where the slurry would go by gravity flow in the event of an emergency discharge, and the environmental impact this would have **[1780.21(h)/1784.14(g)]**

Discharge prevention measures are provided primarily in the storage capacity of the impoundment and in design of the discharge structure. The impoundment is designed to retain with adequate freeboard the 0.5 PMP 72 hour event of 20.3 inches. Engineered safeguards for retention are described in detail in Attachment 3.12.2.1 MSHA Application Appendix C, which also includes a dam breach analysis.

3.11 Coal Processing Waste and Underground Development Waste.

3.11.1 Will coal processing waste and/or underground development waste be disposed of within the proposed permit area?

☒ YES ☐ NO

If NO, explain how coal processing waste and underground development waste will be handled and disposed?

If YES, complete Table 3.11.1: List of Coal Waste Materials to be Disposed within the Permit Area providing analytical data to describe the nature of all coal processing waste and underground development waste material that will be disposed within the proposed permit area.

Note: If this is a new facility and no processed refuse has been generated, provide an estimated analysis in the table and a discussion of the basis for the assumptions in the space below. Also, please note the Department will require submittal of actual analytical results of the refuse material within 60 days after the preparation facility is operational.

Table 3.11.1: List of Coal Waste Materials to be Disposed within the Permit Area

Type of material includes but is not limited to *Coarse Coal Refuse Filter Cake, Fine Coal Refuse (Slurry), immediate floor and roof rock potentially removed and not sent to the preparation plant with coal.*

Type of Material	Source Mine Permit and Preparation Plant	Potential Acidities	Net Neutralization Potential
Fine Refuse	#416 Gateway North	38.44	32.81
	#53 Gateway Central Prep		
Coarse Refuse		129.76	-114.72

3.11.2 Is Disposal of Coal Waste in Underground Workings proposed in this application?

☐ YES ☒ NO

If YES, complete and include Part 14: Disposal of Coal Waste in Underground Workings

3.12 Coal Refuse Disposal Area. Is the construction or modification of a Coal Refuse Disposal Area proposed in this application?

☒ YES ☐ NO

If YES, complete the following

3.12.1 Complete Table 3.12.1: List of Coal Refuse Disposal Areas to be Constructed or Modified for each Coal Refuse Disposal Area to be constructed or modified with this application.

Table 3.12.1 List of Coal Refuse Disposal Areas to be Constructed or Modified.

Name of Facility	Cell 5, Phase 2
***Type of Facility** **(Coal Refuse Pile, Coal Slurry Waste Impoundment)**	Coal Slurry Waste Impoundment
Latitude (DD)	38.1023
Longitude (DD)	89.3835
Approx. Start of Construction (month/yr)	April 2022
Estimated Lifespan	10 years
Coarse refuse	NA
Slurry	NA
Surface Acreage footprint	230.55 acres
Total Coarse Coal Refuse Storage Volume (cubic yards)	1.32M yd^3
Total Fine Coal Refuse Storage Volume (cubic yards)	10.131M yd^3
***Dam Class (According to TR-60, if applicable)**	NA
***Hazard Classification (According to MSHA determination, if applicable)**	Low
Associated NPDES Permit	IL0062189

3.12.2 Design and Construction Details of Coal Refuse Disposal Areas. Coal mine waste shall be disposed of in compliance with requirements of 62 Ill. Adm. Code 1816.81/1817.81 through 1816.84/1817.84.

3.12.2.1 Provide location and describe refuse disposal capacity requirements, facility configuration/staging and scheduling in a detailed construction plan. The plan shall include: acreage of disposal and borrow areas associated with the coal waste disposal area, engineering calculations, cross sections, maps, drawings and design certification for each proposed structure. **[1780.14(b)(8)/1784.23(b)(7); 1816/1817.81(c)]**

- Refuse Cell 5 Phase 2 is to be located on the site of existing Phase 1. Phase 2 of the impoundment will be raised above Cell 5 Phase 1 and extend over Refuse Cell 4. The impoundment footprint is depicted on the Operations Plan Map 6SF.
- Refuse Cell 5 Phase 2 at capacity will impound an additional 6,280 ac ft.
- Attachment 3.12.2.1 MSHA Application and Appendix A include design details.

3.12.2.2 Provide measures to be taken to: control surface drainage, provide surface area stabilization and minimize erosion of the coarse refuse disposal facility and of areas that receive runoff from the coarse refuse disposal facility. Include detail engineering design of all proposed surface drainage control structures. **[1816/1816.81(a)(1); 1816/1817.83(a); 1816.84/1817.84(d)]**

Attachment 3.12.2.1 MSHA Application Appendix C and Appendix D

3.12.2.3 Provide measures that will be taken to ensure mass stability and prevent mass movement of the structure during and after construction. **[1816/1817.49(a)(4); 1816.81(a)(2)/1817.81(a)(2)]**

Attachment 3.12.2.1 MSHA Application Appendix B and Appendix D

3.12.2.4 Provide all necessary on-site investigations results, test borings, and laboratory results of foundation material and coal waste that was used to determine the design requirements for the foundation stability of the coarse refuse disposal area and/or structure as Attachment 3.12.2.4. **[1816/1817.49(a)(6); 1816/1817.81(d)]**

Attachment 3.12.2.1 MSHA Application Appendix B

3.12.2.5 For coal processing waste dams and embankments meeting the Mine Safety and Health Administration (MSHA) size criteria, each design and operations plan shall comply with the requirements of MSHA 30 CFR 77.216-1 and 77.216-2.

3.12.2.5.1 Is the applicant proposing to construct or modify a coal waste disposal structure that impounds water and/or slurry to an elevation of five (5) feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more?

☒ YES ☐ NO

3.12.2.5.2 Is the applicant proposing to construct or modify a coal waste disposal structure that impounds water and/or slurry to an elevation of twenty (20) feet or more above the upstream toe of the structure?

☒ YES ☐ NO

If the answer to either above is YES, the applicant shall provide in this application the plan submitted to the District Manager of the Mine Safety and Health Administration (MSHA) under 77.216 insofar as the MSHA informational design standard requirements are duplicative of the Department's requirements. **[1816/1817.49(a)(2)]**.

3.12.3 Operation and Maintenance of Coal Refuse Disposal Areas.

3.12.3.1 Describe measures to be taken to safely operate the coal refuse disposal area including but not limited to: Scope and frequency of inspections, maintenance of embankments and liners, controls to ensure compaction standards and maintenance of runoff conveyance and discharge structures **[1816/1817.81(a)(4)]**

Attachment 3.12.2.1 OWR Application Appendix E Operations and Maintenance Plan

3.12.3.2 For all coal waste disposal areas explain measures to be taken to ensure that final disposal facility is suitable for reclamation. **[1816/1817.81(a)(3)]**

Following completion of refuse disposal to the design maximum, the impoundment will be allowed to decant for a period of approximately 12 to 18 months allowing slurry fines to settle and solidify to provide a stable surface upon which cover fill can be placed. An engineered cap of four (4) feet of soil material will be placed to cover impounded fine refuse and upon the coarse refuse embankment. Progress in closure and coverage of the impounded slurry fines will be dependent on stability of the interior surface. Cover material will be graded out as the surface will support equipment and fill. Final grading and compaction will be completed according to all approved permit specifications to ensure slope stability. Stable and adequately designed drainage structures and outlets will be restored on site. Depressions will be eliminated to assure positive drainage and post-mine land use capability.

3.12.3.3 Provide the emergency guidelines that will be followed in the case that a potential hazard develops associated with the coarse refuse disposal area(s) being discussed. **[1816/1817.81(e)]**

Attachment 3.12.2.1 OWR Application Appendix F Emergency Action Plan

3.13 Air Pollution Control Plan.

3.13.1 Provide a plan detailing fugitive dust control practices to be employed during proposed surface coal mining and reclamation operations. **[1780.15/1784.26; 1816.150(b)(1)/1817.150(b)(1)]**

Fugitive dust is controlled on site through the application of water by a water truck across the disposal and operations area as necessary during dry dusting conditions.

3.13.2 Provide a description of the steps to be taken to comply with the requirements of the Clean Air Act (42 U.S.C. 7401 et seq.), and other applicable air and water quality laws and regulations and health and safety standards. **[1780.18(b)(9)/1784.13(b)(9)]**

Gateway mine operates under ILEPA Div. of Air Pollution Control Permit 157857AAA. Dust control measures include spray bars and enclosed conveyors. Operations are monitored as required under the air permit.

3.14 Fire Control Plan.

3.14.1 Concerning non-coal mine waste, all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard, provide a description of contingency plans which have been developed to preclude sustained combustion of such materials. **[1780.18(b)(7)/1784.13(b)(7)].**

Non-coal waste will be regularly collected and transported off site by a contract waste hauler.
Coal refuse and coal stockpiles are graded and compacted to prevent combustion. Equipment is on site at the ready to ensure stockpiles or refuse disposal areas are not allowed to burn.

3.14.2 Provide a plan detailing how coal mine waste fires shall be extinguished. **[1816.87/1817.87]**

Coal refuse combustion if it occurs will be promptly extinguished by grading the material and compacting to cut off oxygen feeding the combustion. If significant fires developed, other methods such as chemical foam or other fire fighting methods would be applied.

3.14.3 Provide a plan detailing how coal stockpile fires shall be extinguished. **[**225 ILCS 720/4.08**]**

Coal stockpile combustion if it occurs will be promptly extinguished by grading the material and compacting to cut off oxygen feeding the combustion.