

NPDES Permit No. IL0080134
Notice No. JML:18062001.docx

Public Notice Beginning Date: **August 2, 2018**

Public Notice Ending Date: **September 4, 2018**

National Pollutant Discharge Elimination System (NPDES)
Permit Program

Draft New NPDES Permit to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois Environmental Protection Agency
Bureau of Water,
Division of Water Pollution Control
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-0610

Name and Address of Discharger:

Jackson Generation, LLC
1900 East Golf Road, Suite 1030
Schaumburg, IL 60173

Name and Address of Facility:

Jackson Energy Center
Intersection of Brandon Rd. and Noel Rd.
Elwood, IL 60421
(Will County)

The Illinois Environmental Protection Agency (IEPA) has made a tentative determination to issue a NPDES permit to discharge into the waters of the state and has prepared a draft permit and associated fact sheet for the above named discharger. The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice/Fact Sheet. The last day comments will be received will be on the Public Notice period ending date unless a commentor demonstrating the need for additional time requests an extension to this comment period and the request is granted by the IEPA. Interested persons are invited to submit written comments on the draft permit to the IEPA at the above address. Commentors shall provide his or her name and address and the nature of the issues proposed to be raised and the evidence proposed to be presented with regards to those issues. Commentors may include a request for public hearing. Persons submitting comments and/or requests for public hearing shall also send a copy of such comments or requests to the permit applicant. The NPDES permit and notice number(s) must appear on each comment page.

The application, engineer's review notes including load limit calculations, Public Notice/Fact Sheet, draft permit, comments received, and other documents are available for inspection and may be copied at the IEPA between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

If written comments or requests indicates a significant degree of public interest in the draft permit, the permitting authority may, at its discretion, hold a public hearing. Public notice will be given 45 days before any public hearing. Response to comments will be provided when the final permit is issued. For further information, please call Jenny Larsen at 217/782-0610.

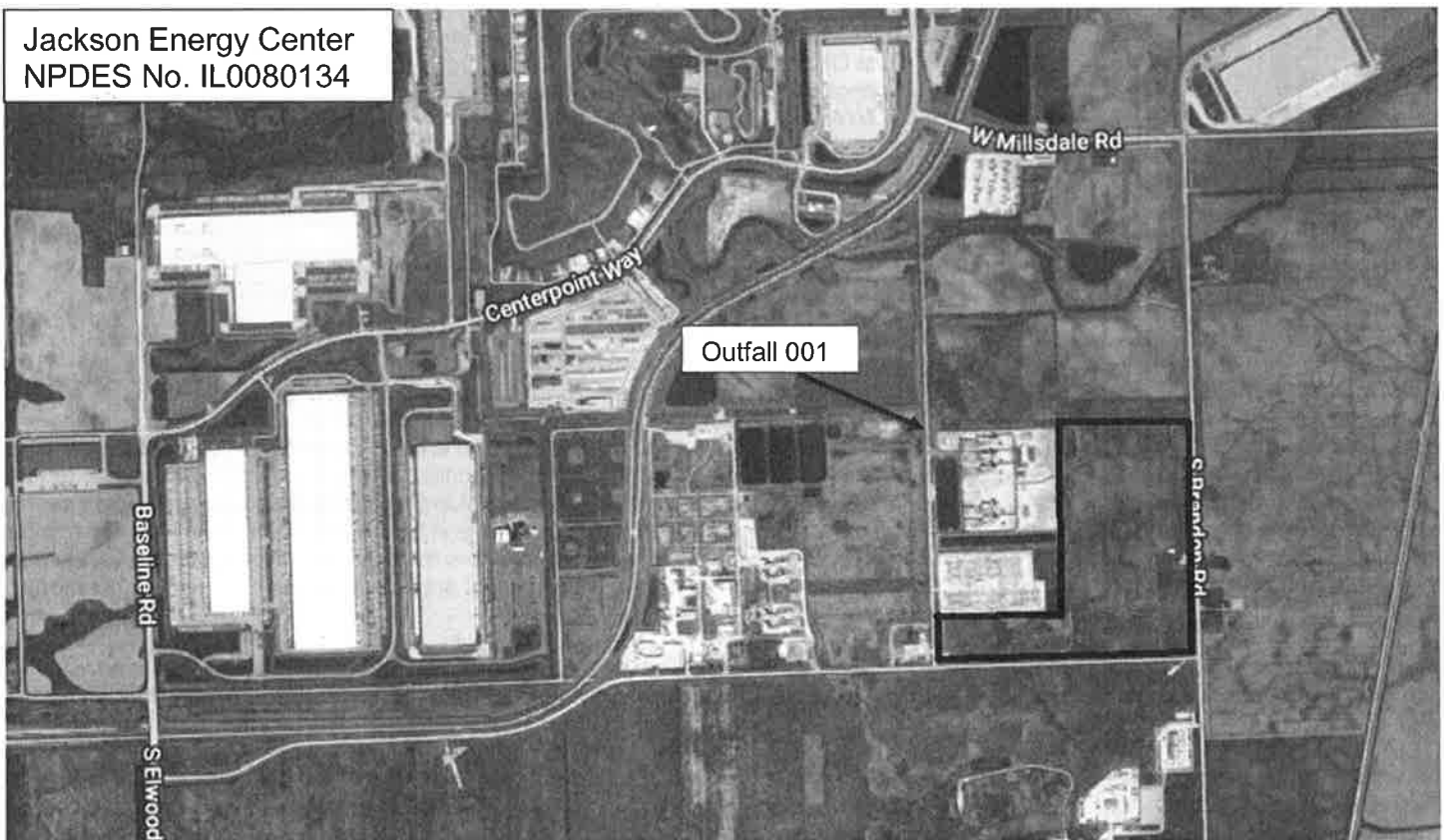
The applicant is proposing to operate a new natural gas-fired combined-cycle power generating facility (SIC 4911). Waste water will be generated from heat recovery steam generator (HRSG) blowdown, reverse osmosis reject water, evaporative cooler blowdown, miscellaneous plant wastewater, steam sample panel drains and stormwater. Plant operation will result in an average discharge of 0.24 MGD and maximum discharge of 0.46 MGD from outfall 001.

Application is made for a new discharge which is located in Will County, Illinois. The following information identifies the discharge point, receiving stream and stream classification:

Outfall	Receiving Stream	Latitude		Longitude		Stream Classification	Integrity Rating
001	Unnamed Tributary to Cedar Creek	41° 26' 37"	North	88° 07' 05"	West	General Use	Not Rated

To assist you further in identifying the location of the discharge please see the attached map.

The stream segment (IL_GD) receiving the discharge from outfall 001 is not listed on the draft 2016 Integrated Water Quality and Section 303(d) List of impaired waters and is not a biologically significant stream on the 2008 Illinois Department of Natural Resources Publication – *Integrating Multiple Taxa in a Biological Stream Rating System*.



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The discharge from the facility shall be monitored and limited at all times as follows:

Noticed

PARAMETER	LOAD LIMITS lbs/day DAF (DMF)		REGULATION	CONCENTRATION LIMITS mg/l		REGULATION
	30 DAY AVERAGE	DAILY MAXIMUM		30 DAY AVERAGE	DAILY MAXIMUM	
<u>Outfall 001:</u>						
Flow (MGD)						35 IAC 309.146
pH				6.5 to 9.0 s.u.		35 IAC 302.204
Total Suspended Solids				15	30	35 IAC 304.124
Oil and Grease				15	20	40 CFR 423.15
Total Residual Chlorine					0.05	40 CFR 125.3 & 35 IAC 302.208
Temperature				Monitor Only		35 IAC 309.146
Strontium-90				Monitor Only		35 IAC 309.146
Arsenic				Monitor Only		35 IAC 309.146
Boron				Monitor Only		35 IAC 309.146
Cadmium				Monitor Only		35 IAC 309.146
Chromium (Hexavalent, Total)				Monitor Only		35 IAC 309.146
Copper				Monitor Only		35 IAC 309.146
Iron				Monitor Only		35 IAC 309.146
Lead				Monitor Only		35 IAC 309.146
Manganese				Monitor Only		35 IAC 309.146
Mercury				Monitor Only		35 IAC 309.146
Nickel				Monitor Only		35 IAC 309.146
Zinc				Monitor Only		35 IAC 309.146

The following explain the conditions of the proposed permit:

The special conditions clarify flow, pH, total residual chlorine, monitoring location, discharge monitoring report submission, additives and stormwater.

There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

**Antidegradation Assessment Review for Jackson Generation, LLC – Jackson Energy Center
NPDES Permit No. IL0080134
Will County**

Jackson Generation proposes to construct a new natural gas-fired combined-cycle (NGCC) power generating facility, known as Jackson Energy Center (JEC), in the Village of Elwood, Will County, Illinois. The JEC would provide a nominal 1,100 MW-gross output at average annual ambient conditions. The facility would be designed as two single-shaft NGCC units, each consisting of one gas turbine, one steam turbine, one generator and one heat recovery steam generator (HRSG), with the gas turbine and steam turbine coupled to a single generator in a tandem arrangement. The proposed technology configuration rapidly responds to fluctuations in energy supply and demand within a relatively small footprint.

The facility would be supplied water from the Village of Elwood municipal water supply. The water would be treated on-site with reverse osmosis (RO) to demineralize the water for the HRSGs and other processes. RO reject from the demineralization process would be discharged with the facility's other sources of wastewater. Quenched HRSG blowdown would be the primary source of wastewater with additional sources including evaporative cooler blowdown, miscellaneous plant wastewater flows through an oil/water separator, and steam sample panel drains. The only planned treatment for the facility would be the oil/water separators, as the wastewater would largely be clean water from the steam cycle. Solids that accumulate in the oil/water separator would be removed and disposed of using proper waste disposal methods. All stormwater and process wastewater with the potential to encounter oils/grease would flow through an oil/water separator prior to entering the detention pond. JEC would utilize air-cooled condensing which does not necessitate the use of cooling tower makeup water and reduces overall facility wastewater discharge.

Water balance calculations for the proposed facility anticipate approximately 170 gpm or 0.24 MGD of generated wastewater when operating at a high capacity factor and a maximum short-term wastewater flow of approximately 317 gpm or 0.46 MGD. The wastewater would be discharged to an unnamed tributary of Cedar Creek via the facility's stormwater detention pond. The detention pond would be designed to accommodate both wastewater and stormwater during a rain event. Discharges from the detention pond would be released at a controlled rate via the proposed outfall structure (Outfall 001).

Information used in this review was obtained from the permit application dated February 15, 2018.

Identification and Characterization of the Affected Water Body

Wastewater generated by JEC would discharge to a General Use unnamed tributary of Cedar Creek at a point where 0 cfs of flow exists upstream of the outfall during critical 7Q10 low-flow conditions. The unnamed tributary of Cedar Creek possesses a watershed area less than 1 square mile and is identified as containing 0 cfs of streamflow during 7Q1.1 low-flow conditions. The unnamed tributary of Cedar Creek is not listed as biologically significant in the Illinois Department of Natural Resources (IDNR) publication *Integrating Multiple Taxa in a Biological Stream Rating System*, or given an integrity rating in that document. The unnamed tributary of Cedar Creek, a tributary to Waterbody Segment IL_GD, is not listed on the draft 2016 Illinois Integrated Water Quality and Section 303(d) List, because it has not been assessed. The unnamed tributary of Cedar Creek is not subject to enhanced dissolved oxygen standards.

Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses

Pollutant loadings associated with the proposed project include metals found in the municipal makeup water, heat from the HRSG blowdown and water treatment additive residuals (e.g. phosphorus) associated with chemical conditioning of the RO system and HRSGs. Water samples from the Village of Elwood were analyzed with strontium identified in the proposed facility's intake water. Other metals and basic constituents in the makeup water (e.g. chloride, sulfate, etc.) were present at background concentrations; therefore, pollutant loadings associated with these parameters are not expected to exceed water quality standards. Metals, strontium and temperature would be monitored to ensure compliance with water quality standards. Adverse impacts to the existing uses of the receiving stream are not anticipated.

Operation of the facility would require continuous use of water treatment additives for chemical conditioning of the RO system and HSRBs. Per the industry standard, phosphorus-based additives would be required for anticorrosion and antiscaling of the piping. However, when accounting for phosphorus in the raw water supply, usage in the HSRGs, and worst-case usage in the RO system, the facility has estimated that <3.9 lb./d of phosphorus (as P) would be discharged from Outfall 001, which would not exceed the phosphorus effluent limit. Sodium bisulfite and RO antiscalant would be used only when the RO water treatment system is producing demineralized water. Tri-sodium phosphate and ammonia may also be used in the HRSGs for chemical conditioning. The remaining specialty chemicals, including sodium hydroxide, P111, tri-sodium phosphate, sodium EDTA, citric acid, hydrochloric acid, sulfuric acid, and an anti-foaming agent, would be used when the rental water treatment system is taken out of service to clean the RO membranes. RO membrane cleaning is expected to occur once every three to six months. The water treatment additives proposed for use by the facility and have been reviewed for compliance with water quality standards as well as the potential for aquatic toxicity and have been determined to be suitable for use. Pollutant loadings associated with water treatment additive usage are not expected to make up a sizable portion of the wastewater and would not adversely impact the existing uses of the receiving stream.

Fate and Effect of Parameters Proposed for Increased Loading

The increased loadings of metals and phosphorus to the receiving stream would persist in the downstream continuum. Phosphorus

would remain in the water column until utilized by aquatic organisms. Temperature would dissipate in the receiving stream. The increases of flow, dissolved solids and phosphorus would have no discernable effect on the receiving stream, as all water quality standards and existing uses would be attained. **Public Notice**

Purpose and Social & Economic Benefits of the Proposed Activity

Project benefits include the efficient production of low-cost electric energy, load support for local renewable energy sources and the regional economic benefits, such as property tax funding for local government and schools. Local construction trades people and operating personnel would be positively impacted during the construction schedule and during the facility's operation.

Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation

Power Generation Alternatives: Jackson Generation evaluated alternative electric power generating technologies (wind, solar, geothermal and hydropower), alternative fuels and alternative natural gas-fired generating technologies (including reciprocating internal combustion engines, gas-fired boilers, and simple-cycle combustion turbines). Alternatives were evaluated for their ability to provide 1,100 MW of reliable base load capacity and ability to quickly respond to fluctuations in energy supply and demand. The evaluation concluded that the aforementioned alternatives could not meet one or more of the project goals for several reasons, including but not limited to, inability to provide significant or reliable base load power and inadequate load-following capabilities.

Plant Cooling Alternatives: Air-cooled and water-cooled condensing alternatives are technically feasible for use with a NGCC facility. Water-cooled condensing would be more efficient; however, it increases water use and wastewater discharge. Potential water impacts are minimized by using air-cooled condensing. Air-cooled condensing eliminates the need for cooling tower make-up water, eliminates potential environmental impacts associated with the cooling water intake structure and results in a significant reduction in water consumption and wastewater discharge. Air-cooled condensing would increase the net plant heat rate by approximately 0.4%, which reduces efficiency.

Plant Discharge Alternatives: Municipal sewer discharge; zero liquid discharge (ZLD) and rental demineralizer; and ZLD with RO/crystallizer were considered as alternative discharge options. Discharge to the Village of Elwood's municipal sewer system would require new sewer mains and lift stations and would likely impact the municipality's ability to achieve 85% removal of BOD and TSS. For the added costs and permit implications, the Village of Elwood may in fact reject discharge from JEC. The ZLD and rental demineralizer and ZLD with RO/crystallizer would drastically increase the facility's operating costs and require additional logistical resources.

Jackson Generation evaluated alternatives to the proposed project that could result in less, or no, load increase to the receiving water. The most economically feasible and least environmentally impactful alternative is to construct the facility for NGCC power generation with air-cooled condensing and wastewater discharge through Outfall 001. The proposed project would follow guidelines set forth by the Agency.

Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities

On June 1, 2018, an IDNR EcoCAT consultation was initiated and determined that the Northern Long-Eared Myotis (*Myotis septentrionalis*) may be in the vicinity of the project location. Although the consultation was not immediately terminated because the presence of the aforementioned resource in the project vicinity, future termination is likely.

Agency Conclusion

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time this assessment was written. We tentatively find that the proposed activity results in the attainment of water quality standards; all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated; and this activity benefits the community by providing a low-cost energy resource and regional economic benefits. Comments received during the NPDES permit public notice period will be evaluated before a final decision is made by the Agency.

