

IEPA Log No.: **C-0408-08**
FERC appl. #: **P-12717**

Public Notice Beginning Date: **March 6, 2014**
Public Notice Ending Date: **April 5, 2014**

Section 401 of the Federal Water Pollution Control Act
Amendments of 1972

Section 401 Water Quality Certification to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois Environmental Protection Agency
Bureau of Water
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-3362

Name and Address of Discharger: Northern Illinois Hydropower, LLC 801 Oakland Avenue Joliet, IL 60435

Discharge Location: Sec. 20 and 21, T35N, R10E, 3rd P.M., Will County

Name of Receiving Water: DesPlaines River

Project Description: Proposed new hydroelectric powerhouse containing four generating units with total installed capacity of 7.8 megawatts with new intake and forebay structures, configuring headrace channel, new tailrace, new transmission lines and appurtenant facilities.

The Illinois Environmental Protection Agency (IEPA) has received an application for a Section 401 water quality certification to discharge into the waters of the state associated with a Federal Energy Regulatory Commission application for license to construct and operate a hydroelectric power generating plant. The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice. The last day comments will be received will be on the Public Notice period ending date unless a commenter 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 project to the IEPA at the above address. Commenters shall provide their names and addresses along with comments on the certification application. Commenters may include a request for public hearing. The certification and notice number(s) must appear on each comment page.

The attached Fact Sheet provides a description of the project and the antidegradation assessment.

The application, Public Notice/Fact Sheet, comments received, and other documents are available for inspection and may be copied at the IEPA at the address shown above between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

If written comments or requests indicate a significant degree of public interest in the certification application, the IEPA may, at its discretion, hold a public hearing. Public notice will be given 30 days before any public hearing. If a Section 401 water quality certification is issued, response to relevant comments will be provided at the time of the certification. For further information, please call Keith Runge at 217/782-3362.

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Fact Sheet for Antidegradation Assessment for
For Northern Illinois Hydropower, LLC
Brandon Road Lock and Dam Hydropower Project
IEPA Log No. C-0408-08
FERC appl. #: P-12717
Contact: Eric Runkel 217/558-2012
March 6, 2014

Grundy County

The Northern Illinois Hydropower, LLC (Applicant) is applying for a 401 water quality certification for impacts associated with the construction of a new powerhouse at the Brandon Road Lock and Dam at Des Plaines River mile 286 in Will County, Illinois. The applicant is proposing to install four 2,000mm turbine/generator units in the power station. The design will comply with requirements set forth by Illinois Department of Natural Resources (IDNR) and Illinois Environmental Protection Agency for a two inch trash rack spacing, an approach velocity of 1.5 feet per second, and a range of flows that are in excess of the first 1000 cubic feet per second (cfs) available in the Des Plaines River. The project will be operated as a “run of the river” facility and pose no effect to the United States Army Corps of Engineers (USACE) operation of the lock and dam. The powerhouse will be controlled with an automated system that would automatically start up, run, and shut down the turbines. The automated system would allow the USACE to modify hydroelectric operations instantaneously in response to emergencies related to lock operation or flood control. All materials will be removed from the floodway at the end of the project.

Antidegradation assessment material was received from the applicant under a 401 Joint Application Form for Illinois, Brandon Road Hydropower Project, ACOE Chicago District, IEPA Log # C-0408-08, received December 10, 2013 from the Damon Zdunich, Northern Illinois Hydropower, LLC, Joliet, Illinois.

Identification and Characterization of the Affected Water Body.

The Des Plaines River has a 7Q10 flow of 1493 cfs at this location and is a General Use water. The Des Plaines River, Waterbody Segments IL_G-23 (upstream) and IL_G-12 (downstream) are listed in the Illinois Integrated Water Quality Report and Section 305(b)/303(d) List 2012 as impaired for Fish Consumption; Mercury and polychlorinated biphenyls are given as the causes of this impairment. Both Segments are fully supporting Indigenous Aquatic Life. Secondary Contact has not been assessed for either Segment. Both Segments at this location are not enhanced waterbodies pursuant to the dissolved oxygen water quality standard. Both Segments are not listed as biologically significant, however Segment IL_12 has been given a category “D” integrity rating in the 2008 Illinois Department of Natural Resources publication Integrating Multiple Taxa in a Biological Stream Rating System. Segment IL_G-23 has not been given an integrity rating.

Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.

To develop the intake approach flow area, the proposal is to dredge a 0.37 acre area upstream of the existing head gate structure resulting in approximately 7,500 cubic yards of sediment and overburden removal above the assumed bedrock elevation. No upstream rock excavation is anticipated. In preparation for temporary downstream cofferdam construction and rock excavation for the power station foundation, the Applicant proposes to dredge the work area mechanically to remove existing sediment and overburden. In preparation for the riverbed rock excavation necessary for the powerhouse foundation, and tailrace, the Applicant proposes to dredge a 0.51 acre area immediately downstream of the existing head gate structure resulting in approximately 2800 cubic yards of sediment and overburden removal. Rock excavation below the assumed bedrock elevation for the powerhouse foundation and tailrace will require approximately 400 cubic yards of rock removal. The total proposed quantity of power station concrete fill placed in the riverbed below the downstream normal high water elevation is approximately 3,500 cubic yards.

The Applicant plans a downstream cofferdam consisting of sheet pile cofferdam cells and a section of earthen cofferdam to dewater the worksite for dredging, excavation and construction. The temporary cofferdams will result in temporary discharge of approximately 16,000 cubic yards of material below the Normal High Tailwater elevation.

Dissolved oxygen (DO) levels in the Illinois Waterway can be relatively low, particularly in the summer months, because the assimilation of nutrients by the river consumes dissolved oxygen from the water; however, available data indicate that current water quality standards are met below the Brandon Road Lock & Dam virtually all of the time. It was determined that a 1,000 cfs minimum by-pass flow for the project at the Brandon Road Lock & Dam was necessary to maintain dissolved oxygen above water quality standards, preserve some of the re-oxygenation that currently occurs at the dam and support habitat for aquatic life.

Without any minimum by-pass flow requirements, addition of the project to the Brandon Road Lock and Dam would create a major modification to existing habitat below the dam. A condition to require 1,000 cfs to spill over the dam was added to the project. The Applicant performed an analysis of the impact of the dissolved oxygen downstream of the Brandon Road Lock & Dam using a mass balance equation. The mass balance equation assumed upstream dissolved oxygen and possible downstream dissolved oxygen results and determined the resulting difference in dissolved oxygen that would result with the powerhouse operating at different stream flows. In addition to the 1,000 cfs flowing over the dam, the project has to allow 275 cfs for USACE lock operations and a minimum turbine operating flow of 300 cfs. Therefore, the lowest flow that is required to operate the turbine is 1,575 cfs. The results of the analysis indicate that by implementing the proposed project a decrease in the mean dissolved oxygen no greater than 0.7 mg/L to 1.8 mg/L would occur at the lower dissolved oxygen levels under worst case conditions.

No pollutant load increases would occur from this project other than some increases in suspended solids near the location of mechanical dredging equipment. Benthic organisms will be disturbed by dredging and construction activities. Fish will be displaced and have foraging opportunities disrupted while construction activities occur.

Fate and Effect of Parameters Proposed for Increased Loading.

Aquatic communities at least as diverse as currently inhabit the river will return upon construction completion. Sediment and soil erosion control plans will be utilized during construction. Silt fencing and straw bales will be properly located to minimize runoff to surface waters. Installation of a turbidity curtain attached to the existing ice barrier wall and adjacent to the proposed cofferdam work area will further prevent passage of sediment disturbed by the cofferdam installation into downstream section of the Illinois Waterway. Turbidity will be monitored continuously and water samples will be collected daily for laboratory chemical analysis during excavation.

The proposed project may result in temporary wetland impacts to 4.5 acres downstream of the project area. A small section of this wetland of the right abutment of the dam may be temporarily disturbed by the reinforcement of the existing USACE access road to the river. Upon completion of the project, the access road will be restored to its prior configuration. If permanent wetland impacts occur the Applicant has agreed to mitigate by purchasing credits from an approved mitigation bank with the same 8-digit HUC unit or the Des Plaines River watershed. The Applicant will mitigate emergent herbaceous wetland impacts at a 1.5 to 1 ratio. The Applicant originally proposed to mitigate the forested wetland impacts at a 1.5 to 1 ratio. The Illinois EPA recommended a ratio of 2.5 to 1 for forested wetlands. The Applicant agreed and memorialized through an electronic mail dated December 30, 2013 that the forested wetland mitigation would be changed to a 2.5 to 1 ratio.

No adverse impacts to the river as a whole would occur from this activity as all water quality standards are expected to be met. There will be a slight overall decrease (no greater than 0.7 mg/L to 1.8 mg/L) in DO downstream of the dam once operations commence. However even with the agreed upon first flow spill of 1,000 cfs over the dam, DO must comply with the standards as set forth in 35 Illinois Administrative Code (IAC) Section 302. The decrease in DO is not anticipated to adversely affect aquatic life. Applicant DO monitoring reports will be scrutinized to ensure plant operations will not cause DO violations in the river.

Purpose and Social & Economic Benefits of the Proposed Activity.

Once online, the powerhouse will provide an estimated, annual generation of approximately 40,000 Mwh. Using the existing, available, and agreed upon flows at the lock and dam, the project will provide sustainable and renewable power to local consumers while retaining/maintaining the lock and dam's primary function and protecting aquatic habitat and water quality.

The project will create local jobs in the skilled trades including ironworkers, carpenters, millwrights, electricians, and laborers, professional services including engineering, legal and investment banking and the service industry. In addition, this project will require significant local resources such as concrete, reinforcing bar, steel beams and other supplies that will be locally produced and delivered to the site.

Additionally once the project is developed, the applicant anticipates two full time equivalent positions to maintain and operate the facility along with continued operations and maintenance support from vendors.

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

No Action

The No-Action Alternative would result in no hydropower development at the Brandon Road Lock and Dam. The no-action alternative is not a preferred option given the present and future need for renewable power in a geographic area that is experiencing a vast increase in power demand due to local population growth and urban growth.

Operations Modification to Enhance Dissolved Oxygen

NIH proposed to operate either or both the crest gates or headgates in conjunction with the proposed Project. The alternative involved automatically increasing the spill through the gate(s) to enhance DO concentrations as generation was reduced. NIH included a provision to monitor and record data for two years and then work with IEPA to determine if modifying operations was necessary. This alternative did not adequately address anti-degradation in terms of either water quality or habitat quality. The alternative was rejected.

Air Injection

NIH analyzed equipment modifications to either passively entrain or force air into the hydro discharge. Both passive and active air injection required extensive modification to equipment as well as powerhouse design, both of which decreased plant efficiencies below cost effectiveness. Operations costs for a forced air system often exceeded the estimated value of the power. While the systems could maintain water quality, less water was available for habitat across the entire width of the dam. The alternative was rejected on the basis of plant economics and habitat degradation.

Dissolved Oxygen Enhancement

NIH analyzed a system to inject oxygen in the forebay of the proposed facility such that dissolved oxygen would meet or exceed water quality standards. NIH proposed to install four Praxair ISO units, controlled by a DO sensor and feedback loop. NIH suggested that the combination of the DO injection system and the ability to adjust the quantity of water through the plants would provide an effective means to maintain water quality.

NIH estimated that by-passing more than 500 cfs along with the operations and maintenance costs of the proposed system would make the Project uneconomic. Because the proposal to by-pass no more than 500 cfs did not meet the criteria for maintaining habitat, the alternative was rejected.

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

The IDNR EcoCAT system was reopened because more than two years had passed since the 2011 review. IDNR determined that no further consultation was necessary since no new potential threatened or endangered species or protected natural areas were identified in the vicinity of the project that could be adversely affected by the project. Consultation was terminated for project #1010242 in a correspondence from Karen Miller (IDNR) on December 19, 2013.

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 the antidegradation review summary was written. We tentatively find that the proposed activity would result in the attainment of water quality standards; that all existing uses of the receiving streams would be maintained; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity would benefit the community at large through the production of clean, renewable energy. Comments received during the 401 certification public notice period will be evaluated before a final decision is made by the Agency.