June 1, 2015

Jessica Hart
Environmental Analyst
Division of Environmental Permits
New York State Department of Environmental Conservation
317 Washington St.
Watertown, NY 13601

SUBJECT: Lyons Falls Hydroelectric Project (FERC No. 2548)
Application for Section 401 Water Quality Certification

Dear Ms. Hart:

On May 15, 2015, Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc., filed an application with the Federal Energy Regulatory Commission (FERC) for an amendment to the current license of the Lyons Falls Hydroelectric Project (FERC No. 2548) (Project).

In support of FERC's issuance of an amendment to the existing license, NBLF is submitting a Joint Application for Permit in support of amending the Project's existing Section 401 Water Quality Certificate or issuing a new Water Quality Certificate for the Project. As noted in the attached form, the application is supported by the May 15, 2015 FERC amendment application. Therefore, a complete copy of the FERC amendment application is enclosed with this submittal.

Should you have any questions regarding this submittal, please doe not hesitate to contact me at (315) 414-2202.

Sincerely,

Jim Gibson
Vice President

Attachments (2)

Joint Application for Permit
FERC Amendment Application

hdrinc.com

1304 Buckley Road, Suite 202Syracuse, NY 13212
T 315-451-2325 **F** 315-451-2429

New York State

JOINT APPLICATION FORM

For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water withdrawal.

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of Engineers (USACE)

APPLICATIONS TO

1. NYS Department of Environmental Conservation

Check all permits that apply:

- ☐ Stream Disturbance
- ☐ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☐ Dams and Impoundment Structures
- ☑ 401 Water Quality Certification
- ☐ Freshwater Wetlands
- ☐ Tidal Wetlands
- ☐ Coastal Erosion Management
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Water Withdrawal
- ☐ Long Island Well
- ☐ Aquatic Vegetation Control
- ☐ Aquatic Insect Control
- ☐ Fish Control
- ☐ Incidental Take of Endangered/Threatened Species

☑ I am sending this application to this agency.

2. US Army Corps of Engineers

Check all permits that apply:

- ☐ Section 404 Clean Water Act
- ☐ Section 10 Rivers and Harbors Act
- ☐ Nationwide Permit(s) - Identify Number(s): _____ _____

Preconstruction Notification - ☐ Y / ☐ N

☐ I am sending this application to this agency.

3. NYS Office of General Services

Check all permits that apply:

- ☐ State Owned Lands Under Water
- ☐ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

☐ I am sending this application to this agency.

4. NYS Department of State

Check if this applies:

- ☐ Coastal Consistency Concurrence

☐ I am sending this application to this agency.

5. Name of Applicant (use full name)

Northbrook Lyons Falls, LLC

Mailing Address: 37 Alfred Plourde Parkway, Suite 2

Post Office City: Lewiston

State: ME Zip Code: 04240

Telephone (daytime): (514) 343-3226

Email: michael.cookson@kruger.com

Applicant must be: (check all that apply)

- ☑ Owner
- ☐ Operator
- ☐ Lessee

Taxpayer ID (If applicant is NOT an individual): 36-4341077

6. Name of Facility or Property Owner (if different than Applicant)

Mailing Address:

Post Office City:

State: Zip Code:

Telephone (daytime): Email:

7. Contact/Agent Name

Michael Cookson

Company Name: Northbrook Lyons Falls, LLC

Mailing Address: 3285, chemin Bedford

Post Office City: Montreal

State: QC Zip Code: H3S 1G5

Telephone (daytime): (514) 343-3226

Email: michael.cookson@kruger.com

8. Project / Facility Name

Lyons Falls Mill

Property Tax Map Section / Block / Lot Number: Multiple

Project Location - Provide directions and distances to roads, bridges and bodies of waters:

Located on the Black River (west shoreline), immediately east of Center Street

Street Address, if applicable: 1040 Center Street

Post Office City: Lyons Falls State: NY Zip Code: 13368

Town / Village / City: Town of West Turin

County: Lewis

Name of USGS Quadrangle Map: Port Leyden

Stream/Water Body Name: Black and Moose rivers

Location Coordinates: Enter NYTMs in kilometers, **OR** Latitude/Longitude

NYTM-E	NYTM-N	Latitude	Longitude
		43.6168	75.3582

For Agency Use Only DEC Application Number: USACE Number:

JOINT APPLICATION FORM - PAGE 2 OF 2

Submit this completed page as part of your Application.

9. **Project Description and Purpose:** Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

See Attached: Lyons Falls Hydroelectric Project (FERC No. 2548) Amendment Application

Proposed Use: ☑ Private ☐ Public ☐ Commercial	Proposed Start Date: See Attached	Estimated Completion Date: See Attached
Has Work Begun on Project? ☐ Yes ☑ No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? ☐ Yes ☑ No If Yes, please specify.		

10. List Previous Permit / Application Numbers (if any) and Dates:

Existing Section 401 Water Quality Certificate (February 12, 1985)

11. Will this project require additional Federal, State, or Local Permits including zoning changes? ☑ Yes ☐ No If yes, please list:

License Amendment from the Federal Energy Regulatory Commission (application filed on May 15, 2015) and an Army Corps of Engineers Section 404 Permit (application to be filed following further development of construction plans). Section 401 WQC is required in order for FERC to issue the license amendment. Section 404 permit to be issued afterward.

12. **Signatures.** If applicant is not the owner, both must sign the application.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

	Printed Name	Title	Date
Signature of Applicant	Pierre Janelle	Vice President Operations	May 29, 2015
Signature of Owner			
Signature of Agent			

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

Agency Project Number _____

_____ (Agency Name) has determined that No Permit is required from this Agency for the project described in this application.

Agency Representative: Name (printed) _____ Title _____

Signature _____ Date _____

LYONS FALLS PROJECT
APPLICATION FOR AMENDMENT OF LICENSE

Prepared for:
Northbrook Lyons Falls, LLC

Prepared by:
Henningson Durham & Richardson
Architecture and Engineering, P.C.

MAY 2015

LYONS FALLS PROJECT
APPLICATION FOR AMENDMENT OF LICENSE

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LYONS FALLS PROJECT
APPLICATION FOR AMENDMENT OF LICENSE

LIST OF TABLES

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(Continued)

List of Acronyms

amps	amperes
APE	Area of Potential Effects
BMI	benthic macroinvertebrates
BMPs	best-management practices
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
COD	commercial operation date
CRIS	Cultural Resources Information System
DO	dissolved oxygen
EPA	Environmental Protection Agency
EPRI	Electric Power Resource Institute
EPT	Ephemeroptera, Plecoptera, and Trichoptera (collectively)
FBI	family biotic index
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission (or Commission)
fps	feet per second
GIS	geographic information system
GSU	generator step-up
HP	horsepower
ICAP	Initial Consultation/Amendment Package
ICD	Initial Consultation Document
IM	impoundment
Kruger	Kruger Energy, Inc.
kV	kilovolt
kVA	kilovoltamperes
kW	kilowatts
Lyons Falls Mill	Lyons Falls Mill Development (or the Development)
MVA	Mega Volt Ampere
MW	megawatt
MWh	megawatt hours

msl	mean sea level
NAWMP	North American Waterfoul Management Plan
NBLF	Northbrook Lyons Falls, LLC (or Applicant)
NG	none gathered
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NYCRR	New York Codes, Rules and Regulations
NYDS	New York Department of State
NYISO	New York Independent System Operator
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSERDA	New York State Energy Research and Development Authority
OPRHP	Office of Parks, Recreation and Historic Preservation
PAF	Public Archaeology Facility
PM&E	protection, mitigation, and enhancement
POI	point of interconnection
Project	Lyons Falls Project
R	richness
RC%	relative composition
RECs	Renewable Energy Credits
RFP	request for proposal
RIBS	Rotating Intensive Basin Studies
RMs	river mile
RPM	revolutions-per-minute
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SDR	Supporting Design Report
SHPO	State Historic Preservation Office

TCEAP	Temporary Construction Emergency Action Plan
TU	Trout Unlimited
uS	microsiemens
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WQC	Water Quality Certification
XS	Cross Section

INITIAL STATEMENT

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

Application for Amendment of License (18 CFR §§ 4.200 and 4.201)

(1) Northbrook Lyons Falls, LLC (NBLF or Applicant), an affiliate of Kruger Energy, Inc. (Kruger), applies to the Federal Energy Regulatory Commission (FERC) for an amendment of license for the Lyons Falls Project (Project), FERC No. 2548.

(2) The exact name, business address, and telephone number of the applicant are:

Northbrook Lyons Falls, LLC
37 Alfred A. Plourde Parkway, Suite 2
Lewiston, ME 04240
Telephone: (207) 786-8834

(3) The Applicant is a domestic corporation, licensee for the water power project designated as Project No. 2548 in the records of the FERC, issued on the 6th day May, 1986.

(4) The amendments of license proposed and the reasons why the proposed changes are necessary, are:

NBLF is proposing to redevelop the Project's existing 5.8 megawatt (MW) Lyons Falls Mill Development (Lyons Falls Mill or Development) to increase the Development's efficiency and overall energy output. NBLF proposes to demolish the existing primary powerhouse and mothball the single-unit powerhouse; thus, all five existing generating units will be decommissioned. A new powerhouse will then be constructed to house two new vertical generating units with a total nameplate capacity of 11.2 MW. The proposed amendment is limited to the Lyons Falls Mill Development and will not affect the Project's Gouldtown or Kosterville Developments. The proposed amendment will increase the total installed capacity of the Project to 14.03 MW.

(5) (i) The statutory or regulatory requirements of New York that affect the Project as proposed with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes are:

a. Authorization to conduct the business of generation, transmission, and distribution of electricity pursuant to Article 2 of New York's Transportation Corporation Law.

b. Water Quality Certification pursuant to Title 6 of New York Codes, Rules, and Regulations (NYCRR) Section 608.9 and Section 401 (a)(1) of Public Law 92-500 as amended by Public Law 95-217 (Clean Water Act of 1977), 33 U.S.C. Section 1341.

c. Except as hereinafter noted, the New York State Department of Environmental Conservation (NYSDEC) has issued permits as follows:

   i. Stream disturbance permit pursuant to Title 5 of Article 15 of the Environmental Conservation Law, Section 15-0501 thereof, and Title 6 NYCRR Section 608.2.

   ii. Dam permit pursuant to Title 5 of Article 16 of the Environmental Conservation Law, Section 15-0503 thereof, and 6 NYCRR Section 608.3.

   iii. Excavation or fill permit pursuant to Title 5 of Article 15 of the Environmental Conservation Law, Section 15-0505 thereof, and Title 6 NYCRR Section 608.5.

(5)(ii) The steps that Applicant has taken or plans to take to comply with each of the laws cited above, are:

a. Applicant has complied with the requirements of the laws of the State of New York with respect to the right to engage in the business of developing and transmitting power.

b. Applicant will apply to the NYSDEC for an amended Water Quality Certification (WQC) pursuant to Section 401 of the Clean Water Act of 1977 in accordance with Title 6 NYCRR Section 608.9. NBLF will apply for the WQC immediately following the filing of this amendment application.

c. Applicant has performed studies associated with aquatic, terrestrial, recreational, and historical resources in support of the associated environmental analyses.

d. The above-referenced NYSDEC permits were either obtained in connection with the initial development of the Project or are not required by virtue of this Commission's exclusive licensing jurisdiction. See Fourth Branch Associates et al. v. The Department of Environmental Conservation, et al., 550 N.Y.S. 2d769 (sup. 1989); Fourth Branch Associates et al. v. The Department of Environmental Conservation et al. Index No. 6029-89, Special Term, June 20, 1989-Cal. No. 19 [Sup. Ct. -Harris, J.]; First Iowa Hydroelectric Coop. v. FPC, 328 U.S. 152, 66 S. Ct. 906, 90 L. Ed 1143 (1946); California v. Federal Energy Regulatory Commission, 110A S. Ct. 2024 (1990); Matter of Power Authority v. Williams, 60 N.Y. 2d315; Matter of deRham v. Diamond, 32 N.Y. 2d34; Matter of Niagara Mohawk Power Corporation v. The New York State Department of Environmental Conservation et al., 82 N.Y. 2d191, 604 N.Y.S. 2d18, 624NE2d146 (1993).

VERIFICATION

This application is executed in the

State of : New York

County of : Lewis

By : Pierre Janelle

Northbrook Lyons Falls, LLC

3285 chemin Bedford

Montreal QC H3S 1G5

The undersigned being duly sworn, deposes and says that the contents of this application are true to the best of my knowledge or belief. The undersigned applicant has signed this application this 15th day of May, 2015.

Pierre Janelle

Subscribed and sworn to before me, a Notary Public of the State of New York, this 15th day of May, 2015.

Rebecca L Scida 5/15/2015

Notary Public

REBECCA L SCIDA
NOTARY PUBLIC STATE OF NEW YORK
LIC. #01SC6267201
COMM. EXP. 08/13/2016
COMMISSION IN ONONDAGA COUNTY

NORTHBROOK LYONS FALLS, LLC
LEWISTON, MAINE

LYONS FALLS PROJECT
FERC PROJECT NO. 2548

LICENSE AMENDMENT APPLICATION
FOR THE LYONS FALLS MILL DEVELOPMENT

Executive Summary

Northbrook Lyons Falls, LLC (NBLF or Applicant), an affiliate of Kruger Energy, Inc. (Kruger), is the owner of and licensee for the Lyons Falls Project (Project) (FERC No. 2548) located on the Moose and Black Rivers in Lewis County, New York. The Project is comprised of three developments: Lyons Falls Mill, Gouldtown, and Kosterville. The Project operates under a license that was issued by the Federal Energy Regulatory Commission (FERC or Commission) on May 6, 1986, and expires on May 31, 2026[1]. NBLF is proposing to redevelop the Lyons Falls Mill Development (Lyons Falls Mill or Development) to increase the facility's efficiency and overall energy output. Accordingly, NBLF is seeking an amendment to the Project's existing FERC license to authorize the proposed redevelopment of Lyons Falls Mill as described in this amendment application.

The proposed upgrades to Lyons Falls Mill would increase the Project's total installed capacity from 8.63 MW to 14.03 MW and would result in an increase in the Project's total maximum hydraulic capacity of greater than 15 percent. Therefore, this application is for a "capacity related amendment" to the Project's existing license as defined at 18 CFR §4.201(b) of the Commission's regulations.

Pursuant to 18 CFR §4.201(b), this application contains revisions and additions to existing license Exhibits A through G[2] currently on file with the Commission that are commensurate with the scope of the proposed amendment and the licensed Project. As described above, NBLF is not proposing any modifications to existing facilities or operations at the Gouldtown or Kosterville developments. Therefore, this amendment application includes only those revisions and

[1] 35 FERC ¶ 62,229, Order Issuing New Major License (1986).
[2] See 18 CFR §4.201(b)(5)

additions to license Exhibits A through G currently on file with the Commission that are germane to the proposed redevelopment of Lyons Falls Mill. Specifically, this application includes:

- **Initial Statement (18 CFR §4.201(a))**
- **Executive Summary**
- **Exhibit A – Project Description (18 CFR §4.51(b)):** Describes the existing and proposed facilities at Lyons Falls Mill.
- **Exhibit B – Project Operations and Resource Utilization (18 CFR §4.51(c)):** Describes existing and proposed operations of Lyons Falls Mill.
- **Exhibit C – Construction History and Proposed Schedule (18 CFR §4.51(d)):** Describes the construction history of Lyons Falls Mill and the proposed schedule for redevelopment.
- **Exhibit D – Statement of Costs and Financing (18 CFR §4.51(e)):** Provides a summary of expected costs for redevelopment, current investment, annual value of power, operations and maintenance costs, and a description of sources of financing.
- **Exhibit E – Environmental Report (18 CFR §4.51(f)):** Discusses the existing environmental, recreational, cultural, and land resources in the vicinity of Lyons Falls Mill and describes the proposed amendment's potential effects on these resources.
- **Exhibit F – General Design Drawings (18 CFR §4.51(g)):** Includes preliminary design drawings of the principal facilities at Lyons Falls Mill as proposed in this amendment application. NBLF notes that the Supporting Design Report will be provided to the Commission concurrent with pre-construction design submittals.
- **Exhibit G – Project Boundary (18 CFR §4.51(h)):** Includes maps showing the current boundary for the Lyons Falls Project as approved by the Commission. NBLF will provide the Commission with an updated and revised, full georeferenced Exhibit G map set following completion of construction current with the applicable as-built drawings.

NBLF notes that information presented in Exhibit F is Critical Energy Infrastructure Information (CEII) as defined by the Commission at 18 CFR §388.113(c). Such information has been removed from the public version of this application. In accordance with the Commission's filing

guidelines, all CEII material is included in a separate volume (Volume II) that has been clearly labeled as CEII. NBLF respectfully requests that this information be accorded treatment as CEII, as it consists of detailed Project facility diagrams and other information relating to the "production, generation, transportation, transmission, or distribution of energy" (18 CFR §388.113(c)).

The Commission's regulations at 18 CFR §4.38 describe the pre-filing consultation procedures for capacity related amendment applications. The consultation process undertaken in the preparation of this application was expedited by utilizing consolidated documents and employing abbreviated stakeholder and agency review periods relative to the procedural timeframes and consultation requirements described in the referenced regulations. NBLF initiated consultation with resource agencies and stakeholders including the New York State Department of Conservation (NYSDEC), U.S. Fish and Wildlife Service (USFWS), Town of Lyons Falls, New York State Council of Trout Unlimited (TU), and Lewis County in the fall of 2014. On January 30, 2015, NBLF distributed an Initial Consultation/Amendment Package (ICAP) to the parties noted above. Subsequent to this initial distribution, on February 3, 2015, NBLF distributed copies of the ICAP to additional resource agencies, stakeholders, and federally recognized Indian tribes with a potential interest in the redevelopment of Lyons Falls Mill. NBLF also placed a copy of the ICAP in the Village of Lyons Falls' library. The ICAP provided information on current and proposed facilities, operations, and environmental conditions. The ICAP also summarized proposed protection, mitigation, and enhancement (PM&E) measures associated with proposed redevelopment of Lyons Falls Mill. A cover letter accompanying the ICAP invited agencies and stakeholders to participate in a Joint Agency/Public Meeting. On February 18, 2015, NBLF published public notice of the Joint Agency/Public Meeting, Site Visit, and the availability of the ICAP.

The Joint Agency/Public Meeting and Site Visit were held on March 4, 2015 at the Lyons Falls Fire Hall and at the Development. The transcript from this meeting is provided in Appendix A of this application. As part of the meeting, NBLF presented an overview of the existing and proposed facilities at Lyons Falls Mill, environmental conditions, and proposed PM&E measures. The PM&E measures included conceptual designs and performance goals for providing seasonal downstream fish movement continuity flows and aesthetic flows. NBLF has

continued to consult with the NYSDEC, USFWS, TU, local municipalities, and other stakeholders (American Whitewater, Oneida Indian Nation, and New York State Historic Preservation Office) regarding the redevelopment, the amendment process, and appropriate PM&E measures. The PM&E measures presented in this amendment application represent measures developed collaboratively and in consultation with these parties.

While the consultation process undertaken in preparation of this application was comprehensive, NBLF is requesting Commission waiver of select aspects of the pre-filing consultation requirements. In accordance with the Commission's requirements[3], NBLF requested that consulted parties affirm in writing that they had no objections to NBLF's pursuit of a waiver of any parts of 18 CFR §4.38 that are not explicitly covered by the consultation record accompanying this amendment application. Those agencies and stakeholders that participated in the consultation process that NBLF followed in the preparation of this application responded with letters indicating in writing that the consultation process that NBLF followed provided sufficient and adequate review opportunities to ensure that the respective agency's resource interests were addressed (see consultation correspondence in Appendix B of this application). Additionally, each party indicated that they supported the amendment being sought by NBLF and that comments raised during consultation have been fully and adequately addressed in the enclosed amendment application. Accordingly, these parties are not opposed to the Commission waiving the requested regulatory requirements.

Lastly, NBLF notes that a water quality certificate (WQC) pursuant to Section 401of the Clean Water Act[4] was issued for the Lyons Falls Project by the NYSDEC on February 12, 1985. NBLF has consulted with the NYSDEC regarding the need for an amended Section 401 WQC for the proposed amendment. The NYSDEC has indicated that a new or modified Section 401 WQC will be required for the proposed facilities that would incorporate the provisions from the February 12, 1985, Section 401 WQC and such current provisions as may be appropriate. Based on consultation with the NYSDEC and pursuant to 18 CFR §4.34(b)(5) of the Commission's regulations, NBLF will apply for a Section 401 WQC subsequent to filing this amendment application.

[3] See 18 CFR §4.38(d)(2)(iii)(e)
[4] 33 U.S.C. 1341

Exhibit A - Project Description

A.1 General Project Description

A.1.1 Project Overview

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc. (Kruger), is the licensee for the Lyons Falls Project (FERC No. 2548) (Project). The Project was initially constructed in 1920 and is located along the Moose and Black Rivers in Lewis County, New York. The developments include (from downstream to upstream) Lyons Falls Mill, Gouldtown, and Kosterville. The Project has a total installed capacity of 8.63 megawatts (MW). The Project operates under a license that was issued by the Federal Energy Regulatory Commission (FERC or Commission) on May 6, 1986. The Project's current license expires on May 31, 2026[5]. NBLF is proposing to redevelop the Lyons Falls Mill Development (Lyons Falls Mill or Development) to increase the facility's efficiency and overall energy output. Redevelopment of Lyons Falls Mill will increase the capacity of this facility from 5.8 MW to 11.2 MW and will increase the Project's total installed capacity to 14.03 MW. The proposed redevelopment requires an amendment to the Project's existing FERC license.

Lyons Falls Mill is located in the Village of Lyons Falls in the Town of West Turin, Lewis County, New York, approximately 42 miles north of Utica and 40 miles south of Watertown, New York. The existing dam, powerhouses, and impoundment are located within and adjacent to a former Georgia-Pacific paper mill on river left[6] at the confluence of the Black and Moose rivers, approximately 82 river miles (RMs) upstream of Lake Ontario. The upstream drainage at Lyons Falls Mill is approximately 879 square miles.

Existing generating equipment at Lyons Falls Mill is housed within two powerhouses located on river left within the footprint of the former paper mill. The Development includes five turbines ranging in size from 900 to 1,200 kilowatts (kW). The main powerhouse contains four horizontal turbines and a second powerhouse contains a single vertical turbine. The Lyons Falls Mill impoundment extends upstream along the Black River and the lowermost reach of the

[5] 35 FERC ¶ 62,229, Order Issuing New Major License (1986).

[6] As used in this amendment application, "river left" refers to the left shoreline of the river when looking downstream; "river right" refers to the right shoreline of the river when looking downstream.

Moose River. The Project's two other developments (Gouldtown and Kosterville) are located on the Moose River at RM 1.0 and 1.3, respectively.

In 2006, an Initial Consultation Document (ICD) proposing the addition of a new 9 MW powerhouse to Lyons Falls Mill was prepared and distributed to interested parties. The 2006 proposal included the development of the new powerhouse on river right, across the river from the former paper mill and the existing facility's powerhouses. Based primarily on the proposed location of the new powerhouse, there was considerable opposition to this proposal. Therefore, NBLF did not pursue redevelopment of Lyons Falls Mill as described in the 2006 proposal.

Recent activity relating to the former paper mill has created an opportunity for NBLF to revisit upgrading Lyons Falls Mill, increasing both power production and efficiency. The ongoing demolition of the adjacent paper mill will allow for all redevelopment activities associated with Lyons Falls Mill to occur within the footprint of the former paper mill site on the river left shoreline, as compared to the river right as was proposed in 2006. Upon approval of the redevelopment, the existing primary powerhouse will be demolished and the single-unit powerhouse will be mothballed; thus, all five existing generating units will be decommissioned. A new powerhouse will then be constructed to house two new vertical generating units with a total nameplate capacity of 11.2 MW. The proposed redevelopment is limited to Lyons Falls Mill and will not affect the facilities at, or operations of, the Gouldtown or Kosterville developments.

A.2 Existing and Proposed Features Characteristics

The redeveloped Lyons Falls Mill will utilize the existing dam and spillway and will consist of a replacement of the existing intake and trashrack structures, the construction of a new powerhouse, and the installation of the two new generating units and the associated generator tie line. The physical composition and dimensions of existing and proposed features are described below.

A.2.1 Existing Features

Overview

The Project is licensed to NBLF and the current license expires on May 31, 2026. The Commission's May 6, 1986 order issuing a new license for the Project and subsequent pertinent orders modifying and amending the license constitute the description of the Project. Existing features at Lyons Falls Mill are summarized below.

Existing Features

The existing Lyons Falls Mill includes a 431.5-foot-long, 10-foot-high, "L-shaped" concrete gravity dam with a 362-foot-long spillway section and a 69.5-foot-long concrete gate structure adjoining the west (river left) end of the dam. The concrete gate structure contains two 6-foot-high, 25-foot-wide flood control gates and one 6-foot-high, 8-foot-wide sluice gate. The spillway is equipped with 26-inch-high wooden flashboards that maintain a 130-acre impoundment with a gross storage volume of 730 acre-feet at an elevation of 806.5 feet mean sea level (msl)[7] (top of flashboards). The normal tailwater elevation of 738.4 feet at Lyons Falls Mill results in a gross head of 68.1 feet.

The intake structure is located adjacent to the river left dam abutment and is equipped with trashracks measuring 18 feet high and 89 feet wide. The trashracks have a clear-bar spacing of 1 and 7/8 inches. The intake area also includes a 3.75-foot-wide by 6-foot-high, manually operated, bottom-opening debris sluice gate located perpendicular to the trashracks. With the exception of the dam, all existing equipment and structures associated with Lyons Falls Mill are located on river left within the footprint of the former paper mill.

The intake structure feeds three penstocks that lead to two powerhouses. Each penstock has an individual, manually operated intake gate. Existing generating equipment at Lyons Falls Mill is housed within two powerhouses located on river left. A 30-foot by 30-foot powerhouse is fed by an 8-foot-diameter, 125-foot-long penstock and contains a single vertical turbine (Unit 1). Unit 1 is a vertical shaft S. Morgan Smith turbine with a top-mounted Westinghouse generator. The

[7] Unless otherwise noted, elevations in this amendment application are presented in msl.

turbine has a 33-inch diameter and is rated at 1,500 horsepower (HP) at 360 revolutions-per-minute (RPM) with a head of 67 feet. The generator is rated at 1,040 kW, 1,300 kilovolt-amperes (kVA), 2300 volts, 355 amperes (amps), and 0.8 power factor. At 80 percent efficiency, a flow of 250 cubic feet-per-second (cfs) is required to produce 1,500 HP.

The 40-foot by 110-foot primary powerhouse is fed by 12-foot and 6-foot-diameter penstocks, both approximately 250 feet long. Four horizontal turbines (Units 6, 7, 8, and 9) are located within the main powerhouse. Units 6 and 7 are horizontal shaft James Leffel and Co. turbines. Both units are rated at 1,500 HP at 240 RPM and 69 feet of head. Unit 6 is mounted with an Ideal Electric and Manufacturing Co. generator rated at 1,200 kW, 1,500 kVA, 2,400 volts, 360 amps, and a power factor of 0.8. Unit 7 has a General Electric generator rated at 1,500 kVA, 2,300 volts, 377 amps, and a 0.8 power factor. At 80 percent efficiency, both units require a flow of 250 cfs to produce 1,500 HP.

Unit 8 is a Rodney Hunt turbine rated at 1,500 HP at 225 RPM and 69 feet of head. As approved under the existing license (issued in 1986), the generator for this turbine, a 1,725 HP General Electric synchronous motor, was upgraded from 750 to 1,200 kW by the Project's previous owner in 1992. At 80 percent efficiency, this upgraded unit requires 250 cfs to produce 1,500 HP.

Unit 9 is a horizontal shaft S. Morgan Smith turbine rated at 1,025 HP at 225 RPM and a head of 64 feet. The turbine is used in conjunction with an Allis-Chalmers generator rated at 900 kW, 1125 kVA, 2400 volts, 270 amps, and a 0.8 power factor. At 80 percent efficiency, a flow of 170 cfs is required to produce 1,025 HP. Summary information regarding the number, type, and rated capacities of the existing turbine/generating units at Lyons Falls is presented in Table A.2-1, below.

TABLE A.2-1
EXISTING TURBINE/GENERATING UNIT CHARACTERISTICS

	Unit 1	Unit 6	Unit 7	Unit 8	Unit 9
Unit Type (propeller)	Vertical	Horizontal	Horizontal	Horizontal	Horizontal
Rated Capacity (cfs)	250	250	250	170	170
Rated Head (feet)	67	69	69	69	64
Generator Power Factor	0.8	0.8	0.8	0.8	0.8
Power (kVA)	1,500	1,500	1,500	1,608	1,125
Generating Capacity (kW)	1,040	1,200	1,200	1,286	900

Eight 2.3 kV generator leads connect the generating units to two 4.2 Mega Volt Ampere (MVA) generator step-up unit (GSU) transformers located adjacent to the primary powerhouse. The voltage is increased from 2.4 kV to the distribution voltage of 23 kV. After step-up, two 23 kV overhead transmission lines extend approximately 2,640 feet from the GSU transformers to the circuit breaker for Lyons Falls Mill. From this point, an overhead transmission line extends approximately 540 feet to the utility point of interconnection (POI) on the 115 kV side of the existing transformer in National Grid's Franklin Street Substation.

A.2.2 Proposed Features

Overview

Described below are the proposed changes to Project facilities pursuant to this application for amendment. All remaining existing facilities and operations described in the existing license issued on May 6, 1986, and subsequent orders amending and modifying the license would remain unchanged.

Proposed Features

The continuation of the demolition of the adjacent paper mill will result in space being made available for the proposed redevelopment of the existing hydropower facility. In support of the redevelopment, NBLF proposes to demolish the primary powerhouse and mothball the single-unit powerhouse. The existing generating units and the primary powerhouse will then be replaced by a single powerhouse containing two generating units. In contrast to the 2006 proposal where a new powerhouse was proposed on the east side of the river (river right), all

proposed redevelopment activities will occur within the footprint of the paper mill on west side of the river (river left).

The proposed Lyons Falls Mill redevelopment would continue to use the existing "L-shaped" concrete gravity dam, including the 362-foot-long spillway section, 69.5-foot-long concrete gate structure adjoining the river left end of the dam, and the existing 26-inch-high flashboards. Under the proposed redevelopment, there would be no modifications to the dam and, thus, no changes to the surface area, gross storage capacity, or usable storage capacity of the existing impoundment as a result of redevelopment.

In addition to the new powerhouse, NBLF would construct a new combined intake and trashrack structure adjacent to the river left dam abutment. The concrete intake/trashrack structure will be located slightly landward of the existing intake structure and will measure 60 feet long, 45 feet wide, and 40 feet high to the top of the intake gate operating deck. The intake structure will be equipped with two angled trashracks, each measuring 24.5 feet high and 25 feet wide. The trashrack structure will be oriented at a 30-degree angle to the flow of the river to reduce fish entrainment through the turbine/generating units. In an attempt to limit the effect of ice build up on the facility's trashracks, the trashracks will have a clear-bar spacing of three inches and will be equipped with full-depth, seasonal, one-inch trashrack overlays. An automatic trash rake will be installed to remove debris from the trashracks. A new bottom-opening debris sluice gate with dimensions 5 feet by 5 feet will be located immediately in front of the trashracks and perpendicular to the flow of the river.

Two 11.5-foot-diameter, 75-foot-long steel penstocks will convey water from the new intake structure to a new concrete and masonry powerhouse located along river left, largely in the footprint of the existing primary powerhouse. The penstocks will be equipped with automated headgates.

The powerhouse will measure 63 feet wide, 60 feet long and 105.5 feet tall from the bedrock interface to the top of the roof and will house two identical vertical "Saxo" Kaplan turbines. Each turbine will have a runner diameter of 2.25 meters and a rated flow of 1,236 cfs. The Saxo

units will be directly connected to two new generators. Relevant information regarding the proposed new turbine/generating units is presented in Table A.2-2.

TABLE A.2-2
PROPOSED TURBINE/GENERATING UNIT CHARACTERISTICS

TURBINES	
Unit Type	Vertical "Saxo" Kaplan
Number of Units	2
Runner Diameter	2.25 meters
Rated Head	64 feet
Rated Flow	1,236 cfs each
Rated Horsepower (or kW)	5,600 kW
Min. Hydraulic Capacity	237 cfs each
Max. Hydraulic Capacity	1,342 cfs each
Project Min. Hydraulic Cap.	237 cfs
Project Max. Hydraulic Cap.	2,684 cfs
GENERATORS	
Number of Units	2
Voltage	4.16 kV
Nameplate Capacity (kVA)	6,251 kVA
Total Installed Capacity	11.2 MW
Average Annual Generation	58,642 MWh
Monthly Average Generation	4,887 MWh
Power Factor	0.9

The proposed powerhouse structure will contain all new appurtenant equipment and ancillary systems including 4.16 kV, 3,000 amp (rated) medium-voltage switchgear line-up, controls, static excitation systems, governors, power units for gates and turbines, a 60-cell battery bank, and station service electrical systems.

A.3 Impoundment Characteristics

NBLF proposes to use the water power potential of the existing dam and impoundment. No changes to the impoundment are proposed as a result of redevelopment of Lyons Falls Mill. Relevant impoundment characteristics are presented in Table A.3-1.

TABLE A.3-1
IMPOUNDMENT CHARACTERISTICS

Elevations, Surface Areas, and Volumes for both Existing and Proposed	
Elevation (top of flashboards)	806.5 feet msl
Surface Area	130 acres
Gross Storage Volume	730 acre-feet
Usable Storage Volume	Lyons Falls Mill operates in a run-of-river mode; therefore, the impoundment does not have a usable storage volume.

Generator leads rated at 5 kV will extend from the new powerhouse to a new 15 MVA GSU transformer to be located near the new intake structure. The GSU will step-up generation voltage from 4.16 kV to the distribution voltage of 23 kV. A new 23 kV aerial transmission line will extend slightly under 2,640 feet from the GSU transformer to the existing circuit breaker for Lyons Falls Mill. From this point to the utility point of interconnection at the existing National Grid transformer located in the Franklin Street Substation, the existing overhead conductors will remain. A single-line diagram is presented as Figure A.3-1.

A.4 Lands of the United States

There are no lands of the United States associated with Lyons Falls Mill or within the Project boundary.

FIGURE A.3-1
SINGLE-LINE DIAGRAM

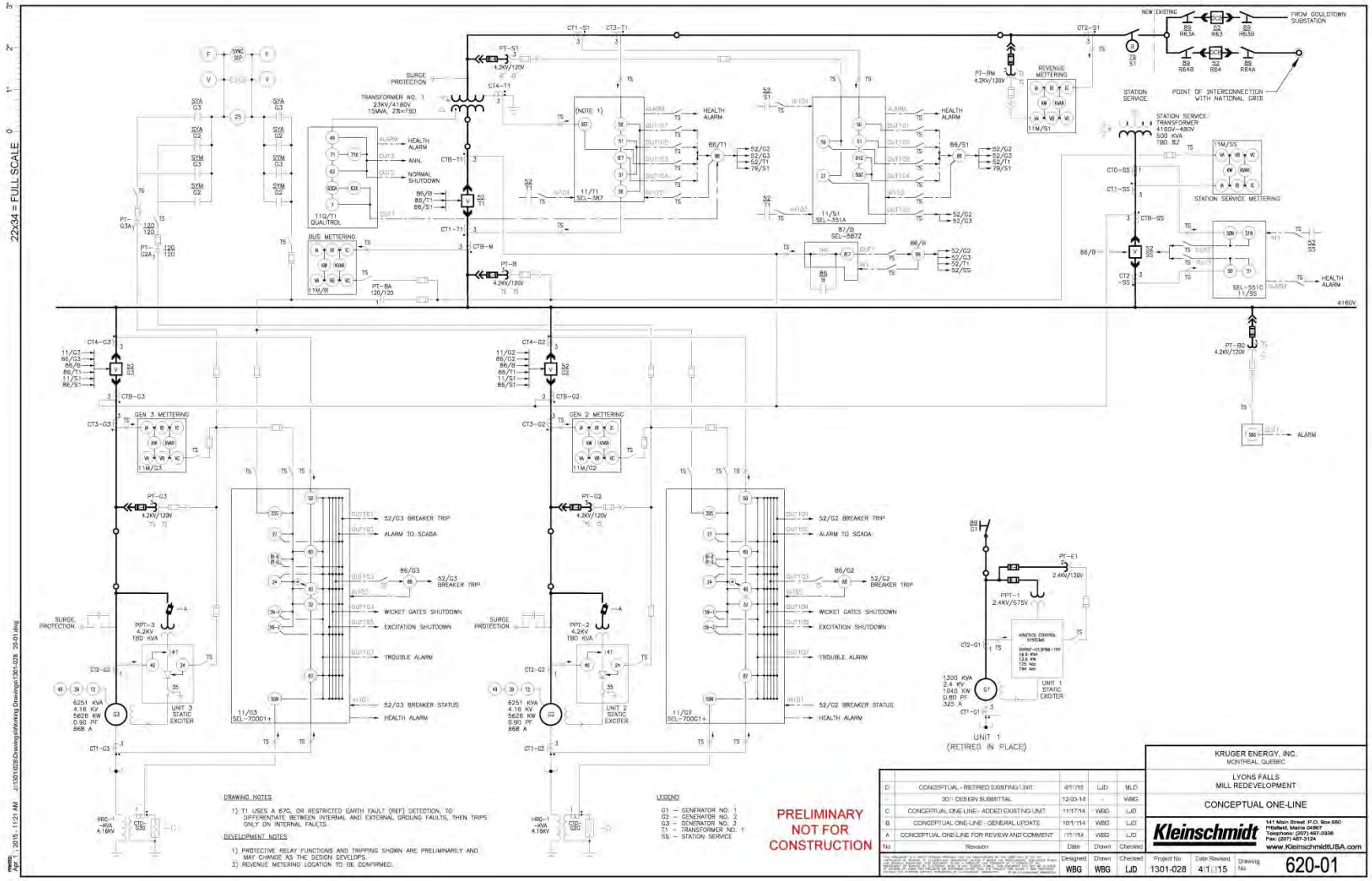


Exhibit B - Project Operations and Resource Utilization

B.1 Current Operations

Consistent with the existing FERC license, NBLF operates Lyons Falls Mill in a run-of-river mode, with limited impoundment fluctuations to account for the limited size of the impoundment, the age of the units, and varied flow conditions. Spillway elevation is generally maintained at 806.5 feet, which is the result of maintaining the 26-inch flashboards on top of the spillway crest, which has an elevation of 804.3 feet. Currently, all river flows between 70 cfs (minimum operating point for unit 9) and 1,170 cfs (maximum hydraulic capacity of all 5 generating units) are passed through the existing units on the left side of the river. There are no minimum flow or fish passage flows currently required at Lyons Falls Mill.

B.1.1 Method of Plant Operation and Annual Capacity Factor

Power plant operation at Lyons Falls Mill is semi-automatic. Based on the generation from years 1970 to 2014 (except for years 1978, 1981 – 1985, and 2001 – 2003) Lyons Falls Mill has an annual capacity factor of 59.77 percent. Generation for the periods that have been excluded from this analysis were done so because the generation from the Mill was not recorded separately from the total generation from all three developments that was reported.

Operation During High Flow Periods

During periods of high flow, when inflow equals or exceeds the plant's hydraulic capacity, Lyons Falls Mill is operated at full gate (full hydraulic capacity of the five turbines). Flows in excess of the hydraulic capacity are passed over the Development's spillway or through the Development's sluice gate. As necessary, the flood gates are utilized to accommodate passage of higher flows.

Operation During Low and Mean Flow Periods

When sufficient quantities of water are not available to permit the continuous operation of the Development at full capacity, facility operation is scheduled to meet the demands of the local

electric grid to the extent possible. The Development is operated such that current license article requirements are complied with during low or mean flow periods.

B.1.2 Estimate of Dependable Capacity and Average Annual Energy Production

Dependable Capacity

NBLF generally defines dependable capacity as the amount of load a hydroelectric plant can carry under adverse hydrologic conditions during a period of peak demand. The estimated dependable capacity of Lyons Falls Mill is currently 2.36 MW, the proposed dependable capacity is 6.0 MW.

Average Annual Energy Production

The Lyons Falls Dam is located on the Black River. The Moose River joins the Black River directly upstream from the Lyons Falls Dam. Historical flow data is available for the Black River from a U.S. Geological Survey (USGS) gage located upstream of the dam (04252500 Black River near Boonville, NY) with a period of record beginning in 1911 extending to the present date. Historical data for the Moose River is available from a discontinued gage upstream of the dam (04254500 Moose River at McKeever, NY), with a period of record beginning in 1905 and ending in 1970.

Flow data for Lyons Falls Mill was developed by prorating the Black River flow data from 1980 to 2014. The flow was prorated by a factor approximately equal to 2.5, which was obtained by prorating the Black River data by the ratio of the Moose River drainage area to the Black River drainage area at the USGS gages and then prorating the data to the Lyons Falls site. Table B.1-1 presents the minimum, mean, and maximum flows at Lyons Falls Mill.

Lyons Falls Mill attempts to generate for the entire year, but at times has seasonal interruptions due to frazil ice accumulations on the trashracks and in the penstocks. Table B.1-2 displays monthly generation records detailing the months of highest and lowest electricity production.

Average monthly and annual flow data and generation (in MWh) are presented in Table B.1-2.

TABLE B.1-1
MINIMUM, MEAN, AND MAXIMUM FLOWS AT LYONS FALLS MILL[1]

Minimum Flow	Mean Flow	Maximum Flow
152 cfs	2,114 cfs	33,000 cfs

1. Flow data is provided for a period of record 1980 - 2014.

TABLE B.1-2
AVERAGE MONTHLY AND ANNUAL DATA[1]

Month	Average Flow (cfs)	Existing Average Generation (MWh)
January	1,944	2,664
February	1,707	2,190
March	2,833	2,627
April	4,786	2,874
May	2,403	2,732
June	1,609	2,465
July	1,144	2,098
August	998	1,785
September	1,197	1,959
October	2,115	2,786
November	2,438	2,771
December	2,301	2,788
Annual	**2,123**	**29,486**

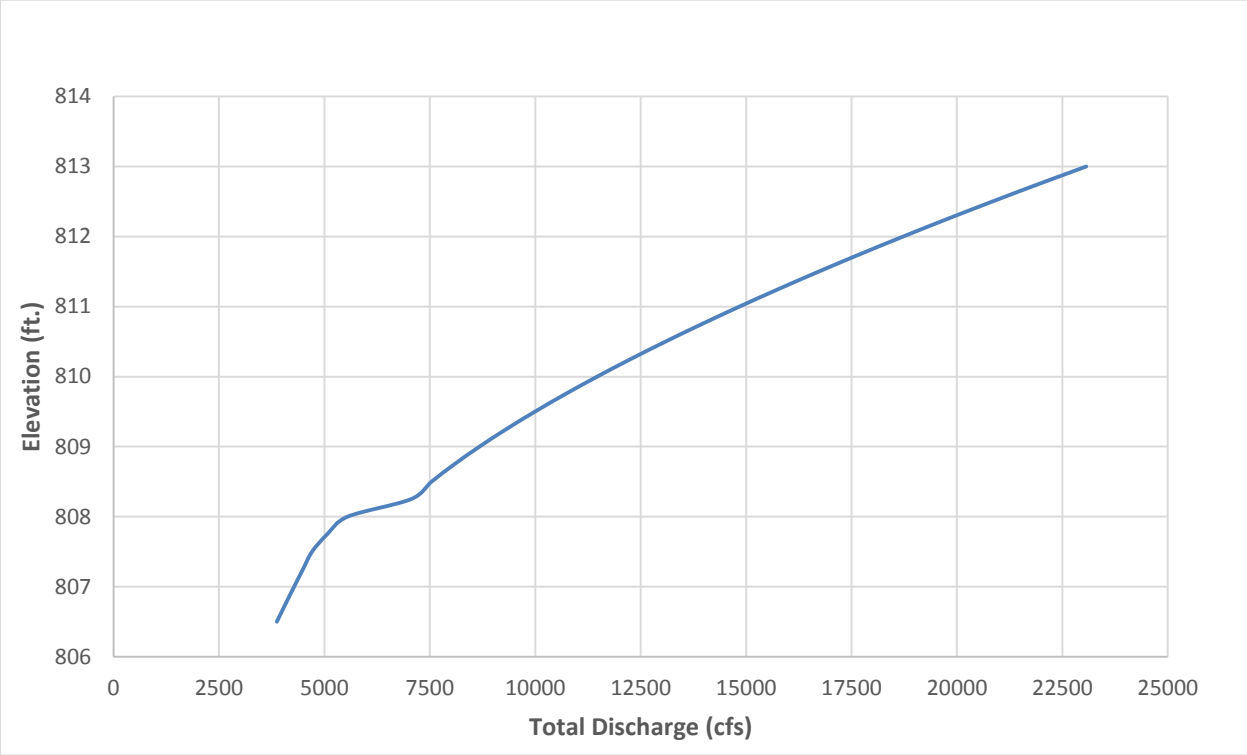
1. Flow data is provided for a period of record 1980 - 2014. Generation data is provided for a period of record (1970 – 2014, except 1978, 1981 – 1985, 2001 – 2003).

Annual and monthly flow duration curves for Lyons Falls Mill are presented in Appendix C of this application document.

Reservoir Storage Capacity

As described in Exhibit A of this amendment application, Lyons Falls Mill has a 130-acre impoundment with a gross storage volume of 730 acre-feet at an elevation of 806.5 feet msl. The Development operates in a run-of-river mode; therefore, the impoundment does not have a usable storage volume. Figure B.1-1 presents the existing headpond rating curve associated with Lyons Falls Mill. Given that the proposed development will not modify the Development's dam or spillway structure, the same headpond rating curve is expected following the proposed redevelopment.

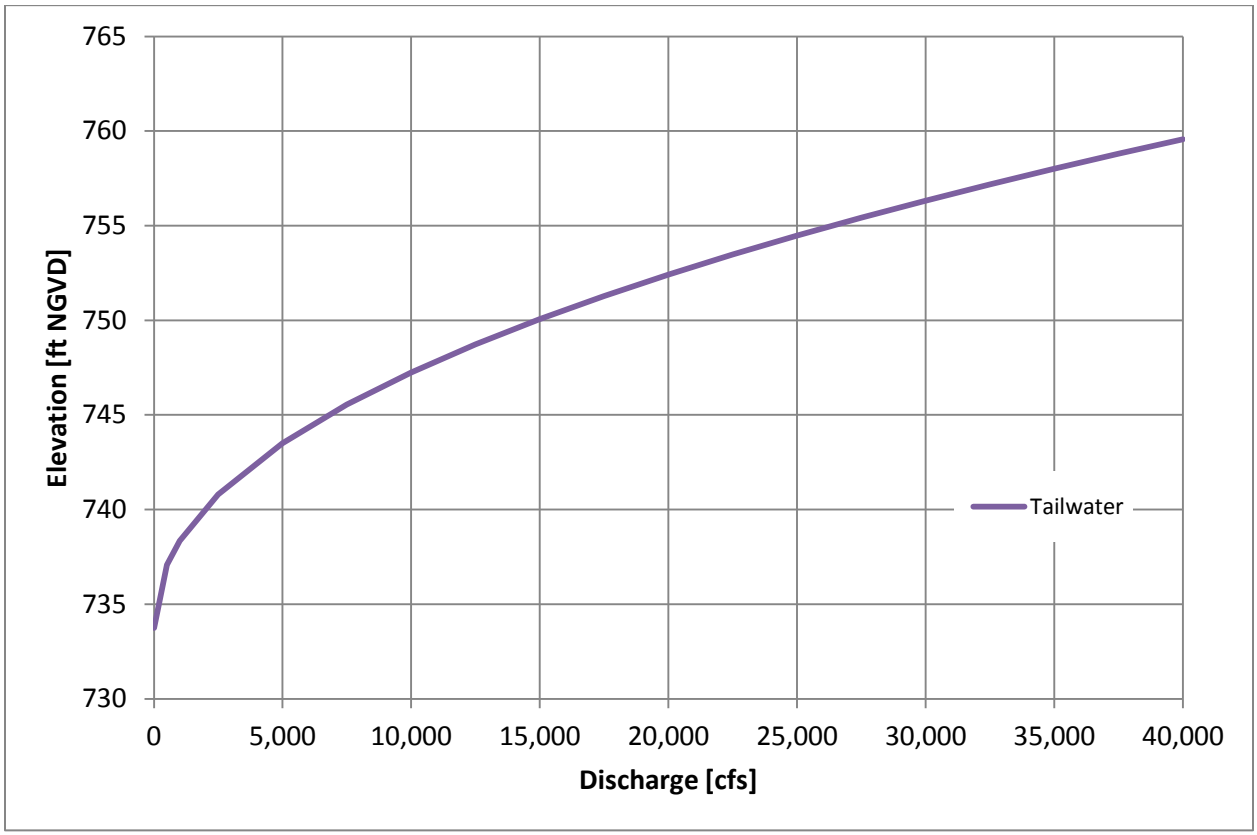
FIGURE B.1-1
LYONS FALLS MILL HEADPOND RATING CURVE



Tailwater Rating Curve

The tailwater rating curve for Lyons Falls Mill is presented as Figure B.1-2

FIGURE B.1-2
LYONS FALLS MILL TAILWATER RATING CURVE



Plant Capability Versus Head

Lyons Falls Mill currently operates in a run-of-river mode with normal maximum impoundment elevation of 806.5 feet. Combining the expected turbine-generator performance values and the estimated maximum turbine hydraulic capacity at various heads yields an estimate of the plant current capability. The minimum, median, and maximum gross head are shown in Table B.1-3.

TABLE B.1-3
MINIMUM, MEDIAN, AND MAXIMUM HEAD[1]

Case	Gross Head (feet)
Minimum	65.93 feet (top of masonry crest)
Median	68.1 feet (top of flashboards)
Maximum	68.1 feet (top of flashboards)

1. Given the run-of-river operations of the Lyons Falls Mill, there is limited variability between the minimum, median, and maximum operating head associated with the facility.

B.1.3 Resource Utilization

NBLF is a wholesale electric generating company and, as such, has no direct retail customers. As a wholesale seller of generated electricity, NBLF sells generation as a market participant in the New York Independent System Operator (NYISO). In general, electricity generated at Lyons Falls Mill is transmitted to electric customers through the integrated transmission and distribution system owned and operated by National Grid. Electricity used on site (station service) is provided by the generating units when they are operating. During outages or when the units trip offline, station service is provided by National Grid.

B.2 Proposed Operation

The proposed facilities would continue to be operated semi-automatically in a run-of-river mode and in accordance with the high, low, and mean operations described below. The licensee would act to minimize impoundment fluctuation levels by maintaining discharges so that flow in the Black River, as measured immediately downstream from the tailrace, matches, within reason, inflows into the impoundment. The facility's tailrace discharge will continue to back water up to the bedrock falls upon which the facility's spillway is situated.

Generation at Lyons Falls Mill would result entirely from the two new units. These units would operate independently at flows ranging from 237 to 2,684 cfs, which would account for approximately 74 percent of the annual flow regime. The existing units in the main powerhouse would be removed and the single unit in the secondary powerhouse would be mothballed.

Differing from the proposal in 2006, operations would not be changed to river right or the east side of the river. Instead, operations would remain on river left with all redevelopment and operations occurring within the footprint of the existing paper mill.

B.2.1 Proposed Minimum Flow Provisions

NBLF proposes to release seasonal minimum flows totaling 70 cfs downstream from Lyons Falls Dam. Of the 70 cfs, a minimum of 45 cfs would be released annually from March 15 through November 30 to provide a fish movement continuity flow to facilitate the downstream movement

of fish. In addition, a flow of 25 cfs would also be released annually during the recreation season (May 1 through October 31) to provide a continuous flow over a portion of Lyons Falls for aesthetic purpose.

B.2.2 Method of Plant Operation and Annual Capacity Factor

As proposed in this amendment application, Lyons Falls Mill would continue to operate semi-automatically. Based on the generation from years 1970 to 2014 (except for years 1978, 1981 – 1985, and 2001 – 2003) Lyons Falls Mill would have an annual capacity factor of 90 percent.

Operation During High Flow Periods

During periods of high flow, when inflow equals or exceeds the hydraulic capacity of 2,684 cfs, Lyons Falls Mill would be operated at full gate (full hydraulic capacity of both turbines). Flows in excess of the hydraulic capacity would be passed over the Development's spillway, through the Development's sluice gate, or via the downstream fish movement gate. Consistent with current operations, as necessary, the Development's flood gates would be utilized to accommodate passage of higher flows.

Operation During Low and Mean Flow Periods

NBLF proposes to operate Lyons Falls Mill to provide the seasonal minimum flows totaling 70 cfs downstream from Lyons Falls Dam and to allow for continuous operation of the Development at full capacity. When sufficient quantities of water are unavailable to allow for both generation and the seasonal minimum flows, NBLF will curtail generation such that seasonal minimum flow requirements are met during low or mean flow periods. Under low or mean flow conditions, facility operation would be scheduled to meet the demands of the local electric grid to the extent possible while maintaining seasonal minimum flow and other license requirements.

B.2.3 Estimate of Dependable Capacity and Average Annual Energy Production

Dependable Capacity

The dependable capacity of Lyons Falls Mill as proposed would be 6.0 MW.

Average Annual Energy Production

Table B.2-1 presents average anticipated monthly and annual generation at Lyons Falls Mill. These generation quantities include a 2% loss of annual generation from outages and 4 weeks of generation losses in the winter due to frazil ice accumulation.

TABLE B.2-1
EXPECTED AVERAGE MONTHLY AND ANNUAL GENERATION

Month	Expected Average Generation (MWh)
January	3,651
February	3,262
March	6,501
April	7,830
May	6,378
June	4,624
July	3,480
August	3,091
September	3,379
October	5,567
November	6,497
December	4.379
Annual	**58,642**

Reservoir Storage Capacity

There will be no modifications to the reservoir storage capacity or usable storage volume as a result of the proposed amendment.

Tailwater Rating Curve

The proposed amendment will not result in any modifications to the tailwater rating curve as presented as Figure B.1-2 of this application document.

Plant Capability Versus Head

As proposed in this amendment application, Lyons Falls Mill would continue to operate in a run-of-river mode with a normal maximum impoundment elevation of 806.5 feet. Combining the expected turbine-generator performance values and the estimated maximum turbine hydraulic capacity at various heads will yield a new estimate of the plant capability vs. net head relationship. Following redevelopment of the powerhouse, NBLF will provide the Commission with this curve. Consistent with the existing conditions, the minimum, median, and maximum gross head are shown in Table B.2-2.

TABLE B.2-2
MINIMUM, MEDIAN, AND MAXIMUM HEAD[1]

Case	Gross Head (feet)
Minimum	65.93 feet (top of masonry crest)
Median	68.1 feet (top of flashboards)
Maximum	68.1 feet (top of flashboards)

1. Given the run-of-river operations of the Lyons Falls Mill, there is limited variability between the minimum, median, and maximum operating head associated with the facility.

Exhibit C - Construction History and Proposed Schedule

C.1 Construction History

Lyons Falls Mill is an existing dam and powerhouse facility owned by NBLF and operated by Kruger. Beginning in 1893, the Gould Paper Company built a timber crib dam and operated the dam until replacement in 1922 with the current concrete dam. Over the next few decades, the existing hydroelectric facilities were added to the mill complex. Lyons Falls Mill originally powered the Lyons Falls Pulp and Paper Mill until its closure in 2001. Currently, portions of the pulp and paper mill are being demolished under the auspices of the North Country Regional Economic Development Council and the Lewis County Development Corporation. The intent is to adaptively reuse the former paper mill site to support local economic growth adjacent to the proposed upgrades to Lyons Falls Mill.

C.2 Proposed Construction Schedule

The preliminary construction schedule forecasts a 19-month duration from the start of construction through final commissioning of Lyons Falls Mill. Within this 19-month duration, construction activities would include construction of a new intake, penstock, powerhouse, and installation of new trashracks. Construction would also require demolition of the main powerhouse, retiring of the one-unit powerhouse, and removal of the existing penstocks.

The proposed construction schedule is presented in Table C.2-1 below and relies on the assumption of two key dates. The first is the proposed filing of the application for an amendment of license on May 15, 2015. The second is the Commission's anticipated order amending the Project's existing license on or before October 2, 2015. Once the order amending the license is issued, NBLF will promptly prepare for the commencement of construction. As presented below, the proposed construction schedule anticipates NBLF making the commitment to obtain the major pieces of equipment prior to the anticipated receipt of an amended license. Such a schedule involves significant risk to NBLF to ensure that its license amendment application is complete and reflects the requirements of the major stakeholders.

TABLE C.2-1
PROPOSED CONSTRUCTION SCHEDULE

	Item or Milestone	Start	Finish
1	Pre-Construction Planning, Engineering, and Final Design	8/1/2015	10/1/2016
2	Finalize Engineering Designs and Construction Specifications	8/1/2015	6/21/2016
3	Major Equipment Procurement and Manufacture and Delivery (turbine/generator/electrical)	8/29/2015	11/1/2016
4	Finalization of Commercial Attributes (financing, PPA, interconnect agreement, access/other agreements)	5/1/2016	11/1/2016
5	Construction Contract Bid/Award	4/21/2016	6/30/2016
6	Submittal of Final Plans and Specifications to FERC (at least 60 days before start of construction)	4/4/2016	4/29/2016
7	Secure All Final FERC/NYSDEC/Other Approvals	6/20/2016	6/27/2016
8	Initial Site Work (security fencing, access roads, initial demolition, silt fencing)	7/1/2016	9/15/2016
9	Contractor Preparation (Site, Blasting and Drilling, Design, Security, Health and Safety, and Environmental Planning)	7/8/2016	8/18/2016
10	Procurement of Equipment Materials	7/29/2016	3/9/2017
11	On-Site Construction (cofferdam/excavation, blasting, water conveyance structures, concrete structures, equipment installation, balance of plant, transmission/substation)	8/26/2016	4/6/2018
12	Cofferdam Construction	8/26/2016	11/10/2016
13	Demolition and Excavation	11/2/2016	2/9/2017
14	Intake Construction	1/27/2017	11/10/2017
15	Powerstation Construction	1/11/2017	12/15/2017
16	Mechanical and Electrical Construction	1/25/2017	3/2/2018
17	Final Site Work (Grading, Paving, Guardrails, Demobilize)	1/8/2018	4/6/2018
18	Commissioning	3/5/2018	4/6/2018

Exhibit D - Statement of Costs and Financing

This Exhibit describes the costs NBLF will incur to redevelop and operate Lyons Falls Mill as proposed in this amendment application. The costs include those PM&E measures developed through consultation with Project stakeholders and proposed by NBLF. NBLF analyzed the economics of Lyons Falls Mill using an approach that is consistent with the FERC's current practices (Mead Corp., 72 FERC ¶ 61,027 (1995)). Current and anticipated costs were analyzed over a 30-year cycle and annualized to develop an estimated annual cost.

D.1 Estimated Costs of New Development

Estimated costs of new development include new capital costs and costs to provide environmental enhancements as described in this amendment application. Table D.1-1 presents the estimated costs that are associated with the redevelopment Lyons Falls Mill. The estimated costs presented in Table D.1-1 include capital costs, indirect construction costs, interest during construction, overhead, legal expenses, contingency costs, administrative, and general expenses.

TABLE D.1-1
COSTS OF MAJOR ITEMS

Item	Estimated Cost (2015 US $000,000)
Civil works (intake, penstock, and powerhouse)	$12.92
Mechanical and electrical (turbine, generator, and ancillaries)	$13.56
Transmission interconnection	$0.31
Construction contingency	$4.56
Permitting, engineering, administration, and construction management	$10.14
Total estimated costs of new development	$41.50

D.2 Estimate of Average Annual Costs

The estimated costs presented in Table D.2-1 include capital costs, taxes, estimate of depreciation, and operation and maintenance expenses including the maintenance expense of each proposed environmental measure.

TABLE D.2-1
ESTIMATE OF AVERAGE ANNUAL COSTS

Item	Estimated Cost (2015 USD)
Cost of capital (equity and debt)	5%
Local, state, and federal taxes	Income taxes: $0; Property taxes: $200,000-$660,000 per year
Depreciation or amortization	$2.075 million per year
Operation and maintenance expenses, including insurance, administrative, and general expenses	$327,000 per year
Angled fish exclusion trashracks with seasonal overlays	Capital cost $100,000; O&M cost $15,000 per year
Downstream fish movement structure	$200,000
Seasonal Aesthetic Flow	$2,000 per year

Annual revenues for the Lyons Falls Mill Hydroelectric Project are expected to be produced from the following sources: energy sales revenues, Renewable Energy Credit (REC) sales revenues, and capacity payments. These sources are estimated to generate a total of $2.8 million dollars per year. Estimated costs do not include energy losses associated with the proposed PM&E measures (e.g., minimum flows).
Cost estimates associated with PM&E measures are based on initial conceptual designs.

D.3 Estimate of Annual Value of Power

As a wholesale seller of generated electricity, NBLF sells generation as a market participant in the NYISO. The 14-year annual average wholesale energy price in the NYISO (2000 – 2013) was $64/MWh. Lyons Falls Mill has an average annual generation of 29,486 MWh. Therefore, based on the annual average wholesale market price, the estimated annual value of power generated at Lyons Falls Mill is $1,887,104. NBLF has proposed to redevelop Lyons Falls Mill to increase generation and efficiency. The proposed redevelopment as described in this amendment application, would increase the estimated annual generation of Lyons Falls Mill to 63,492 MWh. Therefore, based on the annual average wholesale market price, the estimated annual value of power generated at Lyons Falls Mill would be $4,063,488.

NBLF currently also receives a capacity payment from the NYISO for the Lyons Falls Mill Project. The redeveloped mill project will also be eligible for a capacity payment upon commercial operation date (COD). Based on forecast capacity values of $4.29 per kilowatt-month, the estimated annual capacity payment for the redeveloped project is estimated to be $187,000.

The incremental increase in generation from the NBLF mill project will be eligible for Renewable Energy Credits (RECs) in New York State and the surrounding states. NBLF is presently bidding into the New York State Energy Research and Development Authority's (NYSERDA) renewable energy attribute request for proposal (RFP). As pricing for this RFP is confidential and could negatively affect NBLF's probability of being awarded a contract from this solicitation, hourly revenue estimates are not provided in this application. Estimated annual REC revenue is approximately $1,000,000.

D.4 Source and Extent of Financing

NBLF's general plan for financing the construction of the redeveloped facility and the environmental enhancements will be to issue short-term debt (either bank line of credit or commercial paper) and to generate internal funding consisting of advance from affiliates or capital contribution from parent company. If short-term financing options become unattractive, NBLF will issue permanent securities (i.e., long-term debt) to replace short-term debt. This financing plan will adhere to NBLF's overall corporate construction financing requirements.

D.5 Estimate of Cost to Develop License Application

NBLF estimates that the cost to develop this amendment application, including studies, consultants, and internal management and administrative costs, is approximately $492,000.

Exhibit E - Environmental Report

E.1 Introduction

As described in this amendment application, NBLF is proposing to redevelop Lyons Falls Mill, one of three existing developments that comprise the Lyons Falls Project. The Project was initially constructed in 1920 and is located along the Moose and Black Rivers in Lewis County, New York. The developments include (from downstream to upstream) Lyons Falls Mill, Gouldtown, and Kosterville. The Project has a total installed capacity of 8.63 MW.

The proposed redevelopment of Lyons Falls Mill would increase the facility's efficiency and energy output. Lyons Falls Mill is currently equipped with five turbine/generator units with a combined authorized capacity of 5.8 MW. The redevelopment would include decommissioning of the five existing generating units and the construction of a new powerhouse with two new vertical generating units. Redevelopment of Lyons Falls Mill will increase the total capacity at the facility from 5.8 to 11.2 MW. Specific details pertaining to existing and proposed facilities at Lyons Falls Mill are described in detail in Exhibit A of this application document.

Exhibit E contains relevant information regarding environmental resources associated with Lyons Falls Mill, commensurate with the scope of the proposed amendment. The geographic scope of this Exhibit E is the immediate construction footprint and the general area of Lyons Falls Mill where construction or operation of the new facilities may potentially impact resources outside of the immediate construction area.

For each resource area described in Exhibit E, NBLF has summarized existing information relevant to the proposed amendment. Where applicable, Exhibit E also summarizes relevant results of studies and information gathering activities previously conducted by NBLF in support of the proposed upgrades to Lyons Falls Mill in 2006. As described in Exhibit A, the 2006 proposal included the addition of a new, 9 MW powerhouse to Lyons Falls Mill on river right, across from the former paper mill and the existing facility's powerhouses. Although NBLF did not pursue development of Lyons Falls Mill at that time, the studies conducted in 2006 and 2007 provide relevant information regarding existing environmental conditions within the vicinity of Lyons Falls Mill.

In addition to the studies conducted 2006 and 2007, NBLF also conducted studies and consultation activities in 2014 and 2015 to support the current amendment, including the specific location, design, and layout of the proposed facilities. Where applicable, the results of these recent studies and consultation activities have also been incorporated into this Exhibit E.

NBLF notes that the current proposal for redevelopment of Lyons Falls Mill will allow all redevelopment activities to occur within the footprint of the former paper mill site on the river left shoreline, as compared to the river right as was proposed in 2006. The proposed redevelopment is limited to Lyons Falls Mill; NBLF is not proposing any modifications to the Gouldtown or Kosterville Developments.

E.2 Affected Environment

E.2.1 General Description of the Locale

Lyons Falls Mill is located in the Village of Lyons Falls in the Town of West Turin, Lewis County, New York, approximately 42 miles north of Utica and 40 miles south of Watertown, New York. The existing dam, powerhouses, and impoundment are located at the confluence of the Black and Moose rivers, approximately 82 RMs upstream of Lake Ontario (Figure E.2-1). The Lyons Falls Mill impoundment extends upstream along the Black River and the lowermost reach of the Moose River. The Project's two other developments (Gouldtown and Kosterville) are located on the Moose River at RMs 1.0 and 1.3, respectively.

The Black River Valley is situated between the Adirondack Mountains and the Tug Hill Plateau. From its headwaters on the west slope of the Adirondacks, the Black River flows southwest approximately 14 RMs into Kayuta Lake before turning north and flowing approximately 73 RMs to the Town of Deferiet. From Deferiet, the Black River flows approximately 25 RM west where it empties into Black River Bay at the northeast end of Lake Ontario, just west of Watertown (Figure E.2-2). The total drainage area for the Black River is approximately 1,920 square miles (NYSDEC 2007a). Major tributaries of the Black River include the Moose River, Independence River, Beaver River, Deer River, and Otter Creek (NYSDEC 2007a).

FIGURE E.2-1
LYONS FALLS MILL

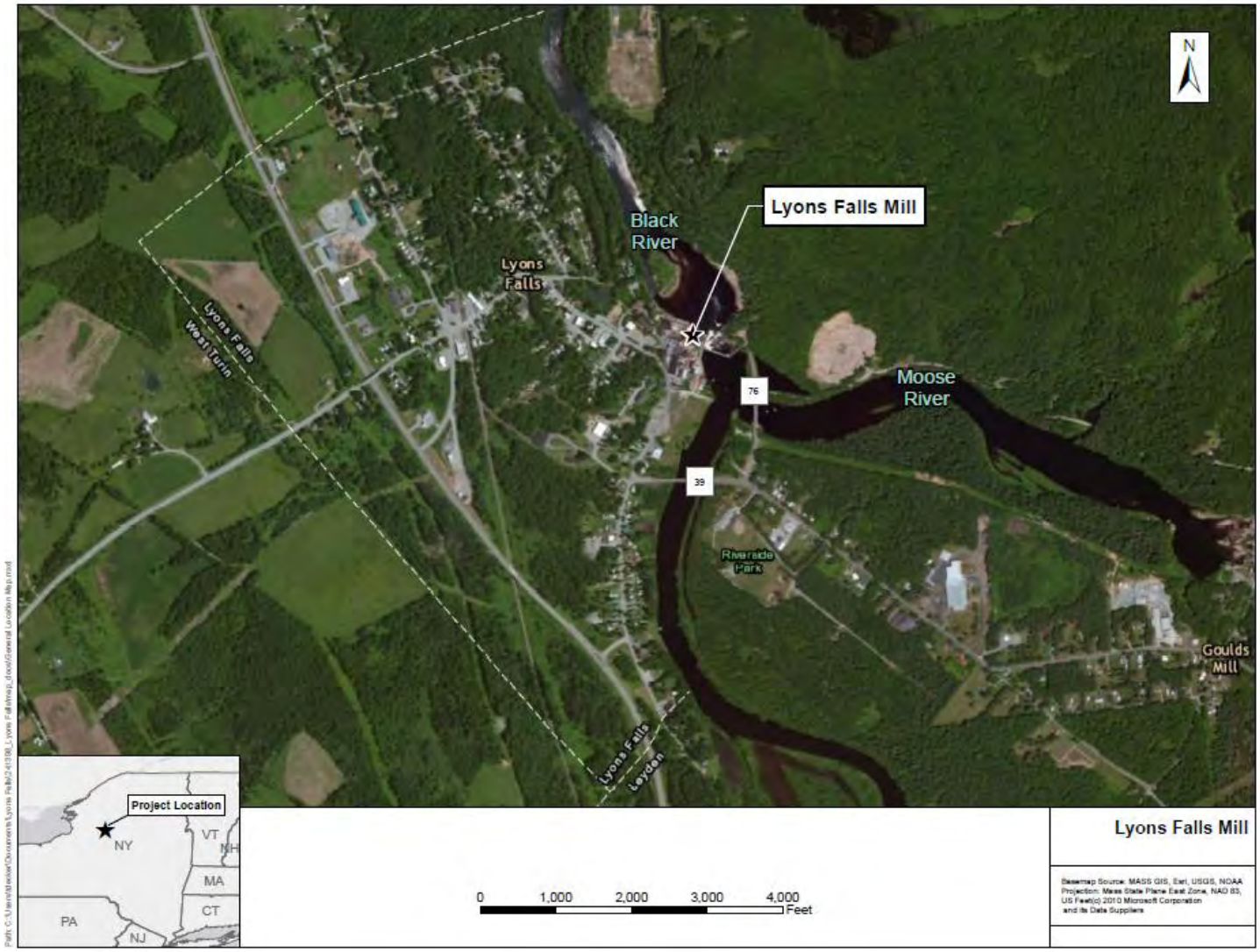
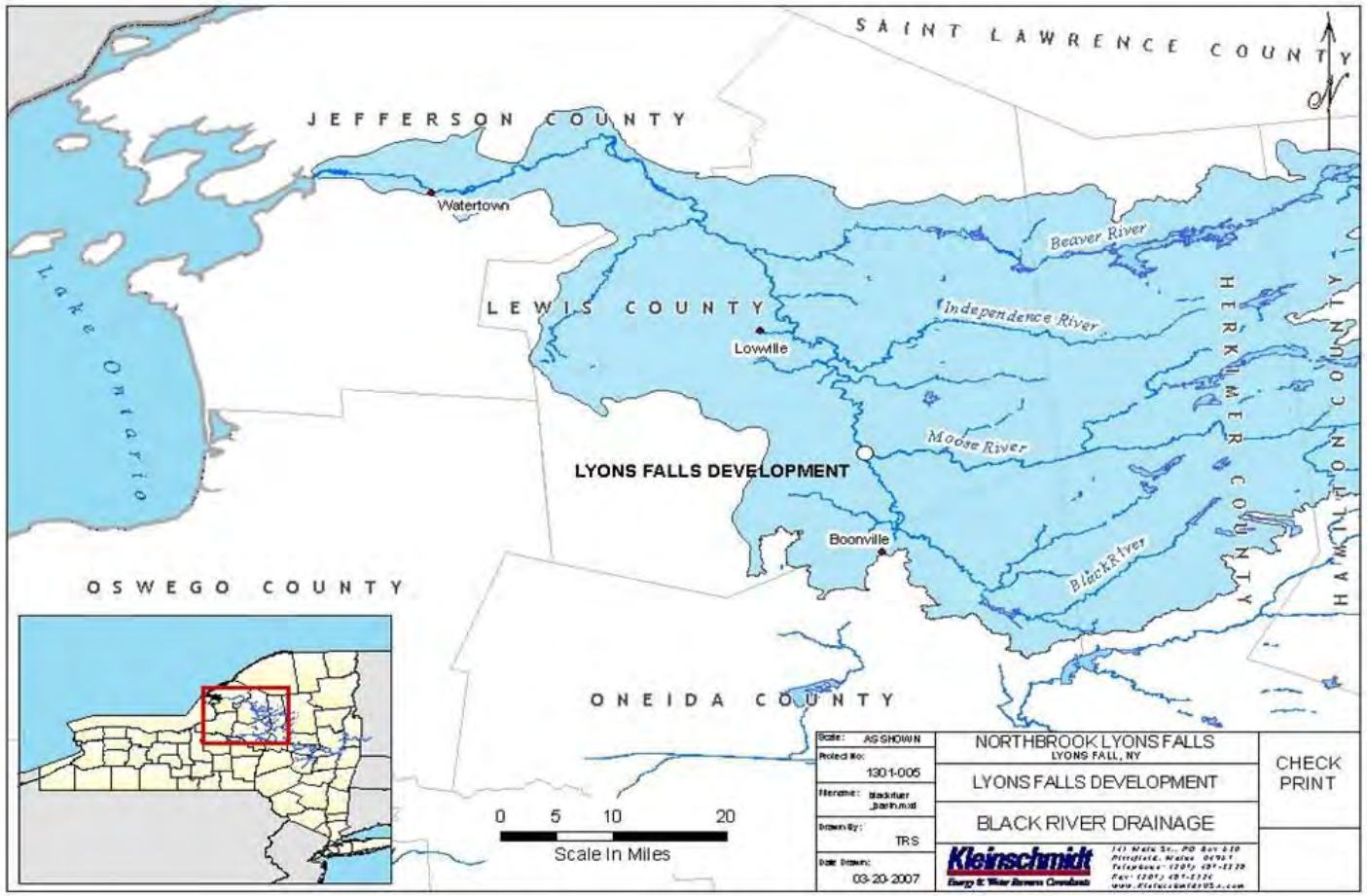


FIGURE E.2-2
LOCATION OF THE BLACK RIVER WATERSHED AND LYONS FALLS MILL



The Black River is divided into three natural reaches: a steep mountainous reach upstream of Lyons Falls Mill, a flat low-gradient reach between the villages of Lyons Falls and Carthage known as the "Black River Flats," and a high-gradient stretch below Carthage extending to Lake Ontario (Lowie et al. 1994). The upper watershed is characterized by numerous lakes and ponds that feed the fast-flowing headwaters of the Black River. The middle watershed is fed by small streams emerging from the Tug Hill Plateau region and major tributaries flowing west out of the Adirondacks. Further downstream, the Black River is fed primarily by drainage from the marshy lowlands of Lake Ontario (NYSDEC 2007a).

The Moose River has three major branches (North, Middle, and South), which originate as high-gradient streams on the west slope of the Adirondacks. The confluence of the North Fork and the Middle Fork is near the hamlet of Old Forge, New York. The confluence of the South Fork is near McKeever, New York, approximately 20 RMs upstream of the Village of Lyons Falls. The Moose River, especially in the middle and upper reaches, is a shallow, high-velocity and high-gradient river system with numerous sections of rapids, cascades, and boulder-filled pocket water. Between the Town of Lyonsdale and the Village of Lyons Falls, the Moose River becomes low gradient, descending approximately 200 feet in three miles and is interspersed by only a few intermittent falls. The Moose River empties into the Black River in the impoundment of Lyons Falls Mill where it is low-gradient flatwater.

The consistent year-round flows and large overall drop in elevation have made the Black and Moose rivers attractive for hydroelectric power development (Lowie et al. 1994). Reportedly, the first dam in the watershed was constructed at Beebe Island near Watertown in 1802 for development of a saw and grist (grain) production (Lowie et al. 1994). Currently, there are 39 hydropower developments within the Black River Basin, 21 of which are on the mainstem of the Black River (FERC 1995). At Lyons Falls Mill, the original timber crib dam was constructed in the late 1800s (Lowie et al. 1994).

Climate

Lyons Falls is characterized by cold snowy winters and moderately warm summers. Mean maximum daily temperature is approximately 78°F. Mean minimum daily temperature is

approximately 8°F. Mean annual precipitation is approximately 42 inches. The wettest month of the year is typically November when precipitation amounts are often greater than seven inches. The driest month is typically February when average monthly precipitation is approximately 2.5 inches. Snowfall accumulation in the region is heavily influenced by lake-effect snow and cold air masses moving in an easterly direction over Lake Ontario. Annual snowfall in the area can be as high as 300 inches, reportedly the highest snowfall amount east of the Rocky Mountains (Dyballa et al. 1981). The Black River Drainage Basin receives the highest amount of precipitation annually of all the watersheds in New York (Lowie et al. 1994).

Topography

The Black River Basin is an extension of the Lake Ontario lowlands, a relatively low and flat topographic depression that sits atop layers of Cambrian and Ordovician sedimentary rock. The Black River Valley separates the two predominant geologic features in the area, the Tug Hill Plateau to the west and the Adirondack Mountains to the east. Contemporary topographic features in the Black River Valley are the product of intense glacial activity that occurred in New York during the advance and retreat of the Wisconsinan ice sheet approximately 18,000 years ago. Landscape features including gorges, troughs, moraines, kettle ponds, and eskers are the result of advancing and retreating ice and subsequent fluvial processes.

Geology

Geologic formations around Lyons Falls Mill are primarily represented by landforms associated with the Adirondack Mountains – New York State's oldest, highest, and most rugged geologic feature – and the Tug Hill Plateau, a small topographic extension of the Allegheny Plateau.

Due east of Lyons Falls Mill, the Adirondack Upland is a roughly circular dome-like mountainous region approximately 200 kilometers in diameter. The Adirondacks are part of the larger Greenville Province, a long north-south belt of metamorphic rock running from Labrador to Mexico along the western margin of the Appalachian Mountains. Although the Adirondacks themselves are relatively new geologically, they are composed of very old rock strata that consist primarily of complex and deformed ancient gneisses (metamorphic granite). Some of these rock formations may potentially be upwards of 1.5 billion years of age and subsequently are

considered Precambrian basement rock strata. Contemporary landscape features of the Adirondacks are the result of long-term erosive, glacial, and geologic uplift processes. The most tectonically active segment of the Adirondacks, where earthquakes occasionally occur and fault lines are most prominent, is centered around the Blue Mountain Lake region, approximately 45 miles to the northeast of the low-lying Black River Valley and Lyons Falls Mill.

The Tug Hill Plateau, due west of Lyons Falls Mill, is a small extension (approximately 20 miles) of the Allegheny Plateau, which is part of the Appalachian Uplift Province (Dyballa et al. 1981; Van Diver 1992). The Tug Hill Plateau begins approximately 10 to 15 miles south of Lake Ontario, rising gradually in a southerly direction to a maximum elevation of 2,300 feet. Its underlying geologic features consist primarily of layered Paleozoic sedimentary rock (e.g., sandstone and slate) that is tilted to the west because of recent uplift associated with the neighboring Adirondacks. Because these formations are capped by more-resistant Oswego sandstone, the current landforms consist of sandstone-capped terraces that have remained intact over time.

Underlying geologic features at Lyons Falls Mill consist primarily of metamorphic gneisses that are representative of the geologic processes associated with the formation of the Adirondacks (Van Diver 1992). West of the riverbed, the surficial geology underlying the Black River is dominated by a long north-south running band of limestone known as the Trenton Group Limestone. Exposed features from both of these formations are routinely visible, including the approximately 60-foot-high bedrock outcrop at Lyons Falls that forms the foundation of Lyons Falls Mill. Further west, the underlying geology of the river valley consists primarily of sedimentary shale and siltstone associated with the Tug Hill Plateau (Van Diver 1992).

Soils

Three major soils series are known to occur at Lyons Falls Mill: Colton, Rumney, and Podunk (NRCS 1999) (Figure E.2-3).

- **Colton Series soils** are well-drained, gravelly-loam, fine sand soils that have developed on glacial outwash and deltaic deposits originating from the gneiss and granite of the Adirondack Upland (NRCS 1954). Slope is generally 0 to 8 percent. At Lyons Falls

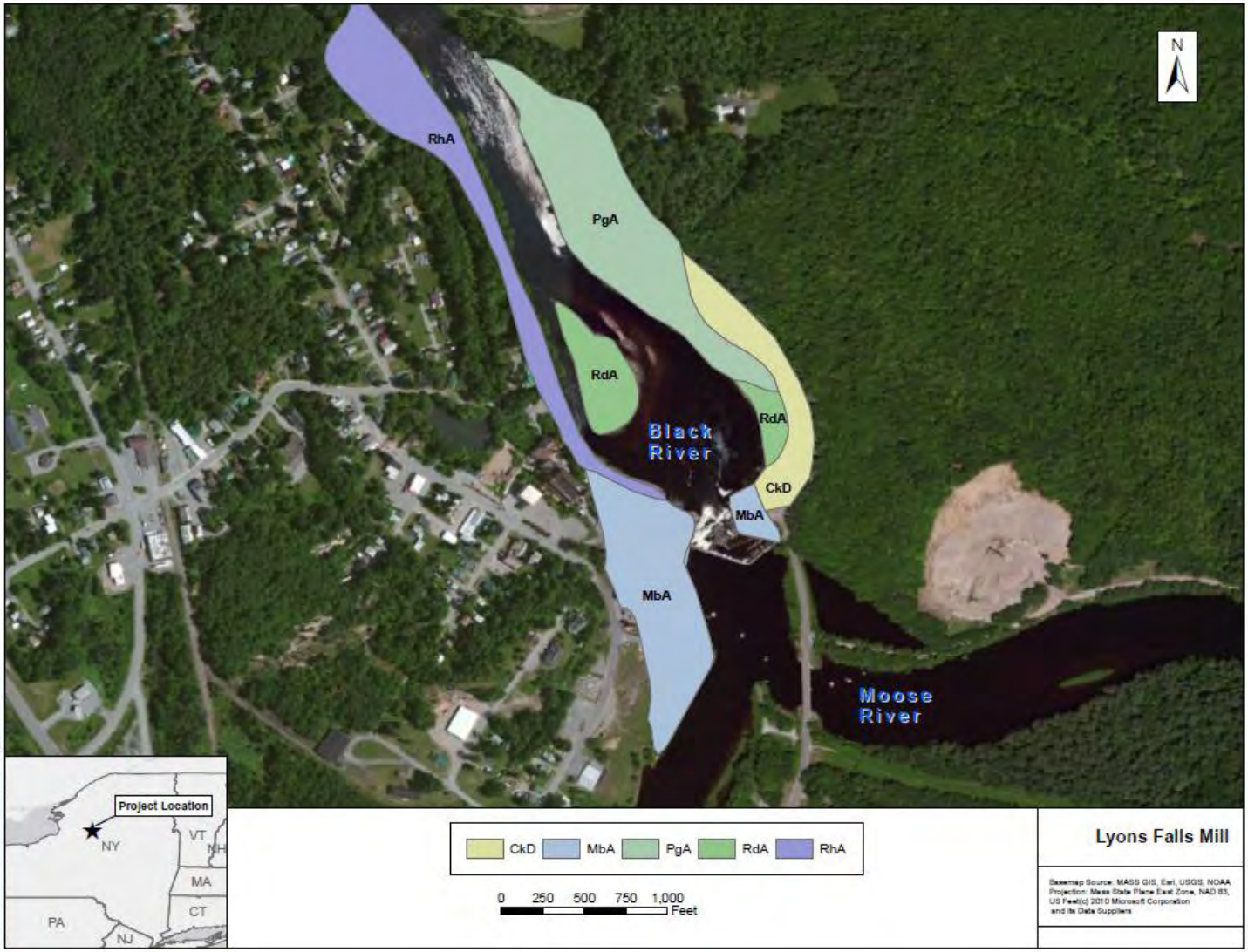
Mill, they are found in the forested hillsides due east of the Black River and on the west side of the river behind the former paper mill facility.

- **Rumney Series soils** are very deep and poorly drained silt loams that have formed on recent alluvial deposits. This soil type consists of a relatively thin layer of loam overlying layered sands and gravels. Rumney soils are typically found within the riverine floodplain and are often subject to periodic flooding. Slope is generally less than 0.02 percent. At Lyons Falls Mill, Rumney soils are found along the west bank of the Black River just below Lyons Falls (NRCS 1954). They reappear along the river edge approximately ¼ mile downstream of Lyons Falls.
- **Podunk Series soils** are very deep, level, and made up of fine sandy loam. They are found on recent alluvial deposits of schist, gneiss, and granite. At Lyons Falls Mill, they are found just downstream of Lyons Falls on the east side of the river.

Other soils in the vicinity of Lyons Falls Mill are mapped as an unclassified Fluvaquents and Udifluvents complex and unclassified Udorthents. The poorly drained and frequently flooded Fluvaquents and Udifluvents complex is formed on the footslope of floodplains from alluvium located downstream from Lyons Falls on river right. The complex is characterized by a relatively thin layer of mucky loamy sand overlying a deep layer of very gravelly sand.

Unclassified Udorthents soils are mapped along river left at the location of the former paper mill and the existing Lyons Falls Mill's powerhouses. Udorthents are characterized as "made land" or similar soils with a thin layer of channery loam overlying a deep layer of gravelly sandy loam. Construction activities associated with the proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the former paper mill and powerhouse footprints in areas mapped as made land.

FIGURE E.2-3
SOILS MAPPED IN THE VICINITY OF LYONS FALLS MILL



Impoundment Sediments

In support of the upgrades proposed in 2006, NBLF conducted an evaluation to characterize accumulated sediment within Lyons Falls Mill impoundment. The results of the survey indicate that there is relatively little accumulated fine-grained sediment in the impoundment. The sediments that do exist in the impoundment are dominated by sand. The bulk of this material is located along the right shoreline of the impoundment, opposite of the existing intake structure and the proposed location for construction of the new integrated intake/trashrack structure. In general, the impoundment is dominated by larger-sized substrates (gravels and cobbles) that are not heavily embedded with fines. Average sediment depth in the impoundment is less than 0.5 foot. A small sediment wedge consisting primarily of gravels and sand exists along a portion of the upstream face of the dam. The results of the impoundment sediment characterization are presented in additional detail in Appendix D.

Wetlands

To evaluate the distribution and composition of existing wetland complexes at Lyons Falls Mill, NBLF queried existing state and federal databases for existing wetland geographic information system (GIS) information. The banks of the Black River at Lyons Falls are generally steep and well defined. As such, there are no extensive wetlands associated with the area. Smaller wetland complexes along the impoundment margin, tailrace area, and river banks include pockets of palustrine forested (mixed hardwood swamp), scrub-shrub (small trees and shrubs less than 20 feet in height), and emergent (marsh vegetation) wetlands. Existing wetlands at the site are described in greater detail in Section E.2.5, below.

Vegetative Cover

Botanical resources at Lyons Falls Mill include upland forests dominated by mixed canopy types and riparian habitat, including stands of coniferous evergreens and deciduous broadleaf trees common to the northeast. Most prominent are stands of white pine, yellow birch, eastern hemlock, black cherry, red maple, sugar maple, and northern white cedar (Georgia-Pacific 1983). Shoreline vegetation is limited by shallow bedrock soils, exposed bedrock, boulder, and sandy

areas. Shoreline areas that support vegetation often consist of shrub species including speckled alder, low-bush blueberry, and honeysuckle. The majority of these areas are inundated during periods of high water (Georgia-Pacific 1983). Additional details pertaining to botanical resources are provided below in Section E.2.5.

Land Use and Development

Lyons Falls Mill is located in the Village of Lyons Falls in the Town of West Turin, Lewis County, New York. The east side of the Lyons Falls Dam along river right abuts the jurisdictional boundaries of the Town of Lyonsdale. With the exception of the former Georgia-Pacific paper mill on the west side of the Black River at Lyons Falls, the area is generally forested with interspersed rural development, primarily limited to several small villages and hamlets. The paper mill, which ceased operations in 2001, is now owned by Lewis County. The location of the paper mill is characterized as an industrial area and demolition of the remnant paper mill facility has begun.

Although the Black River is one of New York's smaller river basins, the region supports a diversity of land use practices. The eastern portion of the Black River Basin consists of densely forested woodlands. Land use in this portion of the river basin consists mainly of silviculture, recreation, and tourism.

Lewis County is heavily forested and dominated by second growth northern hardwoods which comprise approximately 55 percent of the land cover, followed by agricultural lands at approximately 19 percent of the land cover, and residential lands at 14 percent.

Demographics

The Village of Lyons Falls is one of the smaller population centers in the Black River Valley between the Adirondack Mountains and the Tug Hill Plateau (NYSDEC 2007a). The U.S. Census Bureau reports that the Village of Lyons Falls has a population of approximately 566 (US Census Bureau 2010). The Town of West Turin, the Town of Lyonsdale, and Lewis County have populations of approximately 1,524; 1,227; and 27,087, respectively (US Census Bureau 2010).

Presence of Floodplains & Occurrence of Flood Events

Flood stage on the Black River near Lyons Falls (i.e., Boonville) occurs when water levels rise more than 10 feet above an elevation of 935.5 feet at USGS gage 04252500 at Boonville, New York (USGS 2007). At 10 feet above normal water elevation, flood stage begins and is classified as minor, which typically results in flooding of roadways and significant flooding of flat rural lands. At 11 feet above normal water elevation, flooding is considered moderate and can result in residential damage with widespread flooding of roadways and rural areas. At 12 feet above normal water elevation, flooding is considered major, resulting in large scale residential, commercial, and industrial flooding with major road closures (USGS 2007). Flood inundation maps developed by the Federal Emergency Management Agency (FEMA) indicate that lands both upstream and downstream of Lyons Falls Mill are classified as high-risk (FEMA 2007).

Although flooding in Lyons Falls is relatively common, the current operation of Lyons Falls Mill does not increase the chances of flooding because water is not stored in the impoundment for generation. Lyons Falls Mill is operated in a run-of-river mode so that flows into the impoundment are matched by flows discharged into the tailrace. NBLF does not propose to change the run-of-river operation, water elevation in the impoundment, storage capacity, or configuration of any spillway features that would increase the potential for flooding at the site. The current license allows for NBLF to install 26-inch flashboards to pond water and increase head for generation. Operationally, this would not change with the proposed redevelopment.

E.2.2 Report on Water Use and Quality

Existing and Proposed Uses of Project Waters

NBLF proposes to redevelop Lyons Falls Mill to increase the facility's efficiency and energy output as described in Exhibit A. There are no other existing or proposed uses of Black River or Moose River water at Lyons Falls Mill other than hydroelectric generation (i.e., for irrigation, domestic water supply, or steam-electric plants) and the potential installation of a dry hydrant as requested by the local fire department. Instream flow uses include hydroelectric flows and recreation.

The Village of Lyons Falls and the Town of Lyonsdale are supplied with water from nearby natural springs[8]. Wastewater is discharged from the Village of Lyons Falls into the Black River approximately 1,000 feet downstream of Lyons Falls Mill after being treated at the Lyons Falls Water Treatment Facility. Approximately 43,000 gallons per day of treated wastewater are discharged back into the Black River below Lyons Falls[9]. The Town of Lyonsdale discharges its wastewater directly into the town's septic tanks[10].

Black River Flows

Black River flows at Lyons Falls Mill have been prorated using data from Black River USGS Gage 04252500. Monthly and annual flow duration curves are presented in Appendix C to this document.

NBLF currently operates Lyons Falls Mill in a run-of-river mode so that inflow into the impoundment matches outflow from the powerhouses. Currently, river flows ranging from approximately 70 cfs (approximate minimum operating point of unit 9) to 1,170 cfs (maximum capacity of all 5 generating units) are passed through the existing units. Water diverted from the impoundment into the existing turbines is discharged at the western base of the falls. Flows below 70 cfs or exceeding the 1,170 cfs existing hydraulic capacity of the plant are spilled over the facility's spillway or through the facility's sluice gate.

Water Quality Standards

The New York State Department of Environmental Conservation (NYSDEC) has established a water quality classification system based on a best use designation. The five designations given by the state of New York for riverine systems include AA, A, B, C, and D. Each class has its own designated standards for water quality. Designations followed by a (T) are indicative of standards designed to ensure water quality is suitable for trout.

The Black River is considered Class C waters from Carthage to upstream to the Moose River confluence (i.e., Lyons Falls Mill impoundment). Class C waters are designated as best suited

[8] Personal communication, Village of Lyons Falls, Department of Public Works, March 2007.
[9] Personal communication, Village of Lyons Falls, Department of Public Works, March 2007.
[10] Personal communication, Village of Lyons Falls, Department of Public Works, March 2007.

for fishing and human consumption of fish. Above the Moose River confluence, the Black River is classified as Class C(T) water, indicating that water quality standards must be maintained for trout. The lowermost 1.8 RM of the Moose River to its confluence with the Black River are also classified as Class C(T) water. Dissolved oxygen (DO) levels of 5.0 mg/L are required for Class C waters whereas a level of 6.0 mg/L or higher must be maintained for Class C(T) waters. The standard for pH is between 6.5 and 8.5 for Class C and C(T) waters (Lowie et al. 1994).

Existing Water Quality

Water quality issues caused by human activities in the Black River Basin are generally limited in part due to the region's low population density (NYSDEC 2007a). In general, the bulk of water quality issues in the Black River are associated with atmospheric deposition of contaminants (NYSDEC 2007a). In addition, other potential sources of water pollution in the Black River can be associated with agriculture, sediments, chemical spills, and inadequate waste treatment facilities (NYSDEC 2007a).

Because of underlying geologic features, water entering the system from the eastern side of the drainage (e.g., the Adirondacks) is acidic in nature as a result of the predominance of metamorphic schists and gneisses. However, inflow from the Tug Hill Plateau, which is comprised primarily of limestone and slate, results in the input of more alkaline water. NYSDEC has recorded pH levels below 5.0 in numerous lakes and ponds in the Black River Basin, which is attributed to acid deposition (NYSDEC 2007a). The uppermost reach of the Black River (above Kayuta Lake) is also reportedly impacted by low pH and acid rain/run-off, which has affected existing aquatic biota (NYSDEC Bureau of Fisheries 1993). Low pH levels are known to impair and preclude the development of biota in aquatic systems (NYSDEC 2007a).

There are no specific fish consumption advisories for the Black River or Moose River (New York State Department of Health [NYSDOH] 2014). The NYSDOH recommends limiting consumption of most sport fish from the Adirondack Region (including the Moose and Black rivers in the vicinity of Lyons Falls Mill) to no more than four meals (one-half pound) per month (NYSDOH 2014). In addition, the NYSDOH recommends that women of childbearing age,

infants, and children under the age of 15 do not consume yellow perch over 10 inches, northern pike, pickerel, walleye, largemouth or smallmouth bass from any Adirondack waters because of elevated mercury levels (NYSDOH 2014).

NYSDEC regularly monitors water quality in New York through the implementation of its Rotating Intensive Basin Studies (RIBS) monitoring program, which is designed to collect and evaluate chemical and biological information for major riverine systems (NYSDEC 2007a). Monitoring is conducted approximately every five years in each of New York's major river drainages (NYSDEC 2007c). The most recent Black River RIBS data are from 2002 and 2003, when NYSDEC conducted water quality monitoring in the 22.5-mile-long reach of the Black River from Lowville to Lyons Falls. In general, water quality in the Black River is considered non-problematic as compared to other major New York river basins[11].

Black River

Biological, chemical, and physical information collected by NYSDEC in recent years indicates that water quality in the Black River in the vicinity of Lyons Falls Mill is generally in very good to excellent condition. Biological (macroinvertebrate) sampling indicated "slightly impacted water quality" in the Black River near Lyons Falls because the invertebrate community was dominated by caddisflies, midges, and mayflies, which was indicative of minor water quality impacts (NYSDEC 2007a). Additionally, NYSDEC evaluated characteristics of the fish community to assess water quality near Lyons Falls. Results indicate that characteristics of the existing fish community in the Black River from Lowville to Lyons Falls are reflective of "good water quality" (NYSDEC 2007a). The Black River at Lyons Falls was not listed as impaired by NYSDEC in a recent 303(d) report filed pursuant to the state's Clean Water Act reporting requirements (NYSDEC 2014).

NYSDEC's sampling in the Black River from Lowville to Lyons Falls indicated that mercury and aluminum were parameters of concern (NYSDEC 2007a). However, according to NYSDEC's report, the elevated levels of these two elements are not unusual for areas of the state typically affected by atmospheric deposition of mercury and subject to acid rain (NYSDEC

[11] Personal communication, Ray Gabriel, Water Quality Specialist, NYSDEC, April 2006.

2007a). NYSDEC reports zinc in elevated concentrations in this reach of the river, but concluded that "based on sediment quality guidelines developed for freshwater ecosystems, overall sediment quality is not likely to cause chronic toxicity to sediment-dwelling organisms." NYSDEC concludes that results from the most recent round of RIBS sampling indicate that, in the Black River from Lowville to Lyons Falls, there are "no significant water quality impacts and uses of the stream are considered to be fully supported" (NYSDEC 2007a).

In its report entitled "30 Year Trends in Water Quality of Rivers and Streams in New York State Based on Macroinvertebrate Data 1972-2002," NYSDEC categorized water quality in the Black River from Dexter to Port Leyden, which includes Lyons Falls, as slightly impacted (NYSDEC 2004). Upstream from Lyons Falls to Hawkinsville, NYSDEC classified water quality in the Black River as non-impacted.

In 1996, benthic invertebrate sampling was conducted by NYSDEC upstream and downstream of the former discharge lagoon of Georgia-Pacific's paper mill to evaluate the potential impacts associated with the plant's discharge (NYSDEC 2004). It was determined that no significant impairments had resulted from the paper mill's discharge (NYSDEC 2004). Because the mill has subsequently shut down, it is likely that water quality at Lyons Falls Mill has remained non-impacted or has improved.

Moose River

In 2003, NYSDEC conducted its most recent RIBS associated with the Moose River, which included the lower Moose River near Lyons Falls (NYSDEC 2007a). Results of macroinvertebrate sampling indicated that non-impacted water quality conditions were prevalent in the lower portion of the Moose River from its confluence with the Black River to McKeever (NYSDEC 2007a). According to NYSDEC, the macroinvertebrate community is "well-balanced, diverse, and dominated by clean-water mayflies."

NYSDEC's sampling in the lower Moose River indicated that mercury and aluminum were parameters of concern (NYSDEC 2007a). However, according to NYSDEC's report, the elevated levels of these two variables are not unusual for areas of the state typically affected by atmospheric deposition of mercury and subject to acid rain (NYSDEC 2007a). The report also

concludes that "sediment chemistry analysis for these and other contaminants show no metals present above established levels of concern, and no compounds present in concentration likely to cause adverse biological effects to sediment-dwelling organisms" (NYSDEC 2007a).

NYSDEC also collected macroinvertebrate data from the lower Moose River, above Lyons Falls, in 1976, 1982, and 1991 (NYSDEC 2004). All benthic macroinvertebrate monitoring data indicate that the Moose River is non-impacted and reflective of excellent water quality (NYSDEC 2004).

Studies Conducted by NBLF

As described above, NBLF conducted study activities in support of the upgrades to Lyons Falls Mill proposed in 2006. Relevant studies related to water use and quality are described below.

Dissolved Oxygen, pH, Water Temperature, and Conductivity

NBLF recorded existing DO, pH, water temperature, and conductivity conditions at Lyons Falls Mill during the summer high-temperature, low-flow period of 2006 to further document and update baseline conditions. A mid-summer sample (August 23 and 24) was chosen because it was likely to represent a "worst-case" scenario, and it was expected that results from this period would exemplify the lowest DO concentrations likely to occur over the annual cycle because of decreased DO solubility with increasing water temperature (Wetzel 2001). As per NYSDEC guidelines, measurements were taken at five intervals throughout a 24-hour period at six sample sites[12].

Handheld water quality meters were used to gather DO, pH, water temperature, and conductivity information at six sites at Lyons Falls Mill (Figure E.2-4 and Table E.2-1). In the Lyons Falls impoundment, DO and water temperature measurements were taken at 1-foot intervals from the surface to the bottom to create vertical profiles. Data in the riverine sample sites were taken at a depth of 1 foot. At all sites, conductivity and pH were also measured at a depth of 1 foot. Data were collected on five occasions (morning, late-morning, early afternoon, early evening, and evening) spanning approximately a 24-hour period from the afternoon of August 23 to the late-morning of August 24 (Table E.2-1).

[12] Personal communication, Rose Anne Gray, Water Quality Specialist, NYSDEC, May 2006.

FIGURE E.2-4
DO, PH, CONDUCTIVITY, AND WATER TEMPERATURE MONITORING STATIONS ESTABLISHED AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

TABLE E.2-1
DESCRIPTION OF SAMPLING SITES, DATES, AND TIMES OF WATER QUALITY MONITORING AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

Site ID	Location	Date Sampled	Time Sampled
BR1 (Black River)	Upstream of Moose and Black River confluence.	8/23/2006 & 8/24/2006	0730, 1030, 1800, 2045, 2315
BR2 (Black River)	Downstream of the dam across from the existing canoe launch site.	8/23/2006 & 8/24/2006	0745, 1045, 1830, 2110, 2330
MR1 (Moose River)	Upstream of Moose and Black River confluence.	8/23/2006 & 8/24/2006	0715, 1000, 1800, 2030, 2300
IL (Impoundment Lower)	Upstream of dam face.	8/23/2006 & 8/24/2006	0615, 0900, 1630, 1930, 2200
IM (Impoundment Middle)	Mid-impoundment.	8/23/2006 & 8/24/2006	0630, 0915, 1700, 2000, 2215
IU (Impoundment Upper)	Upper end of impoundment below confluence of Moose River.	8/23/2006 & 8/24/2006	0700, 0930, 1730, 2015, 2230

Mean DO at all sites for all five sampling episodes within Lyons Falls Mill ranged from 8.5 mg/L (93.5 percent saturation) to 8.7 mg/L (96.5 percent saturation) and showed little variation during the diurnal cycle and at various depth intervals (Table E.2-2, Figure E.2-5, Figure E.2-6, and Figure E.2-7). Overall, DO dropped by less than 0.5 mg/L between the evening hours (first sample time) to the morning hours (fifth sampling time) for all sites (Figure E.2-5, Figure E.2-6, and Figure E.2-7). Variation of DO by depth was minimal. All DO measurements exceeded the New York State standard for Class C and Class C(T) waters (5.0 mg/L for Class C waters; 6.0 mg/L for Class C(T) waters).

Mean water temperature ranged from 20°C to 20.5°C throughout waters associated with Lyons Falls Mill and dropped by less than 1°C between evening and morning sampling events (Table E.2-2; Figure E.2-8, Figure E.2-9, and Figure E.2-10). Variation of water temperature by depth was minimal (Figure E.2-8, Figure E.2-9, and Figure E.2-10). The only site that showed a perceivable temperature difference between depth intervals was the middle impoundment (IM) during the early evening sampling event (1730) when the temperature dropped by approximately 1°C.

Mean pH values for all sites ranged from 7.1 to 7.7 (Table E.2-2). Mean values met New York State standards for pH; however, three individual measurements were below the state's minimum

threshold for Class C and Class C(T) waters (between 6.5 and 8.5). At the Moose River site (MR 1), pH was between 6.2 and 6.4, during the 0715 and 1000 sampling events, respectively (Figure E.2-11). At the lower Black River site (BR2), pH was 6.2 during the 1045 sampling event. Low pH values may have been a result of run-off associated with precipitation that occurred during sampling. Because acid rain deposition is a noted and persistent water quality issue in the Black River Basin (NYSDEC 2007a), the observed pH measurements are not unexpected; however, there is no nexus between low pH measurements and NBLF's operation of the Project or Lyons Falls Mill.

Conductivity varied distinctly by sample location. Measurements at the Moose River site upstream of the impoundment were noticeably lower than measurements in the Black River. As waters from both river systems mixed, conductivity values became lower in the impoundment and below the Lyons Falls Dam. Average conductivity for the entire sample period ranged from 34.8 (Moose River) to 96.5 microsiemens (uS) (Black River) (Table E.2-2).

TABLE E.2-2
SUMMARY OF MEAN DISSOLVED OXYGEN, PH, CONDUCTIVITY, AND WATER TEMPERATURE SAMPLING RESULTS AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

Site ID	DO (%)	DO (mg/L)	Temp. (°C)	Conductivity (uS)	pH
Riverine Sites					
BR1	96.5	8.7	20.5	96.5	7.3
BR2	93.5	8.5	20.0	63.9	7.3
MR1	95.8	8.7	20.0	34.8	7.1
Impoundment Sites					
IU	95.8	8.7	20.0	45.8	7.7
IM	96.1	8.7	20.3	79.9	7.6
IL	95.7	8.7	20.0	35.9	7.5

FIGURE E.2-5
DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE UPPER IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

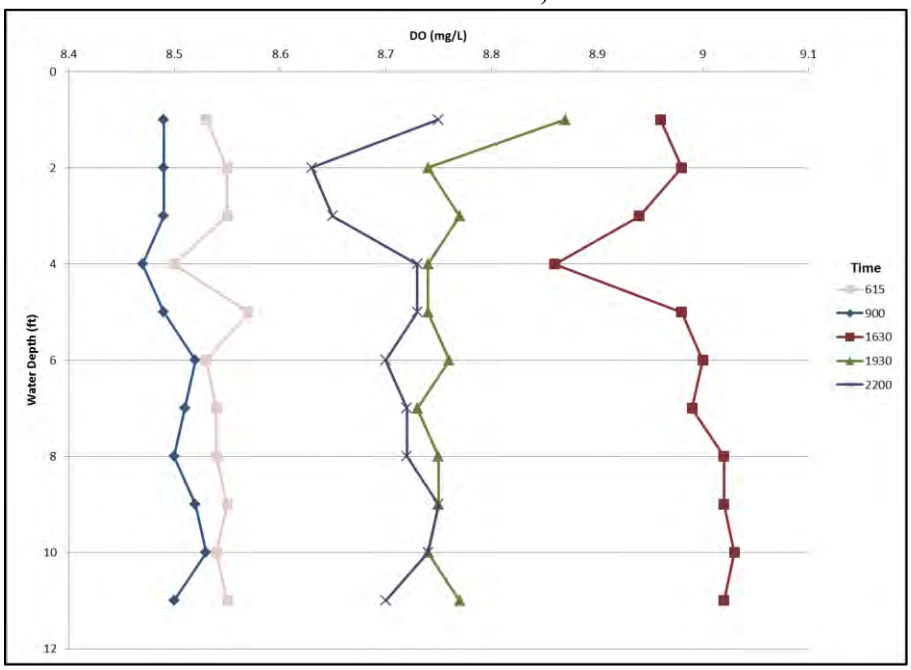


FIGURE E.2-6
DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE LOWER IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

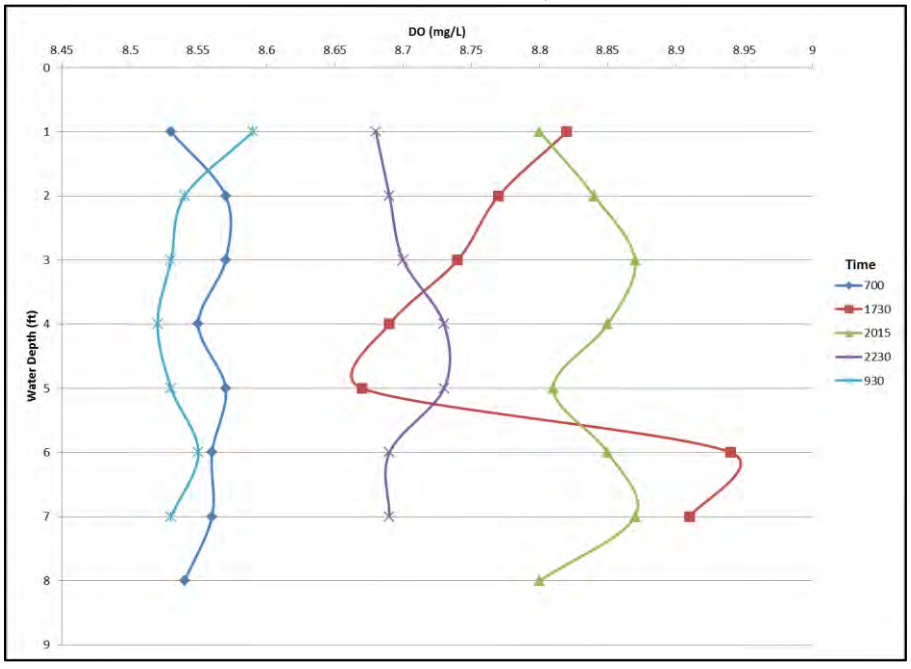


FIGURE E.2-7
DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE MIDDLE IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

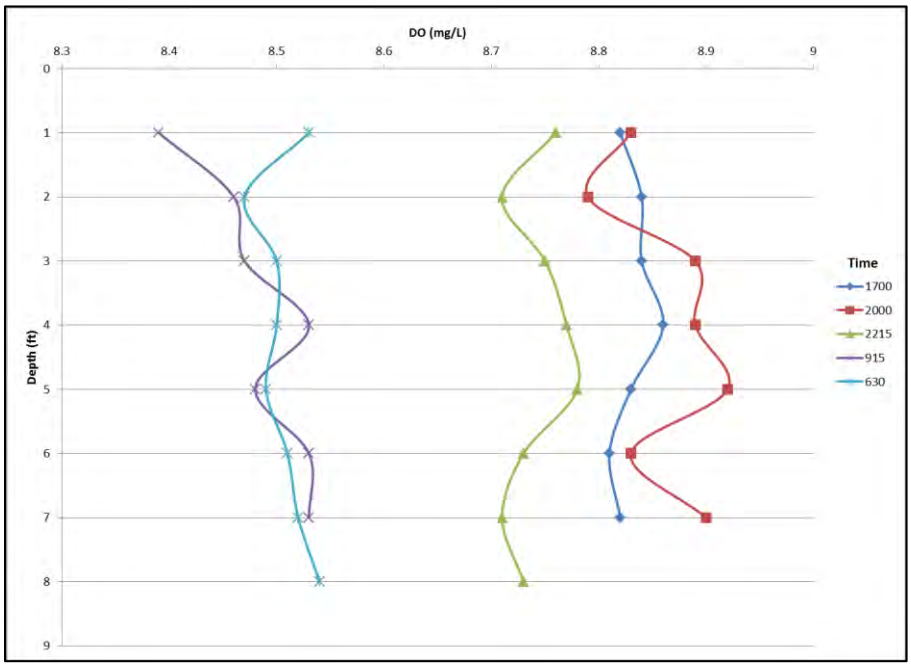


FIGURE E.2-8
WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE UPPER IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

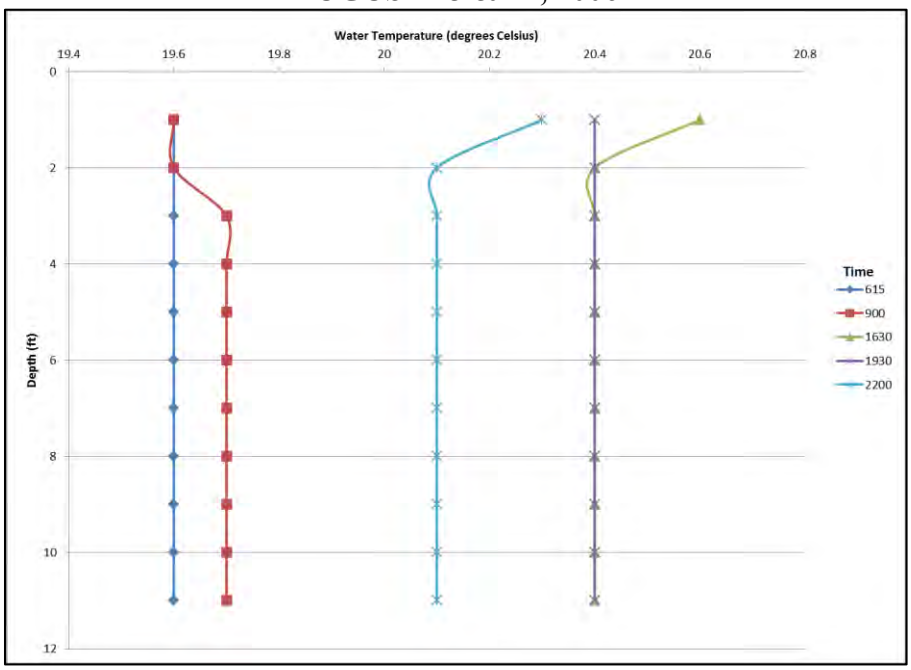


FIGURE E.2-9
WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE MIDDLE IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

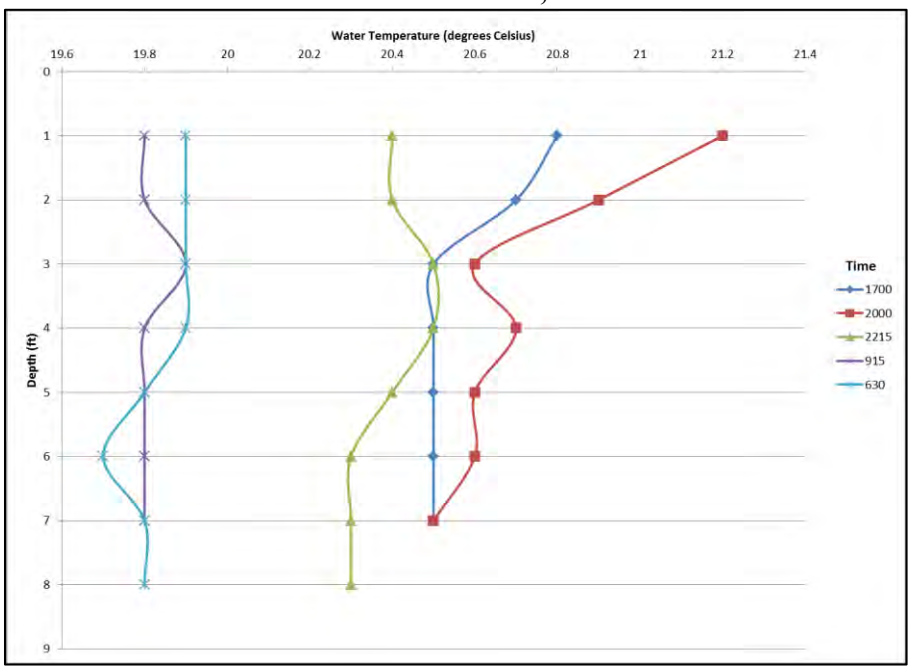


FIGURE E.2-10
WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE LOWER IMPOUNDMENT, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006

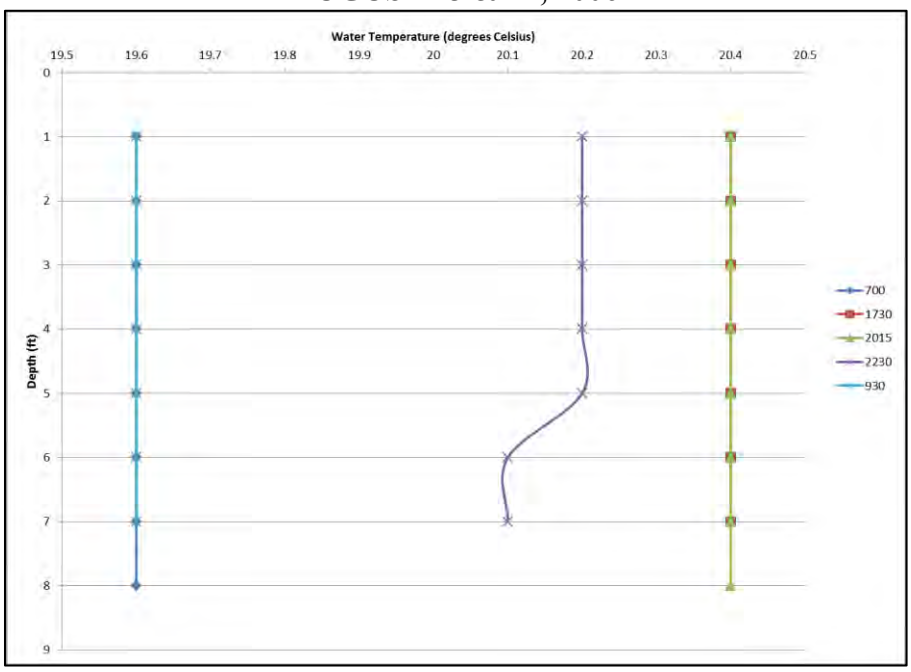
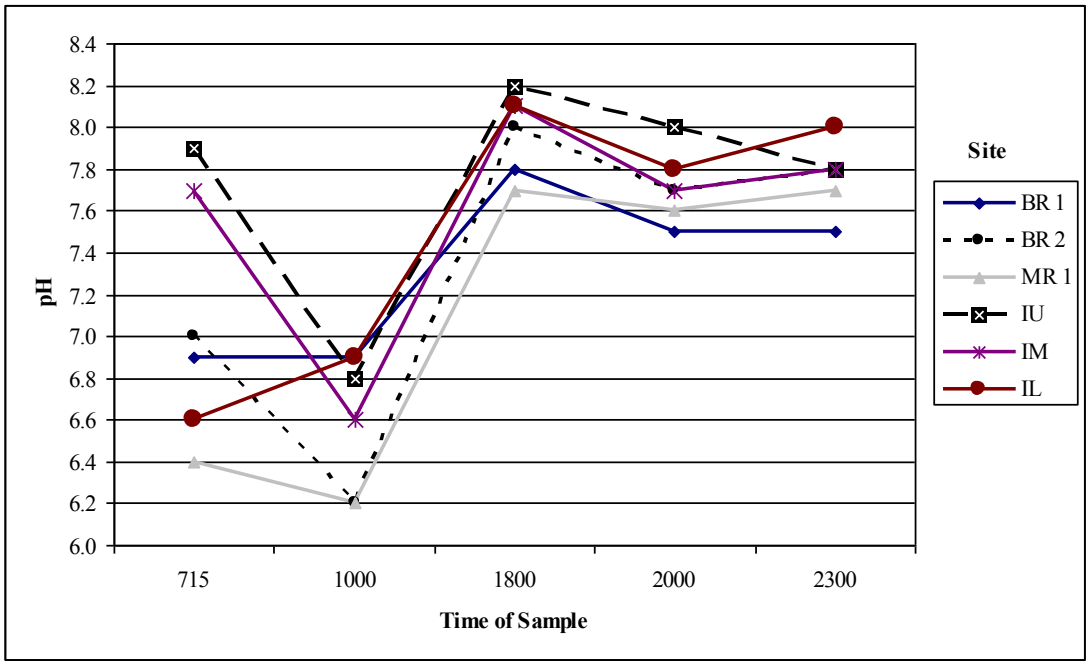


FIGURE E.2-11
SURFACE PH VALUES FOR ALL SITES, LYONS FALLS MILL, LYONS FALLS, NEW YORK, AUGUST 23 & 24, 2006



With the exception of a few individual pH measurements, all sampling events indicate that DO and pH meet or exceed New York State water quality standards for Class C and Class C(T) waters. Rainfall and associated runoff on the night of August 23 and into the morning of August 24 may have influenced pH levels in Lyons Falls Mill as the upper Moose River watershed is considered as an acidic[13]. Variation in conductivity amongst the sample sites is likely a result of differences in upstream watershed characteristics (e.g., dominant soil types and underlying geologic features).

The results of monitoring undertaken by NBLF in 2006 indicate that DO, pH, water temperature, and conductivity are not adversely affected by the operation of Lyons Falls Mill. Values observed upstream, downstream, and within the Lyons Falls Mill impoundment showed little variation and were in compliance with New York State standards. Because monitoring took place during the low-flow, high-temperature period – which is typically when adverse conditions would develop – it is expected that these variables would also meet New York State standards

[13] Personal communication, Alice Richardson, Ecologist, NYSDEC, January 2006 Preliminary Resource Meeting.

throughout the remainder of the year. The DO and temperature profiles in the impoundment indicate that neither thermal nor chemical stratification occurs during the low-flow, high-temperature period of late summer. Water depth in the impoundment is generally less than 14 feet, reducing the likelihood of summer stratification and the development of zones of low DO concentrations.

Benthic Macroinvertebrate Sampling

NBLF conducted a baseline survey of benthic macroinvertebrates (BMI) in 2006 to assess species composition and distribution in Lyons Falls Mill tailrace and impoundment. A comparison of the two communities (impoundment and tailrace) based on common metrics was completed after collection, sorting, and identification of specimens. This information was used to assess differences in the benthic macroinvertebrate assemblages immediately upstream and downstream of the dam and to draw basic conclusions about water quality at Lyons Falls Mill. Aspects of the community that were of interest included species composition, species richness, percent contribution of *Ephemeroptera* (mayflies), *Plecoptera* (stoneflies), and *Trichoptera* (caddisflies) (EPT), and the high quality of the tailrace community as demonstrated by the composition of the BMI community. In general, it was found that the BMI community at Lyons Falls Mill is reflective of excellent water quality. These findings are in agreement with assessments conducted by the NYSDEC (NYSDEC 2007a).

Sampling was conducted in the Moose River and Black River upstream of their confluence, in the Lyons Falls impoundment, and in the Lyons Falls tailrace (Figure E.2-12). Twelve samples were collected with aquatic kick nets in a 1-meter-square sample area. Each kick net station was sampled for 1 minute. Once collected, samples were field-preserved; raw samples were sorted in the lab; and a subsample of 100 macroinvertebrates was removed from each sample. The 100 macroinvertebrates were then identified to the lowest practicable taxonomic distinction (typically to Family). Individual organisms were classified and evaluated according to the U.S. Environmental Protection Agency's (EPA) Standard Operating Procedures for sampling benthic macroinvertebrates (Barbour et al. 1999).

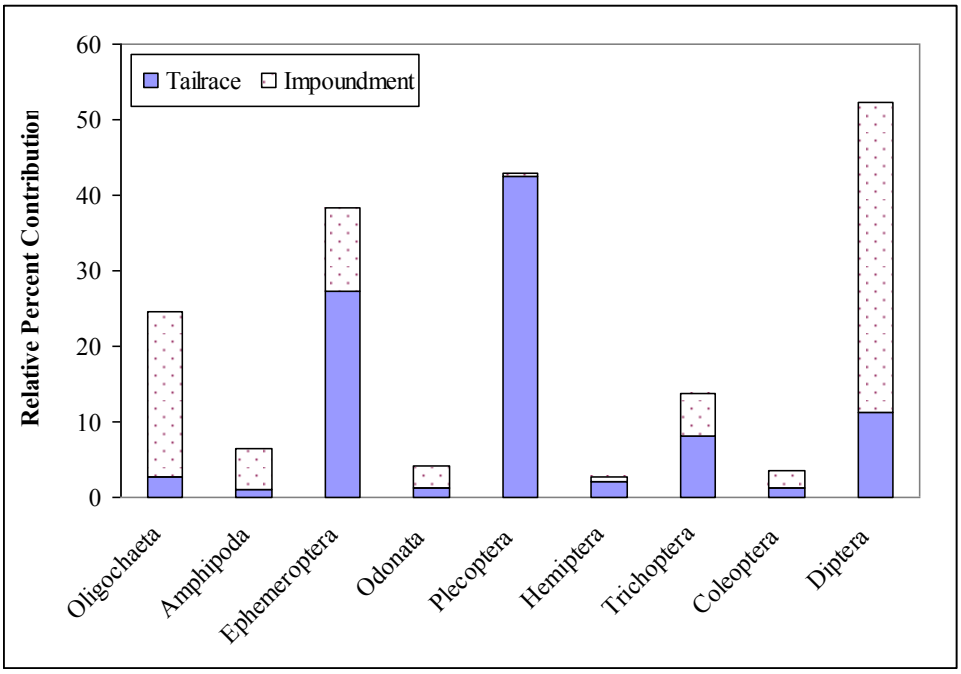
FIGURE E.2-12
MACROINVERTEBRATE SAMPLING STATIONS AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, NOVEMBER 2006

Descriptive properties for invertebrate collections reported include total taxa richness (R). In addition, a modified Family Biotic index (Plafkin et al. 1989) was assigned to the invertebrate samples. In that this biotic index was developed for streams and rivers and is not applicable to impounded reaches, the tolerance value was only developed for the tailrace collections. In accordance with the Hilsenhoff scale, species tolerance values range from 0–10, with a value of zero indicating excellent water quality (organic pollution unlikely), and a value of 10 indicating very poor water quality (severe organic pollution likely) (Hilsenhoff 1988). Family and species level tolerance values were obtained from published values summarized in Mandaville (2002). In addition to the Hilsenhoff biotic index, the percent contribution of EPT (% EPT) to the total sample was also reported. These three groups of macroinvertebrates are typically used in assessing the health of a river because they are the most sensitive to water pollution. As a final measure, both EPT richness and the ratio of EPT to Chironomidae (midge larvae) abundance were assessed.

The results of this baseline study indicate that there are marked differences in the benthic macroinvertebrate communities observed in the impoundment and the tailrace. In large part, community composition appears to mirror flow regime and substrate type. The following sections discuss the differences between the tailrace and the impoundment in greater detail.

Taxa observed in the tailrace community are dominated by the EPT, and to a lesser extent, the *Diptera* (two–winged or "true flies") (Figure E.2-13). Other taxa noted include an admixture of the *Odonata* (dragonflies), *Oligochaeta* (aquatic worms), and the *Gastropoda* (snails and limpets) amongst others. Within the impoundment, members of the *Oligochaeta*, *Amphipoda* (scuds and sideswimmers), *Ephemeroptera*, and the *Diptera* were noted in addition to the *Hirudinea* (leeches and bloodsuckers) and *Bivalvia* (clams and mussels). The *Lepidoptera* were absent from the impoundment and only a single individual was identified in the tailrace. A complete list of taxa observed at Lyons Falls Mill is presented in Appendix E.

FIGURE E.2-13
COMPARISON OF THE RELATIVE PERCENT COMPOSITION OF THE DOMINANT BENTHIC MACROINVERTEBRATE TAXA AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, NOVEMBER 2006



There was a distinct difference in the composition of the benthic invertebrate assemblage observed within the tailrace and the impoundment, which is reflected in the low Morisita coefficient (MSij = 0.256). An examination of the two benthic communities indicates that the differences are largely driven by nine groups of dominant taxa (Figure E.2-13). Within the tailrace community the nine groups account for 97% of the total sample, while they comprise 91% of the impoundment community sample. Of the nine groups, the *Oligochaeta*, *Ephemeroptera*, *Plecoptera*, and the *Diptera* can be said to be the drivers underlying the low similarity coefficient. Simply, there are far greater numbers of *Oligochaeta* and *Diptera* in the impoundment samples, whereas the *Ephemeroptera*, and especially the *Plecoptera,* dominate the tailrace samples.

With respect to other groups observed that contributed less to the overall community, there were greater numbers of *Amphipoda* in the impoundment samples, whereas most of the *Hemiptera* (water or "true bugs") were observed in the tailrace. The relative percentages of *Coleoptera*

(beetles), *Odonata*, and to a lesser extent, *Trichoptera* were approximately equal in both habitat types.

Using the benthic invertebrate assemblages, the tailrace family biotic index (FBI = 3.02) indicates that water quality is excellent. The % EPT percentage is much higher in the tailrace than in the impoundment, whereas the % *Chironomidae* is much higher in the impoundment (Table E.2-3). Taxa richness and EPT richness are approximately equal.

TABLE E.2-3
SUMMARY OF MEAN BMI COMMUNITY METRICS AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, NOVEMBER 2006

Metric	Tailrace	Impoundment
% EPT	77	17
% Chironomidae	9	37
Ratio EPT:Chironomidae	17	0.7
Taxa Richness	14	14
EPT Richness	6	4

The results of this baseline study indicate that there are marked differences in the composition of the tailrace and impoundment benthic invertebrate communities. It is believed that the factor most proximate to the observed differences includes habitat type (e.g., flow regime and substrate). With respect to gauging water quality, the family biotic index used in this analysis is specifically geared towards identifying the effects of organic pollutants. The family biotic index, however, can also be interpreted as an index of differences driven by habitat type (e.g., lotic versus lentic) rather than the effects of organic pollutants.

As observed within the impoundment, many species representative of lentic (ponded or impounded waters) flow regimes and relatively warmer waters with soft substrates dominated the community, including the *Oligochaeta* and the *Diptera* (Mandaville 2002). Both taxa will utilize soft sediments as refugia should water temperatures become elevated, as often can be observed in impounded waters. These taxa typically thrive in this type of habitat. The *Diptera* in particular, can be found in just about every conceivable freshwater habitat type, and the family *Chironomidae*, which dominated the impoundment, includes a number of subfamilies that are generally most common in lentic, warm–water habitats (Mandaville 2002). The composition of

the benthic macroinvertebrate impoundment is not unusual for this type of habitat, however, and the benthic assemblage is comparable to that observed in other impounded waters.

In general, the tailrace macroinvertebrate community exhibited a rich assemblage of species typical of fast moving (lotic) cold waters that are rich in dissolved oxygen. Significant numbers of invertebrates that are typically associated with non-impacted habitats including members of the Orders *Ephemeroptera* and *Plecoptera* were observed in the tailrace. In waters showing impairment, these species would be expected in lower numbers. The high water quality requirements of *Plecopteran* (stonefly) nymphs restrict them to an extremely narrow niche, free from low DO concentrations, sediment loading, high temperatures, and eutrophication. In short, based on the benthic macroinvertebrate community characteristics, it appears that the tailrace invertebrate biota and water quality are in excellent condition, supporting an extremely sensitive benthic assemblage only observed in the cleanest, least-degraded of lotic habitats. Significantly, the high-quality nature of the invertebrate community in the tailrace indicates that the waters being released from the bottom of the impoundment are fairly well–oxygenated, free from excessive nutrient levels, and other pollutants.

Minimum Flow Releases

The existing license for the Project does not require any minimum flow releases at Lyons Falls Mill. Proposed minimum flow releases are discussed below.

Existing and Proposed PM&E Measures

Existing water quality data and studies conducted by NBLF indicate high water quality at Lyons Falls Mill. As such, NBLF proposes to continue to operate the facility in a run-of-river mode so that outflow from the impoundment is consistent with inflow for the protection of aquatic resources.

The existing license for the Project does not require a continuous flow to be released from Lyons Falls Mill. In support of the redevelopment of the facility, NBLF proposes to release seasonal minimum flows totaling 70 cfs downstream from the Lyons Falls Dam. Of the 70 cfs, a minimum of 45 cfs would be released annually from March 15 through November 30 to provide

a fish movement continuity flow to facilitate the downstream movement of fish. NBLF proposes to release downstream fish movement flows through a "gate-in-gate" structure to be installed in the new debris sluice gate immediately upstream from the trashracks (see Section A2.2 of this application document). A minimum flow of 25 cfs would also be released annually during the recreation season (May 1 through October 31) to provide a continuous flow over a portion of Lyons Falls for aesthetic purpose. Aesthetic flow releases will be provided by notching the flashboards (see Section E.2.9 of this application document). NBLF anticipates that the seasonal minimum flow releases will provide additional aeration benefits. Conceptual designs for the gate-in-gate structure and the aesthetic flow release mechanism have been included in Section E.2.3 and E.2.9 of this application document; NBLF will provide final designs for NYSDEC, USFWS, and Commission approval following FERC's order amending the license and prior to the start of construction activities.

Construction of the new Lyons Falls Mill facility will require temporary cofferdamming and a cessation of flow through the intake structure, penstocks, and existing generating units. During the construction period, NBLF will pass all flows over the spillway.

NBLF will prepare a Construction Soil Erosion and Sedimentation Control Plan and a Temporary Construction Emergency Action Plan (TCEAP). The Construction Soil Erosion and Sedimentation Control Plan will describe standard best-management practices (BMP) that NBLF will implement to address sediment and erosion control during construction and final stabilization and/or revegetation in accordance with NYSDEC technical guidance. As required by FERC, the TCEAP will include a notification list of emergency response agencies, a plan drawing showing the proposed arrangement of cofferdams and temporary retaining structures, the location of safety devices and escape routes, and a brief description of testing procedures for the plan. NBLF will submit both the Construction Soil Erosion and Sedimentation Control Plan and the TCEAP for FERC and NYSDEC approval following FERC's order amending the license and prior to the start of construction activities.

A WQC pursuant to Section 401of the Clean Water Act[14] was issued for the Lyons Falls Project by the NYSDEC on February 12, 1985. NBLF has consulted with the NYSDEC regarding the need for a Section 401 WQC for the proposed amendment. The NYSDEC has indicated that a new or modified Section 401 WQC will be required for the proposed facilities which would incorporate the provisions from the February 12, 1985 Section 401 WQC and such new provisions as may be appropriate, using current format. Based on this consultation and pursuant to 18 CFR §4.34(b)(5) of the Commission's regulations, NBLF will apply for a Section 401 WQC no later than 60 days following the Commission's notification that this amendment application is ready for environmental analysis. Construction and operation of Lyons Falls Mill will comply with the terms of any new or modified Section 401 WQC issued by NYSDEC for this proposed amendment.

Continued or Incremental Impacts on Water Quality

NBLF is not aware of any ongoing impacts on water quality related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any continued or incremental impacts. Existing documentation of water quality in the Black River in the vicinity of Lyons Falls, including information collected by NBLF in support of the upgrades proposed in 2006, demonstrates that the current operation of the hydroelectric facility does not adversely affect water quality. Although there are water quality issues in the Black River Basin (e.g., acid deposition), these issues are not directly related to the operation or development of hydroelectric resources. Water quality in the Black River is very good to excellent with minor reported impacts. Information gathered by NBLF in 2006 (e.g., DO, temperature, pH, and macroinvertebrate data) as described above support overall water quality assessments conducted by NYSDEC in recent years.

Similarly, the proposed redevelopment would not adversely affect or result in any incremental decrease in water quality. Although the proposed upgrade would result in the utilization of additional water resources, the site would continue to operate as a run-of-river facility for the protection of existing aquatic resources. All flows utilized by the new units would be discharged directly back into the tailrace on the downstream edge of the falls, similar to the existing flow

[14] 33 U.S.C. 1341

patterns. During the warm, dry months of summer, NBLF's proposed minimum flow requirements would allow 70 cfs to be released continuously downstream from Lyons Falls Dam. NBLF anticipates that this minimum flow would continue to maintain aeration and other benefits that have resulted in high water quality downstream from Lyons Falls Mill. As a result, NBLF anticipates no adverse or incremental effects to water quality as a result of the diversion of water through the new units. Water quality (e.g., DO, pH) in the impoundment would not be adversely affected, as no changes in pond elevation are proposed. Water quality and macroinvertebrate communities downstream of Lyons Falls Mill would not be affected by the proposed upgrade or subsequent operations as all water utilized for the production of power would be discharged directly back into the tailrace, as is done under current operations.

There would likely be short-term impacts to turbidity and sediment mobilization as a result of construction. However, NBLF proposes to develop and implement a Construction Soil Erosion and Sedimentation Control Plan to prevent erosion and sediment mobilization. The Construction Soil Erosion and Sedimentation Control Plan will include BMPs to be implemented in accordance with NYSDEC technical guidelines and in accordance with any new or modified Section 401 WQC issued by NYSDEC.

E.2.3 Report on Fisheries Resources

Historically, 48 fish species were known to occur in the Black River Basin (Lowie et al. 1994). Prior to anthropogenic activity in the watershed, the 60-foot-high waterfall at Lyons Falls divided the Black River fishery into two distinct assemblages: an upland coldwater fishery and a lowland coolwater fishery (Lowie et al. 1994). More recently, the introduction of nonnative fish species though active fisheries management, or otherwise, has resulted in a more homogenous fish community with approximately 70 species distributed throughout the upper and lower watershed (Lowie et al. 1994).

Diadromous and migratory fish species known to occur, or that historically occurred in the Black River, include landlocked Atlantic salmon (native), American eel (native), alewife (native), sea lamprey (native), Chinook salmon (nonnative), steelhead (nonnative), and Coho salmon (nonnative). The extent of the natural upstream migration for diadromous species in the Black

River is limited by High Falls in Watertown, approximately 60 RM downstream of Lyons Falls[15]. The recent installation of fish passage structures at the Dexter Project (FERC No. 2695) and the Glen Park Project (FERC No. 4796) below Watertown has restored fish migratory routes to their historic spatial extent.

Near Lyons Falls, the Black River and the Moose River support resident game, non-game, and introduced sport fish species typical of the northeastern United States. Coolwater species (e.g., smallmouth bass and rock bass) have been introduced over time into the upper reaches of the river above Lyons Falls (NYSDEC Bureau of Fisheries 1993).

In 1992 and 1993, NYSDEC conducted a comprehensive fisheries study of the entire Black River from Dexter to North Lake (NYSDEC Bureau of Fisheries 1993). Because Lyons Falls was reported as the dividing point between the middle and upper reaches of the Black River, results from both reaches are used here to describe the fishery around Lyons Falls.

According to the NYSDEC, the fish community below Lyons Falls is composed of approximately 34 species (NYSDEC Bureau of Fisheries 1993). NYSDEC indicates that the fish community is diverse with few dominant fish species. Common species include rock bass, walleye, yellow perch, tessellated darter, smallmouth bass, rock bass, brown bullhead, pumpkinseed, white sucker, and fallfish (Table E.2-4). Upstream of Lyons Falls, the fish community consists of approximately 28 species and is dominated by white sucker, rock bass, and smallmouth bass (NYSDEC Bureau of Fisheries 1993) (Table E.2-4). The upper reach does contain a higher proportion of trout, although the results of the NYSDEC survey indicate that it is only about 11 percent of the total composition. Additional fish surveys conducted by NYSDEC in the Black River in 1995 and 1998 in the Lyonsdale and Port Leyden area indicate that Northern hog sucker, pumpkinseed, fallfish, chain pickerel, rock bass, and walleye are commonly occurring species in this reach (NYSDEC Bureau of Fisheries 2006).

Fish species noted as common below the dam at Lyons Falls during previous licensing efforts included northern pike, bullhead, smallmouth bass, brown trout, rainbow trout, brook trout, sunfish, carp, and yellow perch (Georgia-Pacific 1983).

[15] Personal communication, Frank Flack, Fisheries Biologist, NYSDEC, April 2006.

TABLE E.2-4
NUMBER AND RELATIVE PERCENT OF FISH CAPTURED IN THE BLACK RIVER BELOW LYONS FALLS MILL (BETWEEN LYONS FALLS AND CARTHAGE) AND ABOVE LYONS FALLS MILL (BETWEEN LYONS FALLS AND NORTH LAKE) (SOURCE: NYSDEC BUREAU OF FISHERIES 1993)

	Lyons Falls downstream to Carthage				Lyons Falls upstream to North Lake		
Species	**Species**	**No. Captured**	**Relative %**		**Species**	**No. Captured**	**Relative %**
1	Rock bass	34	11%		White sucker	61	18%
2	Walleye	29	10%		Rock bass	53	16%
3	White sucker	28	9%		Smallmouth bass	45	13%
4	Fallfish	26	9%		Brown trout	24	7%
5	Pumpkinseed	20	7%		Chain pickerel	24	7%
6	Yellow perch	19	6%		Pumpkinseed	16	5%
7	Brown bullhead	17	6%		Rainbow trout	12	4%
8	Smallmouth bass	17	6%		Northern hog sucker	12	4%
9	Tesselated darter	17	6%		Cutlips minnow	10	3%
10	Chain pickerel	16	5%		Common shiner	10	3%
11	Spottail shiner	12	4%		Brown bullhead	10	3%
12	Golden shiner	11	4%		Golden shiner	8	2%
13	Northern pike	8	3%		Margined madtom	8	2%
14	Satinfin shiner	8	3%		Brook trout	6	2%
15	Burboit	8	3%		Spottail shiner	6	2%
16	Northern hog sucker	7	2%		Tessellated darter	6	2%
17	Central mudminnow	6	2%		Yellow perch	6	2%
18	Grass pickerel	3	1%		Common carp	4	1%
19	Common carp	3	1%		Longnose dace	4	1%
20	Brown trout	1	<1%		Fantail darter	4	1%
21	Brook trout	1	<1%		Lake chub	2	1%
22	Common shiner	1	<1%		Fallfish	2	1%
23	E. silvery minnow	1	<1%		Creek chub	2	1%
24	Creek chub	1	<1%		Bluntnose minnow	2	1%
25	Bluntnose minnow	1	<1%		Blacknose dace	2	1%
26	Longnose dace	1	<1%		Slimy sculpin	NG[1]	-

	Lyons Falls downstream to Carthage				Lyons Falls upstream to North Lake		
Species	**Species**	**No. Captured**	**Relative %**		**Species**	**No. Captured**	**Relative %**
27	Banded killifish	1	<1%		Redside dace	NG[1]	-
28	Largemouth bass	1	<1%		Largemouth bass	NG[1]	-
29	Fantail darter	1	<1%				
30	Hornyhead chub	NG[1]	-				
31	Fathead minnow	NG[1]	-				
32	Redside dace	NG[1]	-				
33	Margined madtom	NG[1]	-				
34	Logperch	NG[1]	-				

[1]NG= None Gathered

The Moose River is managed by NYSDEC as a coldwater trout fishery. Species typical of the Moose River can include blacknose dace, longnose dace, common shiner, cutlips minnow, brook trout, and white sucker (Georgia-Pacific 1983). In the 1970s, NYSDEC conducted a trout tagging survey, the results of which indicated a decline in the quality of the trout fishery in the Moose River. NYSDEC concluded that the presence of smallmouth bass, increased water temperatures, and low pH had adversely affected trout populations in the Moose River (Georgia-Pacific 1983).

The sport and recreational fishery in the Black River near Lyons Falls has been classified as moderately active (Georgia-Pacific 1983). Recreational fishing upstream of Carthage and throughout Lyons Falls has declined in recent years, likely as a result of diminished stocks of large walleye (Lowie et al. 1994). A 1992 angler survey conducted by NYSDEC indicates that angling trips had been reduced from 12 trips per acre to 7 trips per acre in the Lyons Falls area (Lowie et al. 1994).

The trout fishery in the Black River and the Moose River is supplemented through stocking efforts conducted by NYSDEC. Approximately 5,000 brook, brown, and rainbow trout are stocked annually in the Black River and Moose River near Lyonsdale (NYSDEC Bureau of Fisheries 2007). Stocked fish generally range in size between 7 and 13 inches.

Riverine habitat in the Black River below the Lyons Falls Dam consists primarily of uniform low-gradient flatwater and tailrace habitat (Photo E.2-1). The 130-acre impoundment consists of shallow mixed lacustrine habitat that is primarily composed of a well-defined littoral zone (Photo E.2-2). The maximum depth of the impoundment is approximately 17 feet near the intake. Substrates in the shallow impoundment are composed primarily of cobbles, boulder, bedrock, and sand.

Photo E.2-1. Riverine habitat in the tailrace of Lyons Falls Mill.

Photo E.2-2. Aquatic habitat in the Lyons Falls Mill impoundment just upstream of the Moose River confluence.

Studies Conducted by NBLF

As part of the initial study implementation at the site, NBLF conducted an evaluation of aquatic habitat in the Lyons Falls Mill tailrace. The results of the survey and additional information pertaining to existing aquatic habitat resources are discussed in this section. Because Lyons Falls Mill is operated as a run-of-river facility, aquatic habitat in the tailrace is supported by river flows associated with natural precipitation events. To complete maintenance work at the site, flows are modified on a short-term and limited basis to allow for safe and timely completion of scheduled maintenance (e.g., replacement of flashboards).

As described above, NBLF conducted select studies in support of the upgrades to Lyons Falls Mill proposed in 2006. Relevant studies related to fisheries resources are described below.

Baseline Fisheries Surveys

NBLF conducted a baseline fisheries survey in November of 2006. Daytime and nighttime boat electrofishing surveys were conducted within the tailrace and impoundment on November 8. To specifically target walleye, a popular game fish species, a nighttime boat electrofishing survey was conducted during the evening hours of November 9 in the Lyons Falls Mill tailrace. Boat electrofishing surveys were focused on shoreline habitat along both the left and right bank below and above the Lyons Falls Dam, as well as along habitat associated with instream islands (Figure E.2-14).

In addition, two experimental mesh gill nets (mesh size: 0.5-inches to 2.5-inches) were deployed overnight in the tailrace area and impoundment for a period of 16 hours. Gill nets were set in the late afternoon on November 8 and 9 and pulled on each of the following mornings. Gill net locations are illustrated in Figure E.2-15. Beach seining was also conducted in shallow margins of the impoundment; however, the characteristics of the river channel above and below the dam (i.e., relatively steep banks and deep water) limited seining effectiveness and prevented the comprehensive use of this sampling method.

FIGURE E.2-14
LOCATION OF SHORELINE ELECTROFISHING SURVEYS AT LYONS FALLS MILL, LYONS FALLS, NEW YORK, NOVEMBER 2006

FIGURE E.2-15
LOCATION OF GILL NETS DURING BASELINE FISHERIES SURVEYS, LYONS FALLS MILL, NEW YORK, NOVEMBER 2006

The results of the fisheries survey indicate that fish species composition at Lyons Falls Mill is representative of the typical coolwater and coldwater communities known to occur in the Black River. Species composition is similar to that described in earlier studies conducted by NYSDEC and others in and around Lyons Falls. A total of 18 species represented by 197 fish were captured during the electrofishing surveys (Table E.2-5 and Table E.2-6). The dominant species at Lyons Falls Mill was chain pickerel (24%). Brown bullhead (14%), yellow perch (11%), golden shiner (9%), and pumpkinseed (9%) were also abundant. A single salmonid was observed during the survey: a brown trout captured from within the tailrace. No walleye of any age class were captured during day or nighttime boat electrofishing surveys, indicating limited use of waters associated with Lyons Falls Mill by this species. Variability in fish species composition was noticeable between daytime and nighttime sample events within the tailrace. Nighttime electrofishing resulted in the capture of 13 species (total catch = 44) while the day sample contained 10 species (total catch = 53). During the night sampling, chain pickerel again were the most common species, representing 25 percent of the sample.

The gill net catch was low. In the tailrace, one large adult walleye was captured in net C, below the plunge pool of Lyons Falls along the east bank, and one yellow perch was captured in net D, downstream of the mid-channel island (Figure E.2-15). The walleye measured 610 mm (24-inches) at a weight of 1,389 g (3 pounds).

TABLE E.2-5
FISH CAPTURED DURING DAYTIME AND NIGHTTIME BOAT ELECTROFISHING SURVEYS IN THE LYONS FALLS MILL TAILRACE, NOVEMBER 2006, LYONS FALLS, NEW YORK

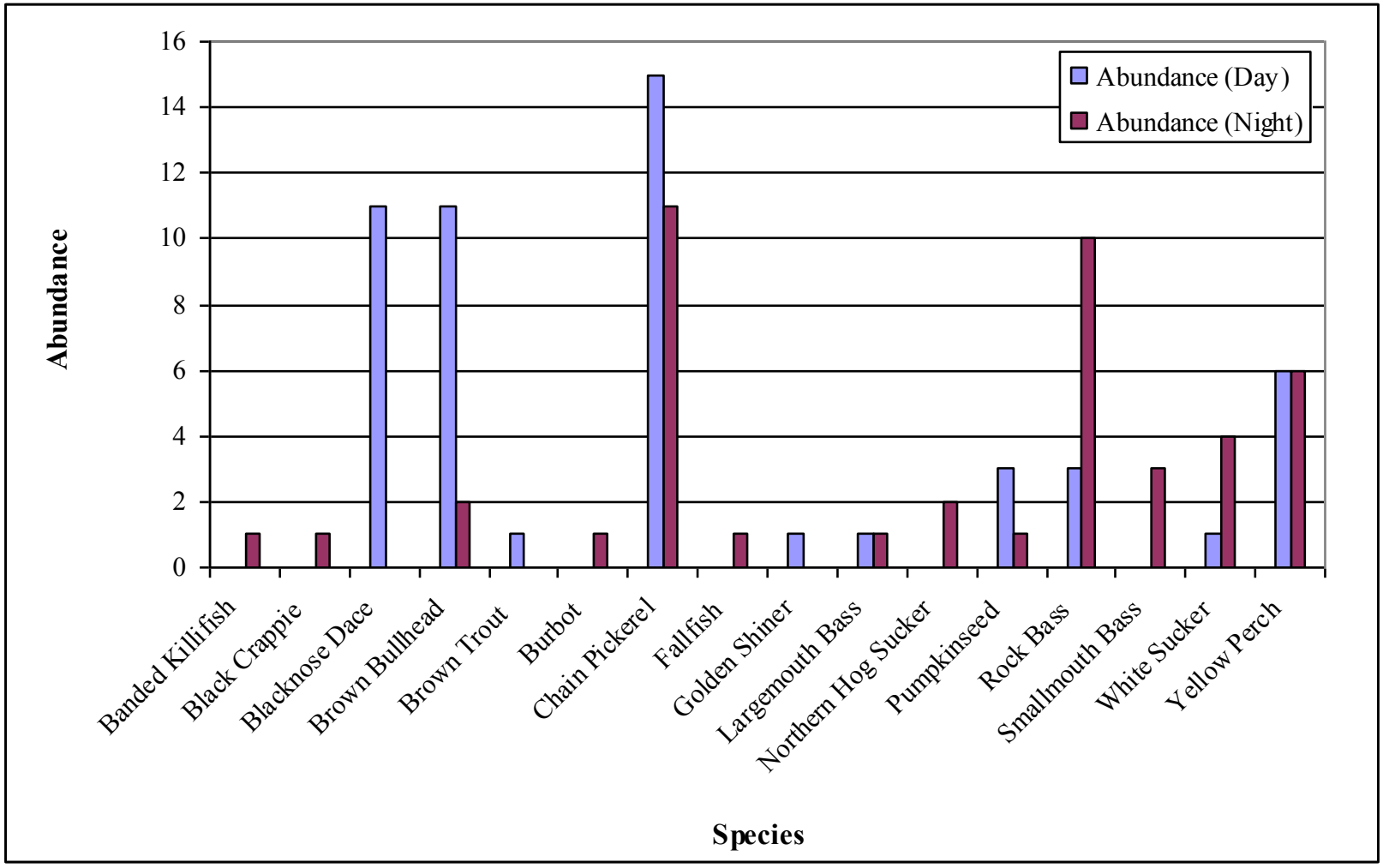
Species	Abundance	Relative Percent
Chain Pickerel	26	27%
Brown Bullhead	13	13%
Rock Bass	13	13%
Yellow Perch	12	12%
Blacknose Dace	11	11%
White Sucker	5	5%
Pumpkinseed	4	4%
Smallmouth Bass	3	3%
Largemouth Bass	2	2%
Northern Hog Sucker	2	2%
Banded Killifish	1	1.%
Black Crappie	1	1%
Brown Trout	1	1%
Burbot	1	1%
Fallfish	1	1%
Golden Shiner	1	1%
Total	97	-

* Tailrace information includes both the daytime and nighttime sample events

TABLE E.2-6
FISH CAPTURED DURING DAYTIME BOAT ELECTROFISHING SURVEY IN THE LYONS FALLS MILL IMPOUNDMENT, NOVEMBER 2006, LYONS FALLS, NEW YORK

Species	Abundance	Relative Percent
Chain Pickerel	21	21%
Golden Shiner	17	17%
Brown Bullhead	15	15%
Pumpkinseed	13	13%
Yellow Perch	10	10%
White Sucker	10	10%
Spottail Shiner	5	5%
Largemouth Bass	3	3%
Log Perch	2	2%
Smallmouth Bass	2	2%
Rock Bass	1	1%
Black Crappie	1	1%
Total	100	-

FIGURE E.2-16
COMPARISON OF NIGHT VS. DAY ELECTROFISHING SURVEY RESULTS IN THE LYONS FALLS MILL TAILRACE AREA, LYONS FALLS, NEW YORK, NOVEMBER 2006



Tailrace Aquatic Habitat Survey

In support of the upgrades to Lyons Falls Mill proposed in 2006, NBLF developed a habitat-based study to assess existing spawning conditions for walleye and smallmouth bass. The goal of this study was to document existing spawning habitat conditions by evaluating depth, velocity, and substrate characteristics in the tailrace and comparing this information to known habitat preferences.

Preferred spawning conditions for both species are well documented. Spawning depth for walleye is typically less than 3.0 feet with preferred velocities ranging from 2.5 to 3.0 feet-per-second (fps) (McMahon et al. 1984; Smith 1985). Spawning and nest construction for smallmouth bass typically takes place in river shallows where average depth is approximately 3.0 feet or less (Edwards et al. 1983; Smith 1985). Optimal velocity for spawning and embryo development of smallmouth bass is typically less than 1.0 fps (Edwards et al. 1983; Smith 1985). Both species use gravel, cobble, and rubble substrates for spawning, although nest construction by smallmouth bass is typically in smaller gravels or in sandy substrates in well-protected eddies. Walleye typically use larger-sized substrates to spawn (e.g., large gravel, cobble, and small boulders).

Cross-section locations were selected in consultation with the NYSDEC on August 24, 2006. Cross-sections were established in areas that were representative of typical habitat in the tailrace. At each cross-section, information pertaining to the basic habitat requirements for spawning walleye and smallmouth bass (water depth, velocity, and dominant substrate type) was collected to provide an assessment of existing conditions. To aid in substrate analysis, cross-sections were established so that they included shoreline habitat beginning at the high water mark. Cross-section length ranged from 454 to 750 feet.

Along each transect, velocity, depth, and substrate data were collected at intervals of 5 to 10 feet. Velocity was measured in fps with a digital flowmeter at a depth of 1 foot below the surface. In deeper areas, water velocity was also measured at a depth of 3 feet. Depth was measured with a sounding weight marked in 1-foot intervals. An underwater camera was used to characterize substrate composition.

Heavier precipitation in Lewis County during the fall of 2006 produced flooding conditions and higher river flow. Flow at the site ranged from approximately 3,225 to 3,875 cfs during sampling efforts (Figure E.2-17). Spillage over the dam occurred throughout the entire sampling effort (Photo E.2-3). Because average monthly flow at Lyons Falls Mill in the spring months (March through May) is approximately 3,250 cfs, conditions during fall sampling were representative of typical conditions for walleye spawning, which occurs in the spring. Average discharge at Lyons Falls in June is approximately 1,300 cfs (USGS 2007); therefore, sampling conditions did not reflect ambient conditions that would be expected during smallmouth bass spawning (typically early summer).

FIGURE E.2-17
BLACK RIVER FLOW CONDITIONS DURING SAMPLING EFFORTS, LYONS FALLS, NEW YORK, NOVEMBER 2006 – BOONVILLE USGS GAGE, PRORATED TO LYONS FALLS. (CIRCLES INDICATE BEGINNING AND END OF SAMPLING EFFORTS)

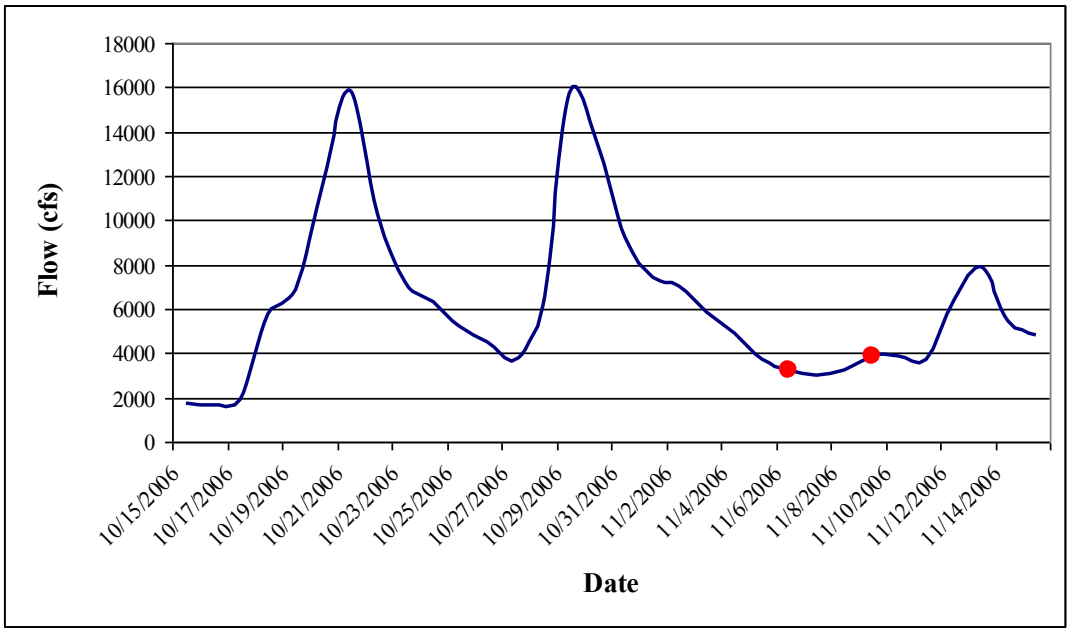


Photo E.2-3. River conditions during sampling in the Lyons Falls tailrace, November 2006.

Substrates - Sand is the dominant substrate in the tailrace (Figure E.2-18). There is a larger depositional area directly in the center of the channel in the middle of the tailrace, which has resulted in the formation of a small sandy island. A larger, low-velocity back eddy also occurs in the middle of the channel upstream of the island, which likely contributes to the deposition of sand at mid-channel. Along the east bank of the tailrace, cobbles and boulders are prominent (Figure E.2-18). Substrates are coarser (mixture of boulders and cobbles) towards the upstream portion of the tailrace, while finer sediment (sand) becomes dominant downstream of the falls. Areas of large woody debris accumulation are also prominent in the main channel. It is likely that some of this debris is remnant pieces of the original timber crib dam. Substrates in the small secondary tailrace channel to the west of the island are dominated by cobble and boulders.

Velocity - Water spilling over the falls splits into two distinct channels due to the presence of the mid-channel sandy island (Figure E.2-19). The largest volume of water funnels towards the east channel. There is also a significant counter current (upstream flow) along the eastern bank that begins approximately 100 feet upstream of the existing canoe launch. A large area of low-

velocity water occurs at the head of the mid-channel island. The maximum water velocity recorded at the time of sampling (November 2006) was 4.07 fps. The highest flow areas were along the eastern shore, where velocities were consistently above 1 to 2 fps (Figure E.2-19). Average and maximum water velocities per transect are presented in Table E.2-7.

Depth - The physical nature of the tailrace is that of an oversized pool and associated pool tail-out. The greatest depths are found immediately below the falls, with the plunge pool becoming shallower and more riverine in a downstream direction. During the survey, discharge over the falls was approximately 3,500 cfs, resulting in an average depth in the tailrace of 8.6 feet with a maximum of 27 feet (Table E.2-7; Figure E.2-20).

FIGURE E.2-18
DISTRIBUTION AND CLASSIFICATION OF SUBSTRATES IN THE TAILRACE OF LYONS FALLS MILL

FIGURE E.2-19
CHARACTERIZATION OF WATER VELOCITY IN THE TAILRACE OF LYONS FALLS MILL, NOVEMBER 2006

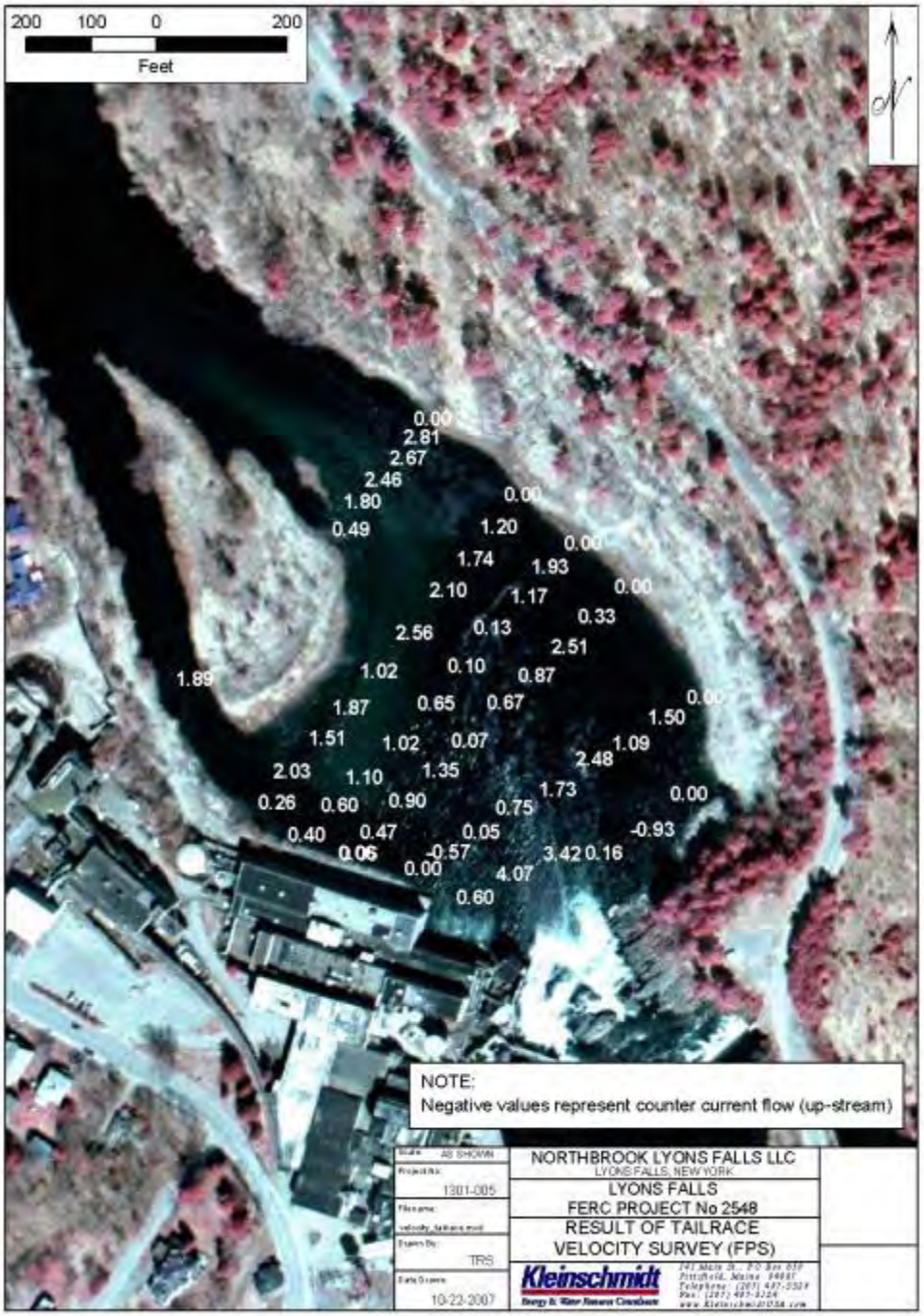


FIGURE E.2-20
CHARACTERIZATION OF WATER DEPTH IN THE TAILRACE OF LYONS FALLS MILL, NOVEMBER 2006

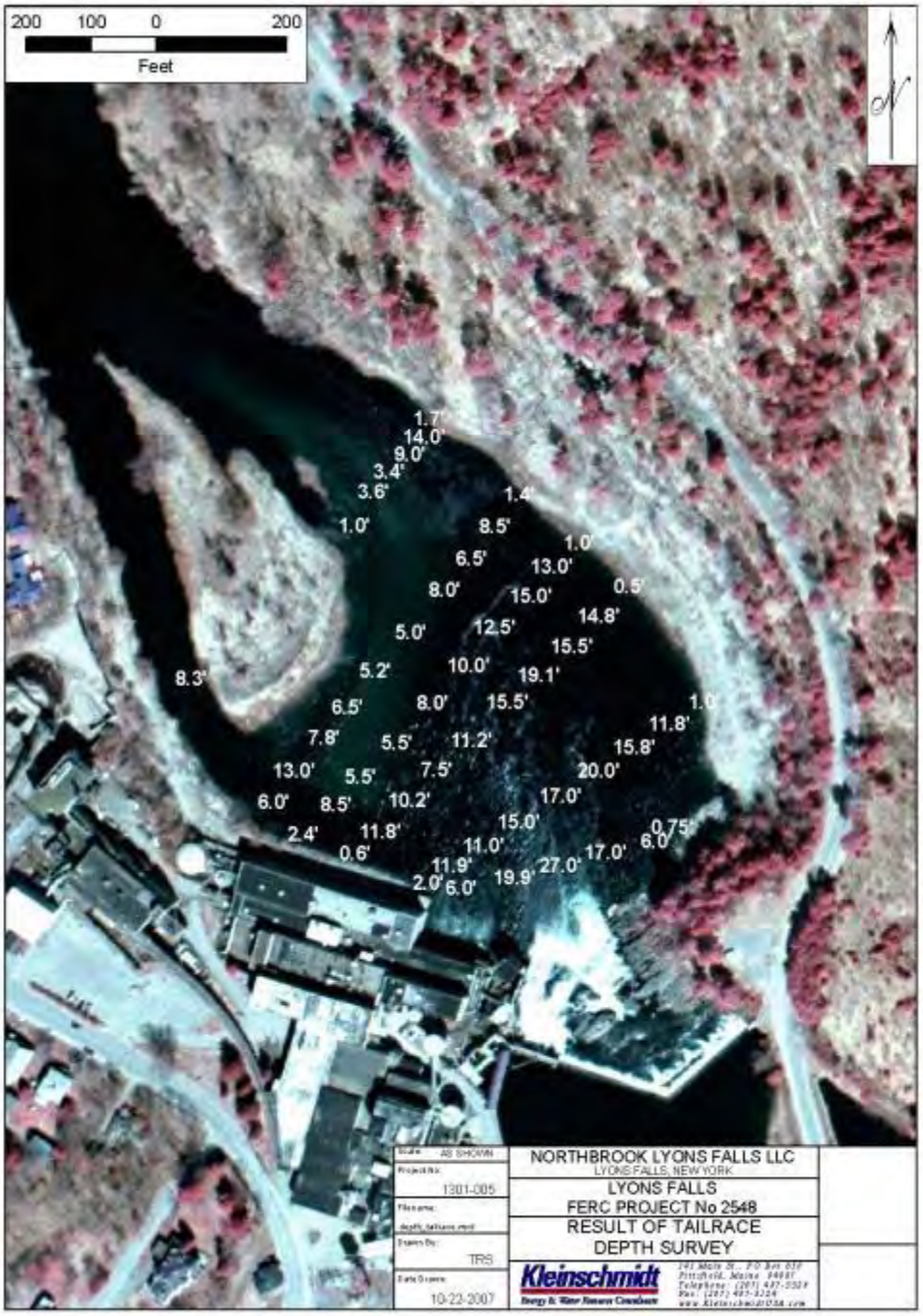


TABLE E.2-7
SUMMARY OF DEPTH AND VELOCITY MEASUREMENTS TAKEN IN THE LYONS FALLS MILL TAILRACE, NOVEMBER 2006

Location	Velocity (fps)		Depth (ft)	
Cross Section (XS)	Average	Maximum	Average	Maximum
XS 1	1.35	3.02	4.9	14.0
XS 2	1.24	2.72	5.9	14.0
XS 3	0.66	2.03	7.4	16.5
XS 4	0.72	2.72	11.6	20.0
XS 5	0.59	2.78	9.5	21.0
XS 6	0.49	4.07	12.2	27.0
Average (all XS's)	0.84	-	8.6	-
Maximum (all XS's)	4.07	-	27.0	-

In general, it appears from the habitat mapping survey that physical habitat for walleye and smallmouth bass spawning habitat exists in the tailrace. The primary section of usable habitat for spawning is likely the large cobble-boulder area on the east bank of the river opposite the area proposed for construction (XS 5 and XS 6). However, survey data from XS 5 and XS 6 indicate that the water depth over the cobble-boulder substrate during high flows drops off quickly so that the extent of any usable habitat is likely limited. Further, these two species comprised a relatively small percentage of the overall fish community (smallmouth bass – 2.5%, walleye – 0.5%), indicating that their prevalence in the tailrace is limited.

Benthic Macroinvertebrates

NBLF conducted a baseline survey of benthic macroinvertebrates pursuant to recommendations from the NYSDEC. The results of the assessment indicated that the overall benthic macroinvertebrate community is in excellent condition. See Section E.2.2, Report on Water Use and Quality, for details pertaining to the results of the benthic macroinvertebrate study.

Angler Use Survey

NBLF performed an angler use survey in 2007 to assess fishing pressure and recreational fishing at the site. Use data were obtained daily at three sites at Lyons Falls Mill: the canoe launch in the tailrace, the boat launch in the impoundment, and the Lyons Falls Picnic Area located upstream of the impoundment at the Lyons Falls Community Park. Throughout the study period

(April 2, 2007 through October 16, 2007), a total of 413 anglers were observed in Lyons Falls Mill, either in the tailrace or in the impoundment. Average angler use at the site was 2.6 anglers per day. It appears from the results of this survey that both the tailrace and impoundment are fished regularly during the open water fishing season.

Fish Impingement and Entrainment Study

In 2015, NBLF conducted a fish entrainment and impingement study of the proposed Lyons Falls Mill redevelopment. The study was based on species data from 2006 fisheries sampling, historic data from the NYSDEC, and other available sources of information regarding the fish community in the vicinity of Lyons Falls. For this study, a blade-strike analysis was conducted using the Advanced Hydro Turbine model developed by the U.S. Department of Energy, and entrainment risk was evaluated using Electric Power Resource Institute (EPRI) database and location-specific fisheries data and design information. Target species selected for this study and their percent relative composition (RC%) are presented in Table E.2-8.

TABLE E.2-8
TARGET SPECIES AND PERCENT RELATIVE COMPOSITION

Fish Species	Lyons Falls to North Lake - NYSDEC 1992		Lyons Falls Impoundment - NBLF 2006		Combined	
	N	RC%	N	RC%	N	RC%
Black Crappie	0	0.00	1	1.00	1	0.23
Brown Bullhead	10	2.95	15	15.00	25	5.83
Brown Trout	24	7.08	0	0.00	24	5.59
Chain Pickerel	24	7.08	21	21.00	45	10.49
Golden Shiner	8	2.36	17	17.00	25	5.83
Largemouth Bass	0	0.00	3	3.00	3	0.70
Log Perch	0	0.00	2	2.00	2	0.47
Longnose dace	4	1.18	0	0.00	4	0.91
Margined madtom	8	2.36	0	0.00	8	1.86
Northern hog sucker	12	3.54	0	0.00	12	2.80

Fish Species	Lyons Falls to North Lake - NYSDEC 1992		Lyons Falls Impoundment - NBLF 2006		Combined	
	N	RC%	N	RC%	N	RC%
Pumpkinseed	16	4.72	13	13.00	29	6.76
Rock Bass	53	15.63	1	1.00	54	12.59
Smallmouth Bass	45	13.27	2	2.00	47	10.96
Spottail Shiner	6	1.77	5	5.00	11	2.56
Tessellated darter	6	1.77	0	0.00	6	1.40
White Sucker	61	17.99	10	10.00	71	16.55
Yellow Perch	6	1.77	10	10.00	16	3.73

Table E.2-9 presents the minimum size of target species that would be excluded by the proposed trashracks, including the proposed trashracks with 3-inch, clear-bar spacing and the seasonal, full-depth trashrack overlays with 1-inch, clear-bar spacing.

The entrainment analysis concluded that the maximum size (length) of fish entrained through trashracks with 3-inch, clear-bar spacing is expected to be 22 inches. The average survival rate of fish entrained under these conditions is 86.29 percent. The analysis conducted for the seasonal, full-depth trashrack overlays with 1-inch, clear-bar spacing indicated that all fish greater than 11 inches in length would be excluded by the trashrack overlays. A total of 92.84 percent of fish entrained when the seasonal overlays are installed are expected to survive. Table E.2-10 summarizes the potential entrainment risk for target species by month.

TABLE E.2-9
TRASHRACK EXCLUSION

Common Name	Scaling Factor for Body Width[1]	Maximum Reported Size (in)[2]	Minimum Size Excluded by a Trashrack Clear Spacing of 3 in*	Minimum Size Excluded by a Trashrack Clear Spacing of 1 in*
Black Crappie	0.099	12	NE	10
Brown Bullhead	0.166	14	NE	6
Brown Trout	0.118	20	NE	8
Chain Pickerel	0.088	20	NE	11
Golden Shiner	0.105	10.5	NE	10
Largemouth Bass	0.134	25	22	7
Logperch	0.105	7.5	NE	NE
Longnoce Dace	0.139	7	NE	NE
Magined Madtom	0.151	6	NE	7
Northern Hog Sucker	0.146	22.5	21	7
Pumpkinseed	0.124	10	NE	8
Rock Bass	0.156	10	NE	6
Smallmouth Bass	0.128	24	NE	8
Spottail Shiner	0.140	5.8	NE	NE
Tessellated Darter	0.139	3.6	NE	NE
White Sucker	0.146	25	21	7
Yellow Perch	0.114	14	NE	9

[1] Scaling factor expresses body width as a proportion of total length (TL) based on proportional measurements for the target/surrogate species in Smith (1985).

[2] Maximum size estimated or reported sizes from NYSDEC (2015) and Smith (1985).

*NE = not excluded; all size classes could physically pass through trashracks based on maximum reported sizes.

TABLE E.2-10
POTENTIAL ENTRAINMENT RISK

Target Species	January	February	March	April	May	June	July	August	September	October	November	December
Black Crappie	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Brown Bullhead	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Brown Trout	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Chain Pickerel	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Golden Shiner	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low	Low
Largemouth Bass	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Logperch	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Longnoce Dace	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Magined Madtom	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Northern Hog Sucker	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Pumpkinseed	Low	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low
Rock Bass	Low	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low-Medium	Low	Low
Smallmouth Bass	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Spottail Shiner	Low	Low	Low	Low	Low-Medium	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low
Tessellated Darter	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
White Sucker	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low	Low	Low
Yellow Perch	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low	Low	Low

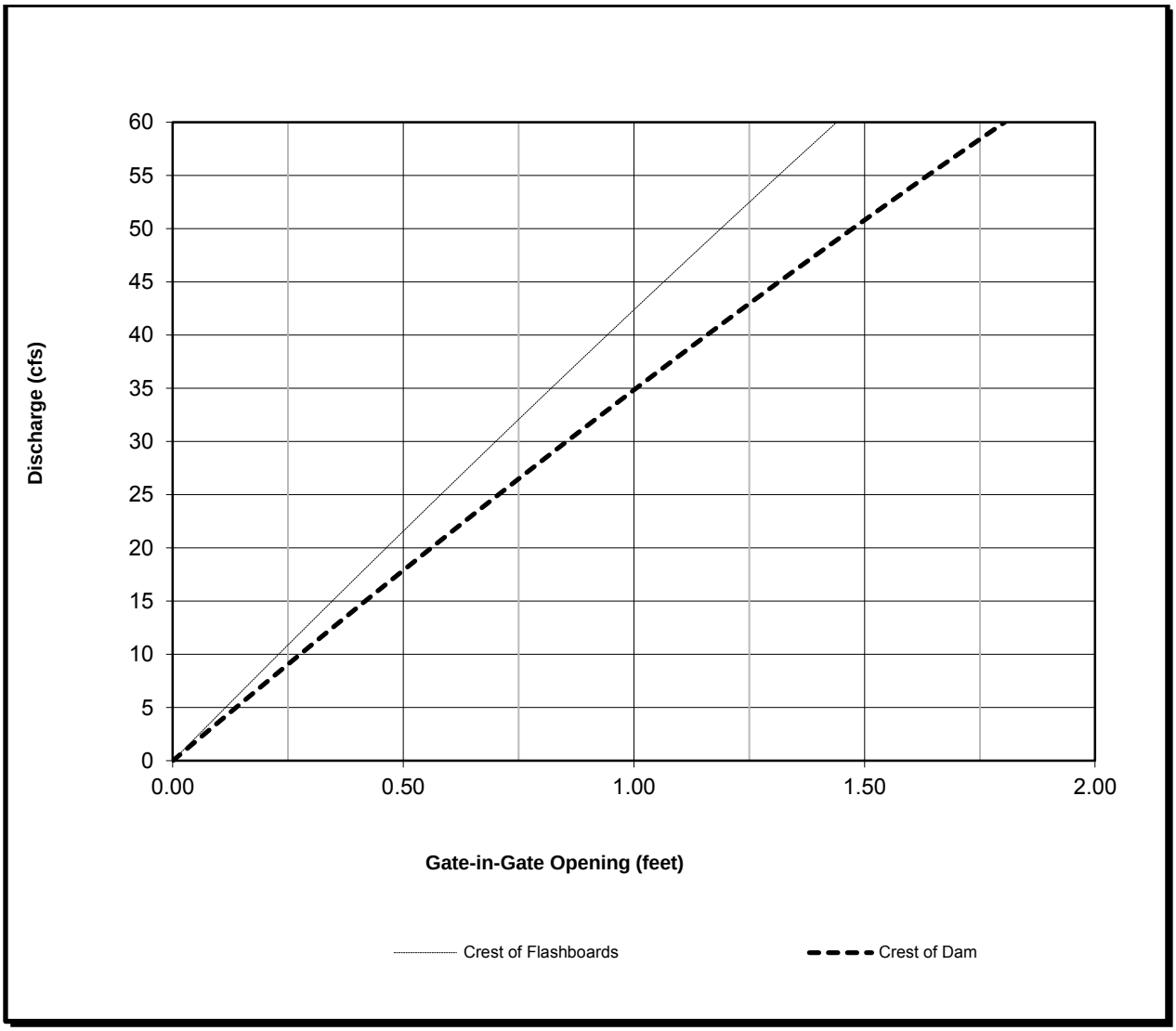
Downstream Fish Movement Assessment

Based on consultation with the NYSDEC, USFWS, TU, and other stakeholders, NBLF identified a target seasonal minimum flow of 45 cfs to provide for downstream fish movement from March 15 through November 30, annually. NBLF conducted a desktop assessment in 2015 to develop general layout and performance concepts for alternative downstream fish movement. NBLF's analysis was based on a proposed "gate-in-gate" concept that would utilize a smaller bottom-opening gate within the new debris sluice gate. This concept has been successfully utilized to provide for downstream fish movement flows at other similar hydroelectric projects in New York State, including projects on the Raquette River. The specific performance criteria were:

- Provide a 45 cfs downstream flow when the impoundment elevation is at crest of dam or crest of flashboards; and
- Maintain a minimum 1-foot-high gate opening to facilitate safe downstream fish movement through the gate.

NBLF developed a rating curve for the proposed fish movement flow release structure based on site parameters and orifice/weir flow calculations. For this analysis, NBLF assumed a gate-in-gate width of 3.0 feet and a debris sluice gate measuring 5.0 feet wide by 5.0 feet high. The rating curve is presented in Figure E.2-21.

FIGURE E.2-21
LYONS FALLS MILL FISH MOVEMENT RELEASE STRUCTURE RATING CURVE



As shown in the rating curve, a 3.0-foot-wide, gate-in-gate would pass 45 cfs when open 1.1 feet and water surface elevation is at crest of flashboards (806.5 feet). A 3.0-foot-wide, gate-in-gate would pass 45 cfs when open 1.3 feet and water surface elevation is at crest of dam (804.3 feet).

As a component of the downstream fish movement assessment, NBLF also identified specific criteria for providing safe downstream movement routes for fish passing through the gate-in-gate release structure. These criteria are consistent with the criteria for safe downstream movement employed at other similar hydroelectric projects in New York State and include:

- Shaded areas downstream of gate-in-gate release structure to consist of plunge pools and connective channels;
- Pools and channels to be constructed using native rock and materials;
- Plunge pool depth equal to 25 percent of the applicable free-fall height; and
- Connective channel geometry to achieve at least 1.0 foot of flow depth.

Existing and Proposed PM&E Measures

Existing fisheries data and studies conducted by NBLF indicate a robust coolwater/coldwater fish community upstream and downstream from Lyons Falls Dam. The fishery includes game fish such as walleye, bass, and brown trout and is popular with anglers. With the exception of a few individual pH measurements, all sampling events indicated that DO and pH met or exceeded New York State water quality standards for Class C and Class C(T) waters. The fisheries and water quality data indicate that current run-of-river operations support a healthy fishery at Lyons Falls Mill. As such, NBLF proposes to continue to operate the facility in a run-of-river mode so that outflow from the impoundment is consistent with inflow for the protection of aquatic resources.

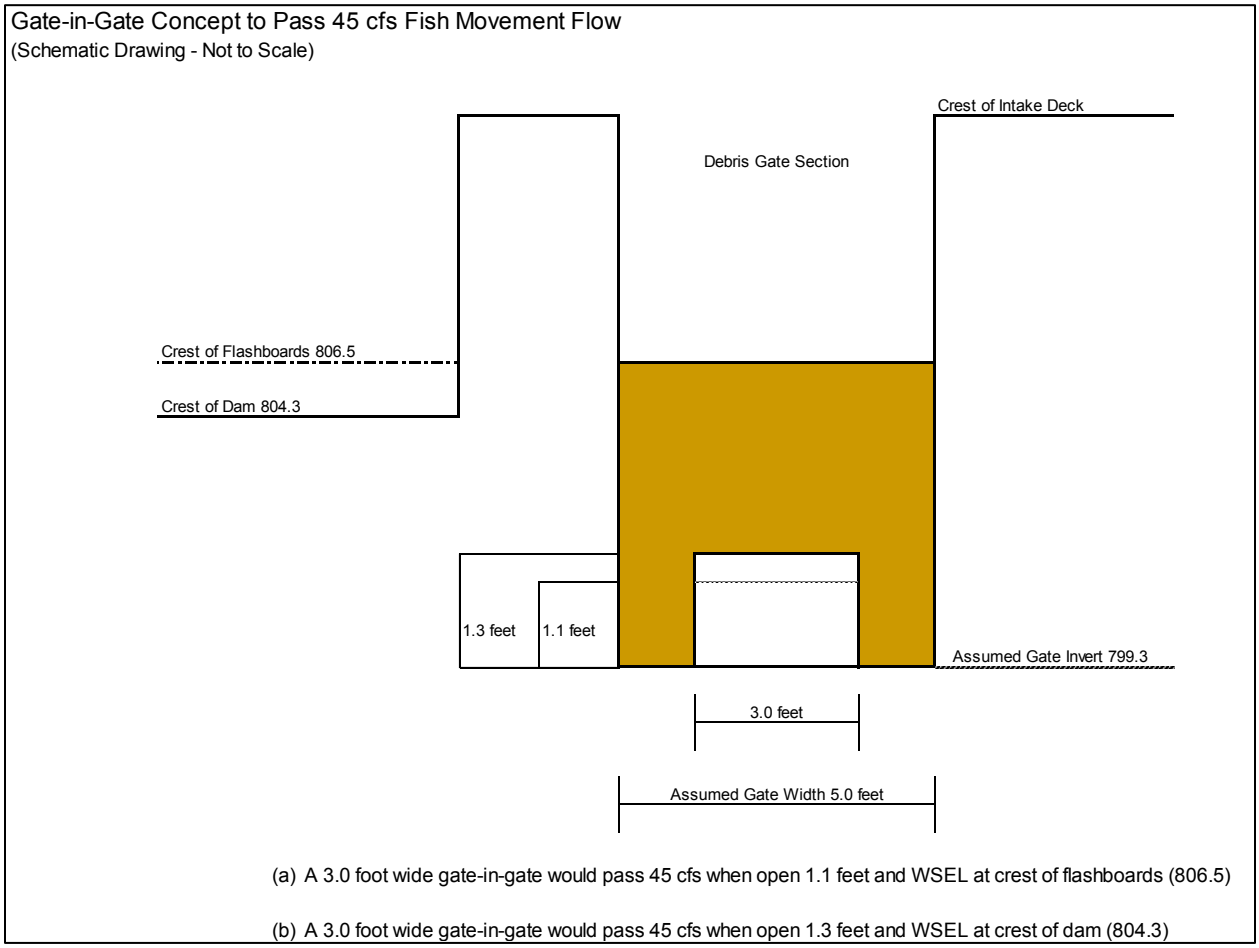
Trashracks at Lyons Falls Mill currently have a clear-bar spacing of 1 7/8 inches. However, the buildup of frazil ice on the trashracks and in the penstocks during winter months has been an ongoing operational concern at Lyons Falls Mill. Frazil ice buildup can significantly reduce flow through the trashracks and impact safety, operations, and generation. For this reason, the proposed new intake structure would utilize trashracks with a clear-bar spacing of three inches

and bars angled 30 degrees to flow direction, with approach velocities no greater than 2 fps. NBLF proposes to install seasonal one-inch trashrack overlays on an annual basis as a fish-protection measure. NBLF anticipates that the seasonal overlays would be installed as soon as possible following ice-out and removed in October. NBLF will notify NYSDEC following installation and removal of the seasonal trashracks.

The existing license for the Project does not require a continuous flow to be released from Lyons Falls Mill. In support of the redevelopment of Lyons Falls Mill, NBLF proposes to release seasonal minimum flows totaling 70 cfs downstream from the Lyons Falls Dam. Of the 70 cfs, a minimum of 45 cfs would be released annually from March 15 through November 30 to provide a fish movement continuity flow to facilitate the downstream movement of fish. NBLF proposes to release downstream fish movement flows through a gate-in-gate release structure that would utilize a smaller bottom-opening gate within the new debris sluice gate. The gate-in-gate structure would provide a 45 cfs downstream flow when the impoundment elevation is at crest of dam or crest of flashboards and maintain a minimum 1-foot-high gate opening to facilitate safe downstream fish movement through the gate. A conceptual design of the gate-in-gate structure is presented in Figure E.2-22. NBLF will provide designs and specifications for the gate-in-gate flow release structure for NYSDEC, USFWS, and Commission approval following FERC's order amending the license and prior to the start of construction activities.

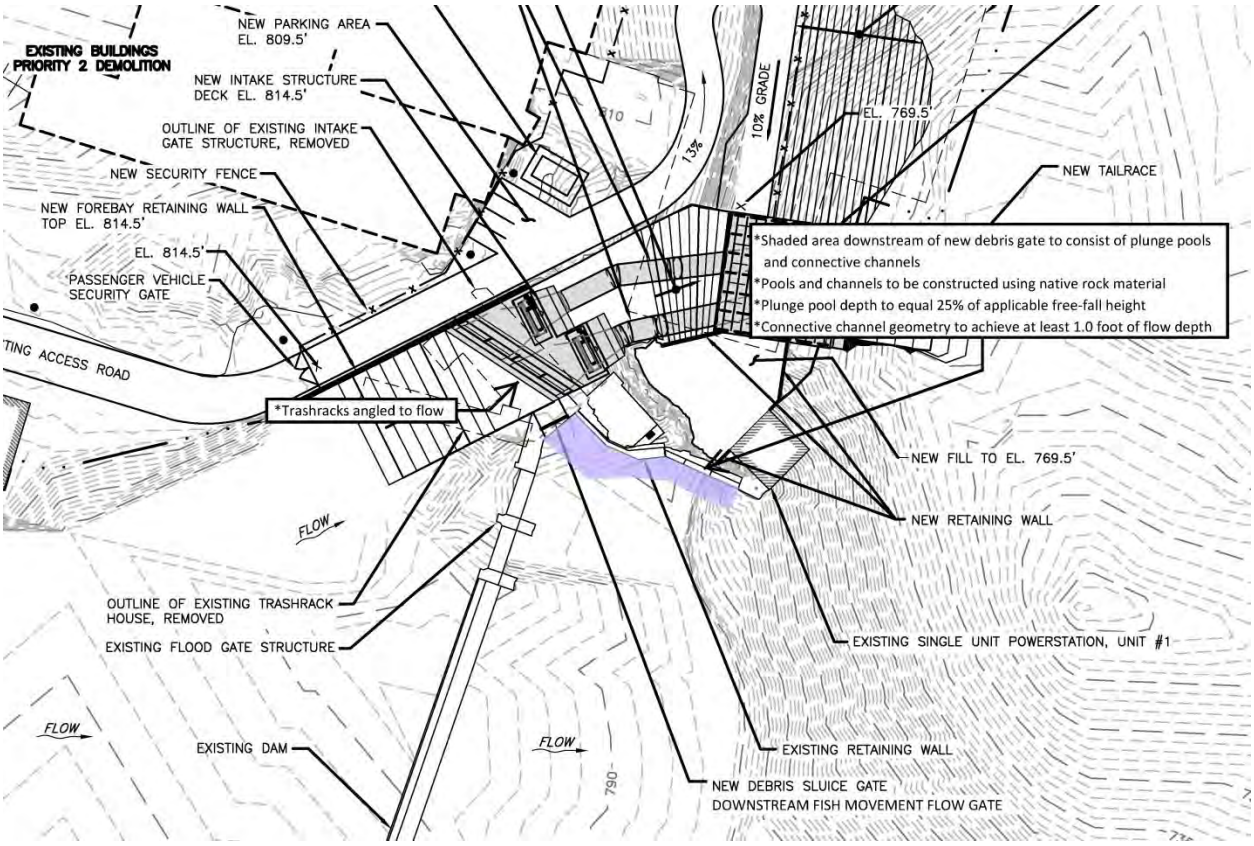
NBLF is aware that NYSDEC adopted a new invasive species regulation (6 NYCRR Part 575) in July 2014, which became effective on March 10, 2015. The goal of this regulation is to help control invasive species through reducing the introduction of new invasive species and limiting the spread of existing populations. NBLF will prepare an Invasive Species Management Plan to include invasive aquatic species in accordance with 6 NYCRR Part 575 for NYSDEC and Commission approval following FERC's order amending the license and prior to the start of construction activities.

FIGURE E.2-22
CONCEPTUAL DESIGN FOR GATE-IN-GATE FLOW RELEASE STRUCTURE



NBLF also proposes to provide a safe downstream movement route for fish passing through the gate-in-gate release structure. As appropriate, NBLF will construct plunge pools and connective channels downstream from the gate-in-gate structure to convey fish safely from the impoundment to the downstream reach below Lyons Falls Dam. Pools and channels will be constructed using native rock and material, and plunge pool depth will be equal to 25 percent of the applicable free-fall height. Connective channel geometry will be designed to achieve at least 1.0 foot of flow depth at 45 cfs of flow. A conceptual design for the downstream fish conveyance plunge pool/connective channel is presented in Figure E.2-23. NBLF will provide final designs and specifications for the downstream fish conveyance route for NYSDEC, USFWS, and Commission approval following FERC's order amending the license and prior to the start of construction activities.

FIGURE E.2-23
CONCEPTUAL DESIGN FOR DOWNSTREAM FISH CONVEYANCE



Construction of the new Lyons Falls Mill powerhouse will require temporary cofferdams and a cessation of flow through the intake structure, penstocks, and existing generating units. During the construction period, NBLF will pass all flows over the spillway and/or through the existing flood gates. Construction will also require excavation in the existing tailrace area to accommodate installation of the new units and draft tubes. The tailrace habitat study indicates that potential spawning habitat is located along the river right shoreline downstream from the Lyons Falls Mill Dam, opposite from the tailrace. Therefore, NBLF does not expect any impacts on potential spawning habitat as a result of temporary cofferdams and excavation.

As described above, NBLF will prepare a Construction Soil Erosion and Sedimentation Control Plan and a TCEAP in support of reducing potential temporary impacts during construction activities.

NBLF has consulted with the NYSDEC regarding the need for a Section 401 WQC for the proposed amendment. The NYSDEC has indicated that a new or modified Section 401 WQC will be required for the proposed facilities which would incorporate the provisions from the February 12, 1985, Section 401 WQC and such new provisions as may be appropriate, using the current format. Based on this consultation and pursuant to 18 CFR §4.34(b)(5) of the Commission's regulations, NBLF will apply for a Section 401 WQC no later than 60 days following the Commission's notification that this amendment application is ready for environmental analysis. Construction and operation of Lyons Falls Mill will comply with the terms of any new or modified Section 401 WQC issued by NYSDEC for this proposed amendment.

Continued or Incremental Impacts on Fisheries

NBLF is not aware of any ongoing impacts on fisheries related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any new or incremental impacts. Information collected by NBLF indicates that fishery resources at Lyons Falls Mill have not been adversely affected by existing operations. Existing aquatic habitat, benthic macroinvertebrate communities, water quality (e.g., dissolved oxygen, water temperature, and pH), and the existing fish community composition provide evidence of a functional aquatic ecosystem. The fishery is popular with anglers and supports a number of game fish species.

NBLF proposes to provide a seasonal (March 15 – November 30) minimum fish movement flow of 45 cfs downstream from the dam, operate the Development in a run-of-river mode, and install seasonal trashrack overlays at the intakes. Table E.2-11 summarizes the protection and downstream fish movement measures proposed by NBLF in this amendment application.

TABLE E.2-11
SUMMARY OF PROPOSED PROTECTION AND DOWNSTREAM FISH MOVEMENT MEASURES

Measure	Details
Impoundment fluctuation	Continue existing run-of-river operations.
Intake Structure	New intake structure, including trashracks with 3-inch clear-bar spacing; angled 30-degrees to flow direction; with approach velocities no greater than 2 fps.
Seasonal Overlays	Seasonal full-depth trashrack overlays with 1-inch clear-bar spacing; installed annually immediately following ice-out; removal in October.
Downstream Fish Movement	Seasonal downstream fish movement structure, including a 45 cfs via gate-in-gate instream flow release structure. Pools and channels constructed using native rock and material. Plunge pool depth equal to 25 percent of the applicable free-fall height.

In addition to these measures, NBLF also proposes to release an additional 25 cfs for aesthetic purposes between May 1 and October 31, annually. The protection and downstream fish movement measures proposed by NBLF, combined with the aesthetic flow provision, are expected to have incremental benefits that would protect and enhance the fishery and macroinvertebrate communities downstream from Lyons Falls Mill.

Due to the small percentage of walleye and smallmouth bass observed in the tailrace during 2006 fisheries sampling, NBLF does not expect impacts to these species. The relatively low numbers of all life stages of these species indicate that they make up only a small percentage of the fish community at Lyons Falls. Further, results of the tailrace spawning habitat survey indicate that, although conditions for spawning (substrate, depth, and velocity) do exist for these two species, spawning habitat and substrate is limited in scope.

The most suitable spawning habitat for walleye and smallmouth bass is within the large cobble-boulder depositional zone just below the falls on the east side of the river. The proposed upgrade would not significantly alter flow patterns at the site (i.e., all water diverted for power production would continue to be discharged into the tailrace at or near the present discharge location). The spawning habitat area would not be impacted by construction activities associated with the proposed upgrade.

Any potential impacts to turbidity and sediment mobilization would be short-term and occur only during construction-related activities. Measures to prevent erosion and sediment mobilization would be implemented in accordance with the Construction Soil Erosion and Sedimentation Control Plan prepared in accordance with NYSDEC technical guidelines and pursuant to the requirements of the Section 401 WQC.

E.2.4 Report on Terrestrial Wildlife

The proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the former Georgia-Pacific paper mill located along river left. The grounds of the paper mill are characterized by industrial buildings and structures in various states of disrepair. The remnant facilities associated with the mill do not offer substantive or quality upland terrestrial habitat, and the area is considered an industrial site.

Lands surrounding Lyons Falls Mill provide a variety of upland habitats that are utilized by numerous species of mammals, birds, and amphibians typical of the northeastern United States (Georgia-Pacific 1983). Wildlife and associated habitat are reported as stable[16]. Wetland and riparian habitat is limited in extent due in part to the geographic nature of area, which consists of exposed bedrock and steep slopes. Wildlife resources observed or with the potential to exist in the vicinity of Lyons Falls Mill are discussed below.

Mammals

A number of the mammals that may occur within the vicinity of Lyons Falls Mill are associated with semi-open woods that are often interspersed with development. The most common of these

[16] Personal communication, Bill Gordon, NYSDEC, Regional Wildlife Biologist, April 2006.

include raccoon, red fox, striped skunk, cottontail rabbit, chipmunk, opossum, and the New England cottontail rabbit (Georgia-Pacific 1983; Degraaf and Yamasaki 2001). Small mammal surveys conducted by Erie Boulevard Hydropower, L.P. for hydroelectric projects located downstream of Lyons Falls Mill indicate that white-footed mice, short-tailed shrews, voles, and chipmunks are also common in the Black River Valley (Erie Boulevard 2006).

Other mammal species that may occur at Lyons Falls Mill include beaver, muskrat, white-tailed deer, coyote, grey fox, and river otter. A number of bat species also have the potential to occur, including the Indiana bat, northern long-eared bat, silver-haired bat, big brown bat, red bat, and the hoary bat (Degraaf and Yamasaki 2001).

Birds

The NYSDEC reports that 79 avian species potentially breed in the vicinity of Lyons Falls Mill. Of those, 38 are confirmed, 4 are probable, and 37 are possible. A number of different taxonomic groups are reported in the vicinity of Lyons Falls Mill including wading birds, shorebirds, songbirds, hawks, raptors, and waterfowl. Annual Audubon Christmas bird counts in the region are tabulated from sightings in Watertown and Rome, New York, both of which are approximately 35 miles from Lyons Falls Mill. During 2005, 40 bird species were reported from Rome and 47 species were reported from Watertown. Species observations were comprised of various taxa including raptors, waterfowl, songbirds, and game birds (National Audubon Society 2006).

Common perching birds including veery, yellow-rumped warbler, American robin, and black-capped chickadee were reported at Lyons Falls Mill as part of studies conducted in the 1980s in support of relicensing the Project (Georgia-Pacific 1983). Because forested upland habitat is common, lands adjacent to Lyons Falls Mill likely support numerous other species of song and perching birds. According to Georgia-Pacific, waterfowl use was limited by a lack of emergent cover as well as rapidly moving water. Habitat for waterfowl is limited to smaller pools located along portions of the Moose River, which provide resting areas for migrating waterfowl (Georgia-Pacific 1983). Similarly, the area proposed for the new powerhouse is characterized by

industrial development, a lack of vegetative cover, and fast-flowing water, making the site generally unsuitable for waterfowl use.

Reptiles and Amphibians

Reptile and amphibian species with the potential to occur in the vicinity of Lyons Falls Mill are based on the known ranges of common and uncommon species. Species with the potential to occur in the area include the Jefferson salamander, blue spotted salamander, spotted salamander, eastern newt, eastern red-backed salamander, dusky salamander, mountain dusky salamander, northern two-lined salamander, and mudpuppy. Frog species that may occur include the American bullfrog, green frog, pickerel frog, northern leopard frog, mink frog, wood frog, gray tree frog, Cope's grey tree frog, spring peeper, and the American toad. Habitat requirements vary for those species highly dependent on aquatic habitat such as the mink frog to those such as the wood frog, which require forested uplands (Degraaf and Yamasaki 2001).

Reptiles that may occur include common northern New York species including the snapping turtle, painted turtle, spotted turtle, and wood turtle. Snakes that may occur include the milk snake, common garter snake, northern water snake, and eastern ringneck.

Studies Conducted by NBLF

There were no study recommendations related to terrestrial wildlife resources submitted by the resource agencies or other interested parties in support of the upgrade proposed in 2006 or in relation to the present application. Therefore, NBLF did not perform any terrestrial wildlife resources studies. NBLF believes that existing information is sufficient to characterize terrestrial wildlife resources in the vicinity of Lyons Falls Mill. Studies related to rare, threated, and endangered species are discussed in Section E.2.6, below.

Existing and Proposed PM&E Measures

The existing license does not include specific PM&E measures related to terrestrial wildlife resources. Proposed redevelopment of Lyons Falls Mill would take place within the footprint of the former Georgia-Pacific paper mill located along river left. The paper mill is characterized as a mixed-use industrial site that includes standing and collapsed buildings, concrete and asphalt

roadways, manufacturing equipment, and storage tanks. There is no significant or high-quality terrestrial habitat within the footprint of the former paper mill. NBLF believes that limiting construction to the footprint of the paper mill is an effective measure to avoid construction-related impacts on terrestrial wildlife habitat.

Lyons Falls Mill currently operates in a run-of-river mode. NBLF proposes to continue run-of-river operations following redevelopment. Continued run-of-river operations are expected to maintain existing shoreline habitat for terrestrial species.

Continued or Incremental Impacts on Terrestrial Wildlife

NBLF is not aware of any ongoing impacts on terrestrial wildlife related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any new or incremental impacts on these resources. Construction activities associated with the proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the existing paper mill located on river left. The area is currently characterized by existing industrial buildings and structures associated with the mill in various states of disrepair. Given the industrial nature of the site, lack of existing vegetation, and absence of cover, the proposed construction footprint does not offer substantive wildlife habitat.

As noted above, NBLF proposes to continue run-of-river operations at Lyons Falls Mill. In addition, NBLF will continue to own the lands presently under its control and does not intend any new development on undeveloped lands. NBLF expects that run-of-river operations and conservation of its undeveloped land will continue to maintain existing terrestrial habitats along the impoundment and upstream reach of the Moose and Black Rivers.

Any potential impacts to turbidity and sediment mobilization would be short-term and occur only during construction-related activities. Measures to prevent erosion and sediment mobilization would be implemented in accordance with the Construction Soil Erosion and Sedimentation Control Plan prepared in accordance with NYSDEC technical guidelines and pursuant to the requirements of any new or modified Section 401 WQC.

E.2.5 Report on Botanical Resources

The proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the former Georgia-Pacific paper mill located along river left. The mill is considered an industrial site and does not support substantive or quality botanical resources. The following information describes botanical resources within the vicinity of Lyons Falls Mill.

Upland Habitats

The forests within north central New York and those within the vicinity of Lyons Falls Mill are considered to be transitional, represented by a mix of coniferous species from the north and broadleaf deciduous species from the south (Benyus 1989). Forest cover types include stands of coniferous evergreens, deciduous broadleaf trees, and mixed stands that are interspersed with shrub-sapling edge habitat, especially in recently disturbed areas. The most prominent stands are a mix of white pine, yellow birch, eastern hemlock, black cherry, red maple, sugar maple, and northern white cedar (Georgia-Pacific 1983). These stands are dominated by sugar maple, beech, and yellow birch (Degraaf and Yamasaki 2001). Sub-dominant stands include white pine and hemlock, which are typically found in areas located along steeper portions of the riverbank. The understory consists of common ferns, trillium, and gold thread (Georgia-Pacific 1983). Predominant edge and understory sapling species include striped maple and witch hazel (Georgia-Pacific 1983). Riparian vegetation within areas adjacent to wetlands along the Moose River includes white pine, American beech, red oak, white birch, eastern hemlock, and bracken fern.

Outside of the industrial mill compound on the west bank of the Black River, the dominant tree species are oak, maple, sumac, and ash. This bank contains a flood plain terrace and a much more gradual slope than the eastern side of the river.

Riparian Habitat

The development of shoreline vegetation is limited near Lyons Falls by shallow bedrock soils, exposed bedrock, boulder, and sandy areas. Shoreline areas that do support vegetation contain shrub species including speckled alder, low-bush blueberry, and honeysuckle. The majority of

these areas are inundated during periods of high water (Georgia-Pacific 1983). Riparian vegetation below the dam includes red oak, hemlock, witch hazel, bigtooth aspen, white pine, and Scotch pine.

Wetland Habitat

In January 2015, NBLF conducted a review of the USFWS's National Wetland Inventory (NWI) and the NYSDEC's GIS wetland maps database. The results of this study are summarized in the following section.

Studies conducted by NBLF

NBLF performed a review of the NYSDEC GIS wetlands database and NWI maps prepared by the USFWS. The NYSDEC's GIS database did not identify any wetlands within the vicinity of Lyons Falls Mill. Based on a review of the NWI data, six classes of wetlands have been mapped near Lyons Falls. These wetlands are presented in Figure E.2-24. A description of the wetlands and their classification according to Cowardin et al. 1979 is presented in Table E.2-12.

FIGURE E.2-24
NWI-MAPPED WETLANDS IN THE VICINITY OF LYONS FALLS MILL

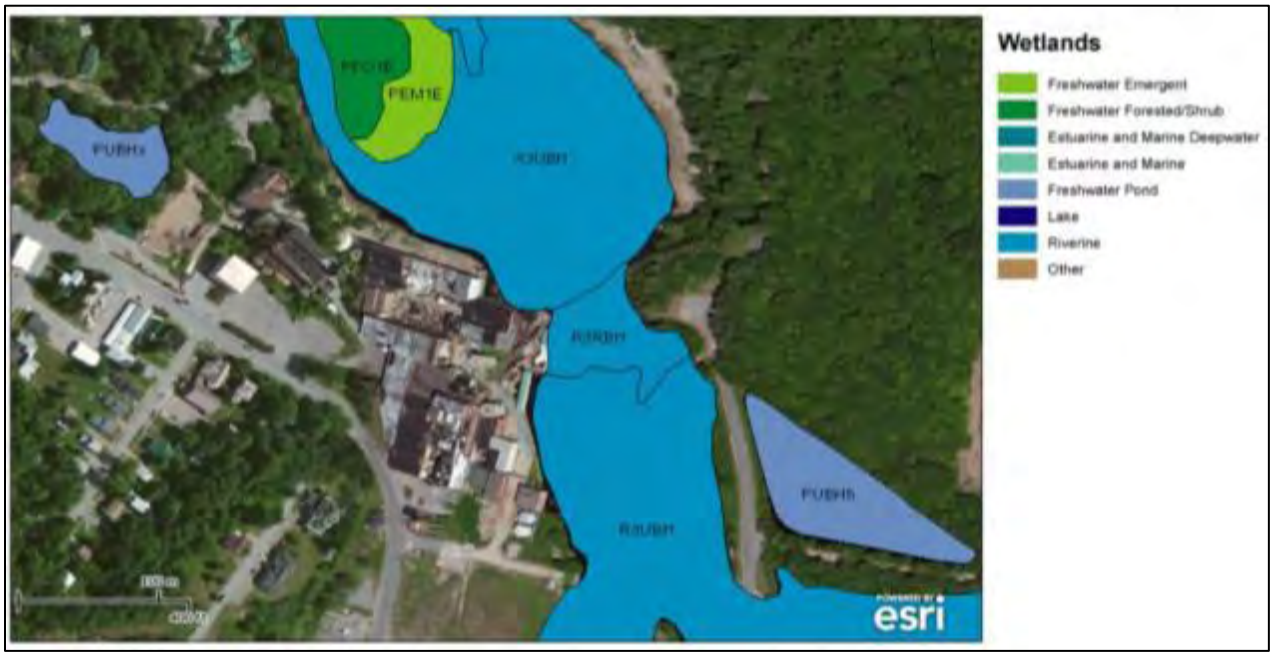


TABLE E-2.12
NWI-MAPPED WETLANDS IN THE VICINITY OF LYONS FALLS MILL

Wetlands Code	System	Class	Wetland Type	Cowardin	General Description
PEM1E	Palustrine	Emergent	Freshwater Emergent wetland	Palustrine emergent	Herbaceous march, fen, swale and wet meadow. Seasonally Flooded / Saturated
PFO1E	Palustrine	Forested	Freshwater-Forested and Shrub wetland	Palustrine forested and/or Palustrine shrub	Forested swamp or wetland shrub bog or wetland. Seasonally Flooded
PUBHh	Palustrine	Unconsolidated Bottom	Freshwater Pond	Palustrine unconsolidated bottom, Palustrine aquatic bed	Pond / Diked or Impounded
PUBHx	Palustrine	Unconsolidated Bottom	Freshwater Pond	Palustrine unconsolidated bottom, Palustrine aquatic bed	Pond / Excavated
R3RBH	Riverine	Rock Bottom	Riverine	Riverine wetland and deep water	River or stream channel / Permanently Flooded
R3UBH	Riverine	Unconsolidated Bottom	Riverine	Riverine wetland and deep water	River or stream channel / Permanently Flooded

Existing and Proposed PM&E Measures

The existing license does not include specific PM&E measures related to botanical resources. Proposed redevelopment of Lyons Falls Mill would take place within the footprint of the former Georgia-Pacific paper mill located along river left. The paper mill is characterized as a mixed-use industrial site that includes standing and collapsed buildings, concrete and asphalt roadways, manufacturing equipment, and storage tanks. There are no significant or high-quality upland, riparian, or wetland habitat or botanical resources within the footprint of the former paper mill. NBLF believes that limiting construction to the footprint of the paper mill is an effective measure to avoid construction-related impacts on botanical resources.

Lyons Falls Mill currently operates in a run-of-river mode. NBLF proposes to continue run-of-river operations following redevelopment. Continued run-of-river operations are expected to maintain existing distribution of botanical resources in upland, shoreline, and wetland habitats.

As described above, NBLF will prepare a Construction Soil Erosion and Sedimentation Control Plan and a TCEAP.

NBLF is aware that NYSDEC adopted a new invasive species regulation (6 NYCRR Part 575) in July 2014, which became effective on March 10, 2015. The goal of this regulation is to help control invasive species through reducing the introduction of new invasive species and limiting the spread of existing populations. NBLF will prepare an Invasive Species Management Plan to include invasive botanical species in accordance with 6 NYCRR Part 575 for NYSDEC and Commission approval following FERC's order amending the license and prior to the start of construction activities.

Continued or Incremental Impacts on Botanical Resources

NBLF is not aware of any ongoing impacts on botanical resources related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any new or incremental impacts on these resources. Construction activities associated with the proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the existing paper mill located on river left. The area is currently characterized by existing industrial buildings and structures associated with the mill in various states of disrepair. Given the industrial nature of the site, there is a general lack of botanical resources within the proposed construction footprint.

As noted above, NBLF proposes to continue run-of-river operations at Lyons Falls Mill. NBLF expects that run-of-river operations will continue to maintain existing upland, riparian, and wetland habitats along the impoundment and upstream reaches of the Moose and Black rivers.

Any potential impacts to turbidity and sediment mobilization would be short-term and occur only during construction-related activities. Measures to prevent erosion and sediment mobilization would be implemented in accordance with the Construction Soil Erosion and Sedimentation Control Plan prepared in accordance with NYSDEC technical guidelines and pursuant to the

requirements of any new or modified Section 401 WQC. NBLF will follow BMPs and appropriate technical guidance for shoreline stabilization and revegetation (as appropriate) related to construction of the new facilities.

E.2.6 Report on Threatened and Endangered Species

Federally Listed Species

In January 2015, NBLF consulted with the USFWS to identify threatened and endangered species or critical habitat that may occur within the vicinity of Lyons Falls Mill. By letter dated January 17, 2015, the USFWS identified one endangered species, the Indiana bat, and one proposed endangered species, the northern long-eared bat that may be present in the vicinity of Lyons Falls Mill. On April 1, 2015, the USFWS listed the northern-long eared bat as a threatened species. Threatened or endangered species identified by the USFWS as potentially occurring in the vicinity of Lyons Falls Mill are Table E.2-13. There is no critical habitat within the vicinity of Lyons Falls Mill.

TABLE E.2-13
FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES THAT MAY OCCUR WITHIN THE VICINITY OF LYONS FALLS MILL

Species	Status
Indiana bat	Endangered
Northern long-eared bat	Threatened

Consultation correspondence with the USFWS is presented in Appendix B to this amendment application.

State-Listed Species

The NYSDEC lists nineteen species of fish, two species of amphibians, twenty species of birds, eleven species of mammals, twelve species of reptiles, and fifteen species of insects as either threatened or endangered in New York (NYSDEC Endangered Species Program 2015).

By letter dated January 23, 2015, NBLF reinitiated consultation with the New York Natural Heritage Program (NYNHP) to identify information regarding the following within the vicinity of Lyons Falls:

- State-listed threatened or endangered species;
- Species proposed for listing as threatened or endangered, or species of concern;
- Designated and proposed critical habitat; and
- Candidate species.

By letter dated February 20, 2015, the NYSDEC notified NBLF that there are no state-listed, candidate, or proposed species or critical habitat in the vicinity of Lyons Falls Mill. Consultation correspondence is presented in Appendix B of this amendment application.

Studies Conducted by NBLF

NBLF has consulted with the NYNHP and USFWS to identify any threatened or endangered species that may occur within the vicinity of Lyons Falls Mill. NBLF believes that such information is sufficient to characterize threatened and endangered species.

Existing and Proposed PM&E Measures

The existing license does not include specific PM&E measures related to threatened and endangered species. Proposed redevelopment of Lyons Falls Mill would take place within the footprint of the former Georgia-Pacific paper mill located along river left. The paper mill is characterized as an abandoned industrial site that includes standing and collapsed buildings, concrete and asphalt roadways, manufacturing equipment, and storage tanks. There is no significant or high-quality habitat within the footprint of the former paper mill. NBLF believes that limiting construction to the footprint of the paper mill is an effective measure to avoid construction-related impacts on threatened or endangered species, should any be present.

NBLF recognizes that both the Indiana bat and northern long-eared bat may be present within the vicinity of Lyons Falls Mill. The Indiana bat is a federally listed endangered species and the northern long-eared bat is federally listed as threatened. Although NBLF does not anticipate any impacts on the Indiana bat or northern long-eared bat as a result of redevelopment or operations,

NBLF proposes to develop an Indiana Bat and Northern Long-eared Bat Management Plan (Bat Management Plan) for Lyons Falls Mill. The Bat Management Plan will be developed in accordance with guidance from the USFWS, including the Northern Long-eared Bat Interim Conference and Planning Guidance (USFWS 2014). The Plan will be submitted for FERC and USFWS approval following FERC's order amending the license and prior to the start of construction activities.

Lyons Falls Mill currently operates in a run-of-river mode. NBLF proposes to continue run-of-river operations following redevelopment. Continued run-of-river operations are expected to maintain existing upland, riparian, open-water, and wetland habitat to support terrestrial and aquatic species.

Continued or Incremental Impacts on Threatened and Endangered Species

NBLF is not aware of any ongoing impacts on threatened or endangered species related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any new or incremental impacts on these resources. Construction activities associated with the proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the existing paper mill located on river left. The area is currently characterized as existing industrial buildings and structures associated with the mill in various states of disrepair. Given the industrial nature of the site, lack of existing vegetation, and absence of cover, the proposed construction footprint does not offer significant or high-quality habitat.

E.2.7 Report on Recreation Resources

The Moose and Black rivers provide many opportunities for outdoor recreation including canoeing, kayaking, angling, sightseeing, whitewater boating, and picnicking (FERC 1986; Erie Boulevard 2006). In this section, recreational resources in the vicinity of Lyons Falls Mill are primarily discussed on a regional scale.

Water-Based Recreational Activities

The Black River is primarily flat in the vicinity of Lyons Falls Mill (average gradient of 0.3 feet per mile) and, therefore, appropriate for both motorized and non-motorized boating. Public boat access is provided at five launch sites along the surrounding reach of the Black River, generally at intervals of 4 to 11 miles (NYSDEC 2007a). This section of the river is popular for canoeing and recreational kayaking, motor boating, and fishing.

Due to the hydrologic nature and riverbed substrate of the Moose River in the vicinity of Lyons Falls Mill, only non-motorized boating, canoeing, and kayaking occur. The "Bottom Moose River," between the towns of Fowlersville and the Gouldtown impoundment has an average gradient of 72 feet-per-mile with 12 major identified rapids over the course of a 3.6-mile segment (American Whitewater 2006; FERC 1986). The Bottom Moose River is also the location for the Moose River Festival, a three-day annual event in mid-October that draws hundreds of whitewater recreationists and numerous spectators to the area.

Angling is also a popular recreational activity along the Black and Moose rivers. Angling along the Black River near Lyons Falls Mill is primarily for brook, brown, and rainbow trout, smallmouth bass, chain pickerel, northern pike, rock bass, and walleye (NYSDEC 2005a). Fishing on the Moose River is primarily for trout, bass, pike, and pan fish (NYSDEC 2005a).

NBLF currently provides recreational access both upstream (impoundment) and downstream (tailrace) of Lyons Falls Mill to support water-related recreation activities. Recreational facilities at Lyons Falls Mill are discussed in additional detail below.

Portions of the Moose and Black rivers are designated under the New York State Wild, Scenic, and Recreational Rivers Act. Sections of both the Moose River and the Black River are identified as "scenic" by the State of New York. Approximately 15 miles of the Moose River, from the confluence of the South and Middle Branches to the boundary of Adirondack State Park, is designated a scenic waterway. The Black River is designated as scenic from the point where Farr Road crosses the river (approximately 8 miles upstream of Lyons Falls Mill) to the point where the river intersects the Adirondack Park boundary (NYSDEC 2005b). None of these sections are within the Lyons Falls Project boundary. The Black River was also designated as a

Blueway Trail by the New York State Department of State (NYSDOS) and Governor George Pataki in June 2005.

Land-Based Recreational Activities

Lewis County provides many opportunities for outdoor recreation. Locations for hiking, picnicking, sightseeing, biking, and other activities are provided by several state, county, and municipal parks, historic sites, and trails. Parks located near Lyons Falls Mill include Whetstone Gulf State Park, Singing Waters Picnic Area, and Whittaker Falls Park. Whetstone Gulf State Park is located on the eastern edge of the Tug Hill Plateau, approximately nine miles northwest of Lyons Falls Mill. The park offers a beach, camping, hunting, picnic tables, fishing access to Whetstone Creek, and miles of trails for hiking and cross-county skiing (New York State Parks 2007). Singing Waters Picnic Area is owned and operated by Lewis County and provides picnic facilities, sightseeing opportunities, and primitive camping located approximately four miles northeast of Lyons Falls Mill (Adirondack Regional Tourism Council 2006). Whittaker Falls Park, managed by the Town of Martinsburg, provides campsites, picnic facilities, swimming area, restrooms with showers, and two pavilions. The park is located approximately 10 miles northwest of Lyons Falls Mill (Adirondack Regional Tourism Council 2006).

More than 175,000 acres of public land in Lewis County is available for hunting, hiking, and fishing (Adirondack Regional Tourism Council 2006). Much of the public land in Lewis County is state forest land that is administered by the NYSDEC and the Bureau of State Land Management. State forests within close proximity to Lyons Falls include Otter Creek, Beartown, High Towers, and Lesser Wilderness. The Tug Hill Wildlife Management Area, west of Lyons Falls Mill, provides hiking, cross-country skiing and snowshoeing trails, bird watching opportunities, camping, hunting and trapping, and angling opportunities on 5,114 acres (NYSDEC 2007d).

Recreational Facilities Associated with Lyons Falls Mill

Existing recreational facilities at Lyons Falls Mill include boat access and portage routes, fishing, picnicking, walking, and sightseeing along the Moose and Black rivers (Figure E.2-25). Many of these sites have been improved over recent years by NBLF and previous owners to

provide recreational opportunities for local communities and visitors. An improved canoe/kayak access site downstream of the dam (Photo E.2-4 and Photo E.2-5) provides parking, a hand-carry boat launch, and angling access to the eastern shoreline of the Black River. NBLF also provides access to the impoundment with a gravel vehicle-access boat launch located just upstream of the confluence of the Black and Moose rivers (Photo E.2-6), located off of River Road. There is a carry-in boat access area on the Black River provided by NBLF, located approximately 1.5 miles upstream of the dam (FERC 1986).

In addition to these recreation sites, public access to Project lands is allowed. As such, informal recreation activities such as hunting, angling, hiking, and cross-country skiing occur at Lyons Falls Mill (FERC 1986). There is also an informal recreation access point and vehicle pull-out on the east side of Black River, just downstream of the dam, which allows local residents to access Lyons Falls directly.

Just upstream of Lyons Falls Dam on the Moose River is a canoe/kayak access site that provides portage opportunities around the Lyons Falls Dam. The upstream canoe access is connected to a downstream canoe/kayak access site via Lyons Falls Road.

The Lyons Falls Community Park, which was donated by the former licensee, Georgia-Pacific, to the Village of Lyons Falls, is located adjacent to Lyons Falls Mill on the Black River, upstream of the confluence with the Moose River (Figure E.2-25). The Park provides sports fields, a skating rink, and picnic facilities. This site is adjacent to but not within the Project boundary and is managed by the Village of Lyons Falls.

FIGURE E.2-25
RECREATIONAL SITES ASSOCIATED WITH LYONS FALLS MILL, VILLAGE OF LYONS FALLS, NEW YORK

Photo E.2-4. Canoe and kayak access parking area to the Black River below the Lyons Falls.

Photo E.2-5. Canoe and kayak access parking area to the Black River below Lyons Falls.

Photo E.2-6. Boat launch, picnic area, and fishing opportunities provided by NBLF at the Black River / Moose River confluence.

Recreation facilities on NBLF-owned property are managed and maintained by NBLF. However, fishing and hunting regulation and enforcement on these facilities are the responsibility of the NYSDEC. With respect to fishing, NYSDEC regulates fishing methods and devices, creel limits, selling and importing of fish and bait species, licensing and enforcement throughout New York (NYSDEC 2007b). Specific to Lyons Falls Mill, there are special black bass limits on the Black River and special trout regulations on both the Moose and Black rivers (NYSDEC 2007d).

The NYSDEC also regulates hunting, including waterfowl hunting, that may occur at Lyons Falls Mill. The NYSDEC regulates hunting methods and bag limits, licensing and enforcement, and sets allowable seasons for each species (NYSDEC 2007e).

Studies Conducted by NBLF

2007 Recreational Use Survey

In support of the upgrades proposed in 2006, NBLF conducted a recreational use survey throughout the 2007 recreation season to assess overall recreation use at the site, including angler use. Recreational facilities at Lyons Falls Mill were monitored by NBLF staff between May 6, 2007 and October 16, 2007. Monitoring was conducted on 147 of 164 days within the study period (90 percent) and included four peak holidays: Memorial Day, Independence Day, Labor Day, and Columbus Day. For this study, data was collected from the Lyons Falls Boat Access (impoundment), Lyons Falls Canoe Access (downstream), and the Lyons Falls Picnic Area.

Data was grouped by day type (weekdays, weekend days, and holidays) to allow a better understanding of how recreation sites are used by the public. Missing days were represented using mean replacement within each day type and activity (boating, fishing, etc.) for the 17 days that were not monitored. Daily totals were then computed and summed by day type, and seasonal use estimates were computed by summing the resulting totals.

Peak weekend averages were developed by dividing the total estimated holiday use estimates by the number of holiday weekends in the season.

Table E.2-14 presents the estimated recreation use at Lyons Falls Mill by day type. Table E.2-15 presents estimated total daytime and nighttime use and peak weekend averages.

TABLE E.2-14
ESTIMATED 2007 RECREATION USE BY DAY TYPE AT LYONS FALLS MILL

Day Type	Activity	Days
Weekdays	boating	51
	fishing	227
	swimming	105
	sightseeing	176
	picnicking	18
	Other	51
	Undetermined	24
	Subtotal	**652**

Day Type	Activity	Days
Weekends	boating	16
	fishing	188
	swimming	41
	sightseeing	145
	picnicking	12
	Other	8
	Undetermined	0
	Subtotal	**410**
Holidays	boating	12
	fishing	32
	swimming	8
	sightseeing	38
	picnicking	5
	Other	0
	Undetermined	0
	Subtotal	**95**
Total		**1,157**

TABLE E.2-15
ESTIMATED 2007 DAYTIME, NIGHTTIME, AND PEAK WEEKEND AVERAGES AT LYONS FALLS MILL

		Annual Total	Peak Weekend Average
2007 Data	Daytime	1,157	24
	Nighttime	0	0
2015 Data	Daytime	1,500	20
	Nighttime	45	8

2014 – 2015 Recreation Use Survey

To collect data for the 2015 Licensed Hydropower Development Recreation Report (FERC Form 80), NBLF developed a Recreation Use Monitoring Form specific to the Project to be used by traveling operators during random sampling activities. Existing FERC-approved and informal

recreation areas associated with the Project were surveyed from May 31, 2014 through February 26, 2015 for the presence of recreationists and types of recreation engaged in.

Although limited during portions of the year (e.g., non-summer months), recreation associated with the Lyons Falls Project occurs on a year-round basis. For the purpose of completing the forms, the summer recreation season is defined as the period from May 30th through September 30th, and the winter recreation season is defined as the period from December 1st through March 1st.

A total of 271 days were sampled, which included weekdays, weekends, and holidays (i.e., Memorial Day, July 4th, and Labor Day weekends). Sampling occurred at various times throughout the day. NBLF staff recorded the number of persons or vehicles observed, as well as the type of recreation activity occurring, on the Recreation Use Monitoring Form for the appropriate recreation area. If no recreationists were observed during the survey, a zero was recorded on the Recreation Use Monitoring Form.

The survey data collected on the 271 sampling days was the basis for calculating the estimated number of recreation days for all of the recreation areas. Specifically, NBLF multiplied the average observed recreation amenity use by an average number of people per observed use (estimated based on NBLF staff experience) and then by the number of days in the calendar year. The resulting daytime and nighttime annual totals were then supplemented by operator estimates. The operator estimates were based on informal observations that occurred throughout the observation period, as well as daily knowledge of the Project. The peak weekend use and amenity occupancy calculations utilized a similar methodology, including survey observations and operator estimates.

Approximately 30 percent of the Lyons Falls Mill's 3.65 miles of shoreline are available for public use. Based on the recreation use data collected in 2014 and 2015, the number of annual daytime visits to recreation areas at Lyons Falls Mill (in recreation days) totaled 1,500; an increase of 343 visits from 2007. Nighttime visits totaled 45; whereas, no nighttime visits were observed in 2007. The annual peak weekend average totaled 20 visits for the daytime and

8 visits for the nighttime; a decrease from an average of 24 daytime visits in 2007. No nighttime visits were recorded in 2007.

The recreation sites at Lyons Falls Mill are currently utilized at only 10 –25 percent of their available capacity. Table E.2-16 presents recreational amenity types and capacity usage for Lyons Falls Mill recreation facilities as defined on the 2015 FERC Form 80 report (see Appendix F of this amendment application).

TABLE E.2-16
RECREATION AMENITIES AND CAPACITY UTILIZATION

Recreation Amenity Type	Capacity Utilization (%)
Boat Launch Areas	10
Portages	20
Picnic Areas	10
Overlooks/Vistas	25
Access Points	25

Existing and Proposed PM&E Measures

Proposed redevelopment of Lyons Falls Mill would take place within the footprint of the former Georgia-Pacific paper mill located along river left. The paper mill is characterized as a mixed-use industrial site that includes standing and collapsed buildings, concrete and asphalt roadways, manufacturing equipment, and storage tanks. There are no recreation facilities within the boundaries of the former paper mill, and none of the existing recreational facilities at Lyons Falls Mill would be impacted by the proposed redevelopment. NBLF believes that limiting construction to the footprint of the paper mill is an effective measure to avoid construction-related impacts on recreation resources.

NBLF proposes to continue the operation and maintenance of existing recreational facilities at Lyons Falls Mill. NBLF proposes to install seasonal 1-inch, clear-bar-spacing trashrack overlays on an annual basis. NBLF anticipates that the seasonal overlays would be installed as soon as possible following ice-out and removed in October. Further, NBLF proposes to release a minimum 45 cfs fish movement flow between March 15 and November 30 annually for the

protection of fish and aquatic resources. The proposed seasonal trashrack overlays and fish movement flow will continue to support a productive sport fishery that includes popular game fish such as largemouth and smallmouth bass, rainbow trout, brown trout, chain pickerel, northern pike, rock bass, and walleye.

The recreation study conducted in 2007 indicates that one of the largest groups of users attracted to Lyons Falls during the recreational season are described as "sightseers." There are currently no minimum flow requirements at Lyons Falls Mill, and aesthetic flows over Lyons Falls only occur when the hydraulic capacity of the existing units is exceeded. NBLF proposes to provide a seasonal minimum aesthetic flow of 25 cfs over Lyons Falls for the duration of the recreational season (May 1 – October 31). The seasonal minimum aesthetic flow will enhance the aesthetics of the falls during the recreation season. Seasonal aesthetic flows are discussed in additional detail in Section E.2.9 of this application document.

Any impact to recreation as a result of construction activities is expected to be temporary and limited. As noted above, NBLF will prepare a Construction Soil Erosion and Sedimentation Control Plan and a TCEAP in support of minimizing potential temporary impacts during construction. Furthermore, construction and operation of Lyons Falls Mill will comply with the terms of any new or modified Section 401 WQC that is expected to be issued by NYSDEC for this proposed amendment.

Continued or Incremental Impacts on Recreation Resources

NBLF is not aware of any ongoing impacts on recreation resources related to operation of Lyons Falls Mill, and the proposed redevelopment is not expected to have any new or incremental impacts on these resources. Construction activities associated with the proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the existing paper mill located on river left. The area is currently characterized by the existing industrial buildings and structures associated with the mill. Given the industrial nature of the site, the proposed construction footprint does not offer any recreational access or facilities.

As noted above, NBLF proposes several PM&E measures to support or enhance recreation at Lyons Falls Mill, including:

- Seasonal installation of trashrack overlays with 1-inch, clear-bar spacing installed as soon as possible following ice-out and removed in October to protect fish.
- A seasonal (March 15 – November 30, annually) minimum fish movement flow of 45 cfs released downstream from Lyons Falls Dam to enhance and protect fish and aquatic resources, including game fish.
- Continued operation and maintenance of existing recreational facilities at Lyons Falls Mill.
- A seasonal (May 1 – October 31, annually) 25 cfs minimum aesthetic flow released over Lyons Falls to enhance the aesthetics of the falls during the recreation season.
- Preparation and implementation of a Construction Soil Erosion and Sedimentation Control Plan and a TCEAP to avoid temporary impacts on instream recreation.
- Continued run-of-river operations.

NBLF expects that these PM&E measures will enhance and protect recreational opportunities at Lyons Falls Mill. Therefore, NBLF does not anticipate any continued or incremental impacts on recreation as a result of the proposed redevelopment.

E.2.8 Report on Cultural and Historic Resources

Four major cultural stages or periods define precontact developments in the northern portion of New York State:

- Paleoindian period – c. 10,500 B.C. to 8,000 B.C.
- Archaic – period c. 8,000 B.C. to 1,500 B.C.
- Transitional period – c. 1,500 B.C. to 1,000 B.C.
- Woodland period – c. 1000 B.C. to 1615 A.D.

The Paleoindian period begins in the terminal Pleistocene at the end of the Wisconsinan glaciation. The late glacial and early Holocene transition presented a dynamic mosaic of changing environmental settings. Glacial retreat created rapid, unpredictable, and extreme

changes in climate, drainage, topography, and soils. Paleoindian subsistence practices relied on a hunting and gathering strategy that depended heavily on large migratory game. The mobility and settlement patterns of Paleoindian groups appear linked with seasonal migratory routes, landscape features, and the availability of high-quality lithic raw materials. Paleoindian sites in the Northeast and New York State typically consist of a sparse lithic assemblage that includes fluted projectile points, end scrapers, gravers, and blades. No Paleoindian artifacts have been found in the immediate vicinity of Lyons Falls, but have been found approximately 35 miles to the northwest on the east side of the Black River.

The Archaic period represents a period of gradual transition. The final retreat of the glaciers at the end of the Pleistocene resulted in warmer and drier conditions that supported a more temperate, mixed deciduous-coniferous forest and essentially modern fauna. The archaeological record from the Archaic period suggests an increasing cultural diversity and elaboration. Sites from this period include seasonal base camps and special purpose loci used for hunting, fishing, gathering, food processing, and raw material. Overall, the Archaic period is viewed as a period of population growth and expansion.

Some archaeologists recognize a transitional period between the Archaic and later Woodland period. The Transitional stage is marked by the gradual introduction of pottery. The Woodland period is characterized by the emergence of ceramic vessels, incipient horticulture, semi-permanent settlements, and the development of complex mortuary ceremonialism, trade networks, and political systems. Woodland Stage sites have been found throughout the central and northern New York region, and several Late Woodland sites have been identified along the Black River in Lewis and Jefferson Counties.

Before the European incursion, the Adirondack region was controlled by the Oneida and Mohawk. The earliest direct European contact in the region took place in the mid-seventeenth century when the French explorer Simon LeMoyne made contact with the Onondaga at what is now Syracuse. The first European settlement in the region was the Castorland Colony, a French settlement dating to the late 18th century. The Castorland settlement was an attempt to create a community along the Black River, but the local representatives and founders of the colony were misled as to the nature of the territory and the accessibility of the Black River. By 1793, the

Castorland Colony was established immediately downriver from Lyons Falls, on a bluff overlooking the east bank of the Black River. The community attracted very few residents and was populated for much of its existence by company employees who used the site as a base for exploring and mapping the Black River. The few French families that did arrive rarely stayed long, as conditions were nearly unbearable.

Despite this early level of activity, the community never received the kind of support that it needed for long-term survival. According to Pilcher, "*Although the [Castorland] Company officially remained in existence until 1814, when its charter expired, there was never a sufficient infusion of people and resources at one time to produce a viable settlement. In all, only about 20 French families resided there at one time or another.*" At the same time, however, other well-financed settlements came into being in the region, including what are now Boonville and Barneveld. Toward the middle of the century, other American settlers, including Caleb Lyons, began to propose a town at the abandoned Castorland settlement, what was then called the "High Falls." While Lyons owned the water rights of the falls that now bear his name, he never settled there. The most important incentive to settlement came in the mid-nineteenth century with the opening of the Black River Canal. Completed in 1856, the Black River Canal allowed boats to travel from High Falls to Rome, where it connected to the Erie Canal. The canal required 109 locks over its 35-mile length and opened the region to manufacturing development, which focused on sawmills and tanneries. Lumbering and the manufacturing of timber products such as pulp were vital parts of the region's economy. The region's limited manufacturing continued despite the abandonment of the canal in the early twentieth century.

The Village of Lyons Falls became an important center for the timber pulp industry in 1892, when Henry P. Gould founded the Gould Paper Company. Gould's pulp and paper mill was completed in early 1896 at the location of an earlier saw mill, with a sulphite mill added in 1900. The initial plans, filed in 1893, noted that Gould intended to build a dam and use the water power for his mill. The mill initially used an existing timber crib dam; this dam was replaced in 1922 by the current concrete dam. The hydroelectric facilities were added to the mill complex over the course of the next few decades.

Previous Studies

In 1983, Pratt and Pratt conducted a cultural resources survey of areas that were proposed for redevelopment by the former licensee, Georgia-Pacific. The proposed redevelopment at that time included repairs and replacement of electrical generation equipment at all three developments that comprise the Project (Pratt and Pratt 1983). The Pratt and Pratt survey area extended primarily along the Moose River from Lyonsdale west to Lyons Falls. Their study consisted of a background and literature search followed by an archaeological field survey. For the field survey, they conducted shovel tests along transects that lined both sides of the Moose River.

This survey resulted in the recovery of several historic-period artifacts along all three transects. However, they found no evidence of precontact or of early French occupation. Pratt and Pratt concluded that the actions that were then proposed (including the construction of a new powerhouse at Lyons Falls Mill) would "*not be expected to impact any settlement related to Indian or French occupation"* (Pratt and Pratt 1983). While they concluded that the then-proposed actions had the potential to affect the historic mills along the Moose River, they noted no impacts to Lyons Falls Mill. Further, while they noted that the hydroelectric installations at the mills were "*of interest as part of the fabric of the use of water power sites,"* they concluded that the hydroelectric installations themselves would not be eligible for the National Register of Historic Places (NRHP) (Pratt and Pratt 1983).

In addition, in support of the demolition of the former paper mill, the New York State Office of Parks, Recreation and Historic Preservation's (OPRHP) was consulted with regarding the proposed demolition activities. As a result of this consultation, the ORPHP indicated in a June 14, 2013 letter that demolition of the former paper mill "will have 'No Impact' upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places." This is applicable to NBLF's proposed redevelopment plan for the hydropower facility given that the proposed activities will occur within the footprint of the former paper mill.

Studies Conducted by NBLF

In 2007, the Public Archaeology Facility of the State University of New York at Binghamton (PAF) conducted a Phase IA Cultural Resources Assessment of the upgrades to Lyons Falls proposed in 2006, including construction of a new powerhouse on river right. The Area of Potential Effects (APE) for the construction that was proposed in 2006 was located along the east bank of the Black River from the bluff adjacent to the falls, to the boat launch approximately 400 feet downstream of the falls, and from the edge of the river inland to the public access road. The study consisted of a pedestrian walkover combined with auger probes. The pedestrian walkover identified those portions of the APE that had the potential for intact soils. Two distinct soil deposition locales were identified, running roughly parallel to the Black River. A band that ranged from 45 to 50 meters in width lying closest to the river was identified as completely scoured, containing only high-energy alluvium, with no potential to contain intact archaeological resources. However, the pedestrian walkover identified a terrace of intact soils lying between the band of high-energy alluvium and the public access road, varying from 12 to 15 meters in width, featuring a thin cap of late Holocene alluvium over terminal Pleistocene silts. This band of soils, extending approximately 110 meters from the base of the bluff adjacent to the falls to the boat launch downriver, was determined by PAF to have the potential to contain archaeological deposits. Since the 2006 upgrades were expected to impact intact soils, PAF recommended that a Phase IB Field Investigation be conducted on the narrow band of soil with the potential to contain significant archaeological resources. As noted above, NBLF decided not to pursue the proposed project in 2007; therefore, additional testing was not conducted along the east shoreline of the Black River.

In January 2015, NBLF conducted a review of the OPRHP Cultural Resources Information System (CRIS) to identify reported archaeological and historic resources within a one-mile radius of Lyons Falls Mill, including resources previously listed in or determined eligible for the NRHP. Table E.2-17 presents archaeological and historic resources identified through a review of the CRIS database.

TABLE E.2-17
PREVIOUSLY REPORTED ARCHAEOLOGICAL AND HISTORIC RESOURCES WITHIN ONE MILE OF LYONS FALLS MILL

Name	Type	Affiliation	NRHP Status
Castorland Colony	Archaeological Site	Historic	Undetermined
The Pines	Building	Historic	Listed
Lyons Falls Pulp and Paper Mill Complex	Buildings and archaeological site	Historic	Undetermined
Gould Mansion Complex	Building	Historic	Listed
Clark House	Building	Historic	Undetermined
Brian Belmont House	Building	Historic	Undetermined
Forest Presbyterian Church and Manse	Buildings	Historic	Listed
Mid 19 c gable roof frame dwelling 3 bay, Italianate detailing; some alterations	Building	Historic	Undetermined
Harris House (Hotel)/Hendel's Hotel	Building	Historic	Eligible
IGTS 081-AF1-1	Archaeological site	Historic	Undetermined
Wildwood Cemetery & Mary Lyon Fisher memorial Chapel	Historic Site	Historic	Listed

Of the resources identified in Table E.2-17, only the Lyons Falls Pulp and Paper Mill Complex is located within or adjacent to Lyons Falls Mill. There is little existing information regarding this resource, and it is unclear whether the Lyons Falls Pulp and Paper Mill Complex includes the existing facilities that comprise Lyons Falls Mill. In any case, the NRHP-eligibility of this property has not been determined.

By letter dated January 29, 2015, NBLF initiated informal consultation with the New York State Historic Preservation Office (SHPO) to determine if historic properties listed in or eligible for inclusion in the NRHP will be affected by the proposed redevelopment of Lyons Falls Mill. Copies of this consultation correspondence have been included in Appendix B to this amendment application. As a result of this consultation, the SHPO indicated in a May 8, 2015, letter that the proposed Project "will have 'No Impact' upon historic properties."

By letter dated February 3, 2015, NBLF initiated informal consultation with the Oneida Indian Nation. On March 30, 3015, the Historic Resources Specialist for the Nation met with NBLF at Lyons Falls Mill to discuss the Project. As a result of this meeting, the Oneida Indian Nation indicated in an April 29, 2015, letter that the Project does not have the potential to adversely affect historic properties of significant to the Oneida Indian Nation.

Existing and Proposed PM&E Measures

Article 409 of the existing license requires the licensee to consult with the SHPO prior to any change in location of any construction activities and prior to any future construction at the Project. If any previously unrecorded archeological or historic sites are discovered during the construction or development of any Project works or associated facilities, construction activity in the vicinity shall be halted, a qualified archeologist shall be consulted to determine the significance of the sites, and the licensee shall consult with the SHPO to develop a mitigation plan for the protection of significant archaeological or historic resources. If the licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historical work related to the Project, the Commission reserves the right to require the licensee, at its own expense, to conduct any necessary work.

Continued or Incremental Impacts on Cultural or Historic Resources

New York SHPO office sent a letter on May 8, 2015, stating the determination that no historic properties will be affected by the Project. In addition, the Oneida Indian Nation stated in a letter dated April 29, 2015, that the Project will not adversely affect historic properties of significance to the Oneida Indian Nation.

E.2.9 Report on Land Management and Aesthetics

The area surrounding Lyons Falls Mill is mostly rural, heavily forested, and relatively undeveloped. The eastern portion of the Black River Basin is characterized by limestone plateaus, steep rugged mountains, and an extensive system of lakes. To the west, the Tug Hill Plateau is characterized by sand terraces and deep gorges cut by tributary streams flowing eastward from the plateau to the Black River. The northern end of the basin in the vicinity of Lake Ontario is characterized by rolling hills with a gradual downward slope toward Lake Ontario. The Black River Valley floor is at an elevation of approximately 750 feet msl. Elevation in the Ontario Lowlands is about 250 feet msl (FERC 1995).

Lyons Falls Mill is located entirely within Lewis County. From the tailrace of Lyons Falls Mill, the Project boundary generally follows the shorelines of the Black and Moose rivers upstream

approximately 2.5 and 1.3 miles, respectively. The Project boundary encompasses lands on the eastern shore of the tailwater, totaling approximately 13 acres, including the Project works. The east side of the Lyons Falls Dam along river right abuts the jurisdictional boundaries of the Town of Lyonsdale with the Development itself within the Village of Lyons Falls in the Town of West Turin.

Description of Existing Development and Use of Project Lands

The Black River Basin, one of New York State's smallest, includes both the Black and Moose rivers and supports a diverse set of land-use practices. The eastern portions of the basin consist of densely forested woodlands associated with the Adirondack Mountains. Land use and management in this portion of the basin consists mainly of silviculture, recreation, and tourism.

Lyons Falls Mill lies entirely within Lewis County, New York, which is approximately 1,272 square miles in area. Lewis County is dominated by second growth northern hardwoods, which comprise approximately 55 percent of the land cover, followed by agricultural lands at approximately 19 percent, and residential lands at 14 percent (Table E.2-18). The remaining lands within Lewis County are comprised of commercial, industrial, public, and recreational lands among other uses (Lewis County 2006).

TABLE E.2-18
LEWIS COUNTY LAND USE

Type of Use	Square Miles	Acres	Percent of County Land
Agricultural	244.07	156,205.9	19.2
Residential	177.97	113,900.1	14.0
Vacant (Open Space)	92.79	59,390.8	7.3
Commercial	2.54	1,627.5	0.2
Recreation/Entertainment	3.81	2,440.7	0.3
Community Services	36.86	23,593.0	2.9
Industrial	2.54	1,627.5	0.2
Public	15.25	9,762.8	1.2
Wild/Forested	695.35	445,024.1	54.7
Total	1,271.18	813,572.4	100.0

Almost 20 percent of the lands of Lewis County are agricultural lands, producing goods such as corn, oats, and dairy (National Agriculture Statistics Service 2001; Lewis County 2006). In

2007, there were 616 farms on over 167,000 farmland acres within Agricultural District 6 of Lewis County (Lewis County 2009).

There are no prime or unique farmlands, as designated by the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture, the Special Area Management Plan of the Office of Coastal Zone Management, or the National Oceanic and Atmospheric Administration (NOAA) within the immediate vicinity of Lyons Falls Mill.

The Village of Lyons Falls is one of the smaller population centers in the Black River Valley between the Adirondack Mountains and the Tug Hill Plateau (NYSDEC 2007c). The U.S. Census Bureau reports that the Village of Lyons Falls has a population of approximately 566 (US Census Bureau 2010). The Town of West Turin, the Town of Lyonsdale, and Lewis County have populations of approximately 1,524; 1,227; and 27,087, respectively (US Census Bureau 2010).

Land Management

Some land uses on privately owned lands within Lewis County are regulated by the Lewis County Planning Department. Lewis County developed a Comprehensive Plan for the County to guide land use planning and community development for 10-15 years following 2009[17].

The County has a Comprehensive Economic Development Strategy (2006) that provides information on topics related to agriculture, land use patterns, housing and transportation, recreation, and infrastructure. The purpose of the plan is to set forth development strategies for the county to, among other things:

- Protect, support, and promote our current economic base to retain existing employment opportunities and increase availability of good quality employment opportunities through attraction of new businesses;
- Create a positive environment for growth in the economy and community;
- Promote Lewis County as a great place to visit;

[17] Personal communication, Renee Byer, Lewis County, October 2, 2007.

- Maximize utilization of existing resources to enhance the multiplier effect and value-added opportunities within the County.

Existing Zoning Regulations

The Village of Lyons Falls is not subject to the zoning regulations of Lewis County, nor is the village within the jurisdiction of the Lewis County Rural Development Plan or Land Use Plan (Lewis County Planning Department 2006). Lyons Falls Mill lies mostly within the jurisdiction of the Village of Lyons Falls and Town of West Turin. The eastern border of the Development is adjacent to the Town of Lyonsdale.

Management of Project Lands

Project operations and associated maintenance are the primary activities that occur at Lyons Falls Mill. This includes operating and maintaining the powerhouses and associated facilities (FERC 1986). Public recreation facilities at the Project are discussed in Section E.2.7, above.

Aesthetic Resources

The landscape surrounding Lyons Falls Mill includes moderate hills and forested terrain with relatively shallow streambeds. Northern hardwood forest species including sugar maple, beech, yellow birch, and conifers such as white pine and hemlock dominate the vegetation (FERC 1986).

The Moose River and Black River comprise the most significant aesthetic resources associated with Lyons Falls Mill. The Black River drops approximately 60 feet at Lyons Falls and is the highlight of aesthetic and visual resources at the site. Although views of the falls are somewhat limited because of dense vegetation and the low hilly relief of the area, the falls can be viewed from numerous locations downstream, including from the canoe access located downstream of the falls. Both the Black and Moose rivers are considered valuable scenic resources to boaters and the local community (FERC 1986).

Project works, the impoundment, Lyons Falls, and the tailrace are visible from several vantage points around Lyons Falls Mill. On the Moose River, the impoundment and Project works are

visible from the Lyons Falls Road Bridge, which crosses the Moose River approximately 750 feet upstream of the Lyons Falls Dam (Photo E.2-7). On the Black River, the impoundment, top of the dam and Project works can be seen from the Laura Street Bridge, which traverses the Black River approximately 1,050 feet upstream of the dam (Photo E.2-8). The impoundment and dam can also be seen from the gravel boat launch adjacent to the Lyons Falls Road Bridge and from a dead-end road that terminates at the confluence of the Moose and Black rivers (Photo E.2-9). The tailrace, dam, Project works, and Lyons Falls can be seen from several vantage points downstream including the canoe access site on the eastern shore of the Black River, downstream of Lyons Falls Mill (Photo E.2-10).

Photo E.2-7. Lyons Falls Mill impoundment looking downstream at Lyons Falls Mill.

Photo E.2-8. Black River and Laura Street Bridge from the impoundment looking upstream.

Photo E.2-9. Confluence of Moose and Black River at the Lyons Falls Mill impoundment looking upstream into Moose River.

Photo E.2-10. Lyons Falls and existing Project works, view from downstream canoe access and shoreline angling site.

Aesthetic Flow Assessment

There are currently no minimum flow requirements at Lyons Falls Mill, and aesthetic flows over Lyons Falls only occur when the hydraulic capacity of the existing units is exceeded. NBLF proposes to provide a seasonal minimum aesthetic flow of 25 cfs over Lyons Falls for the duration of the recreational season (May 1 – October 31). The seasonal minimum aesthetic flow will enhance the aesthetics of the falls during the recreation season.

In 2015, NBLF conducted an assessment to develop the conceptual layout for providing the 25 cfs seasonal minimum aesthetic flow. The conceptual approach would modify the 26-inch-high wooden flashboards to provide flow over the falls. This modification is proposed to be accomplished by notching or otherwise removing a portion of the tops of one or more flashboards. The assessment indicated that a flashboard notch measuring 8.33-foot-long and 1.0-foot-high would provide the minimum 25 cfs flow over the falls. A conceptual design of the flashboard notch is presented in Figure E.2-26, below.

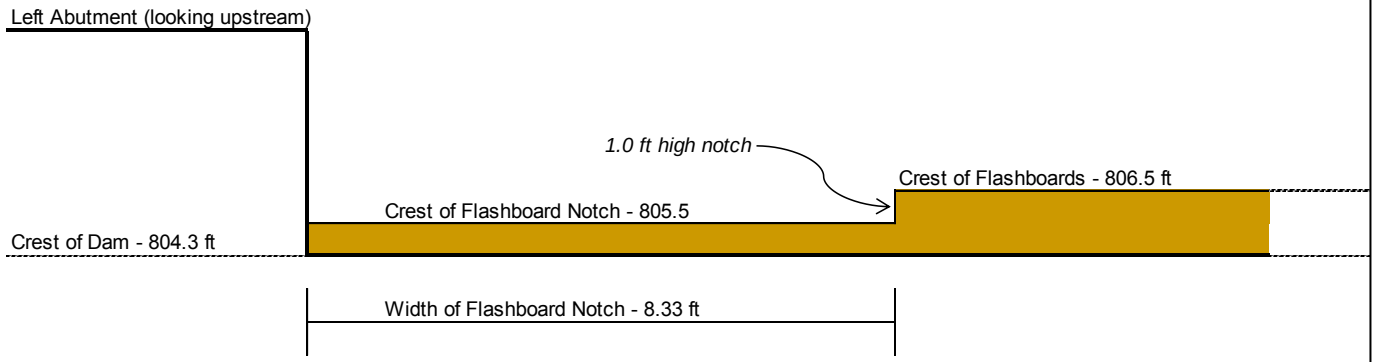
FIGURE E.2-26
CONCEPTUAL DESIGN OF FLASHBOARD NOTCH FOR AESTHETIC FLOW

Flashboard Notch Concept to Pass 25 cfs

(Schematic Drawing - Not to Scale)

$Q = C \times L \times H^{(1.5)}$

Q = 25 cfs (target flow)
C = 3.0
L = 8.33 ft
h = 1.0 ft
Solved Flow = 25 cfs



Elevation View of Flashboard Notch (Looking Upstream)

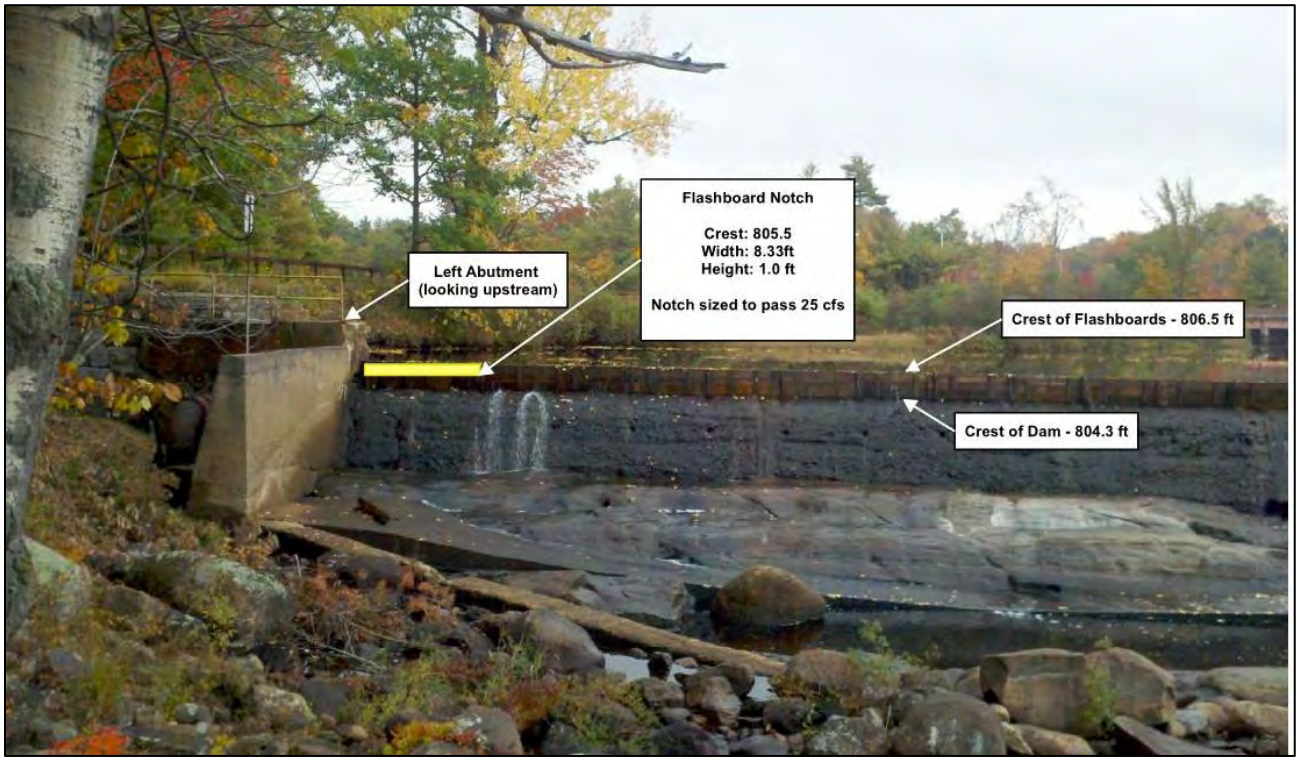
Existing and Proposed PM&E Measures

Article 406 of the existing license for the Project requires that the licensee develop a plan to avoid or minimize disturbance to the existing visual resources caused by the construction and maintenance of Project works and that Project works blend into the existing landscape through use of natural materials, landscape vegetation, and debris removal.

NBLF proposes to develop an Aesthetic Resources Plan to avoid or minimize disturbance of existing visual resources associated with the proposed upgrade. The plan will describe how the design of the new powerhouse and other facilities associated with the proposed upgrade will blend with the surrounding environment through the use of similar colors and materials. The proposed Aesthetic Resources Plan will also provide standard BMPs to address landscape vegetation, site stabilization, and debris removal associated with the proposed upgrade. NBLF proposes to develop the Aesthetic Resources Plan following the Commission's issuance of an order approving the proposed amendment and in consultation with the Town of Lyons Falls, NYSDEC, USFWS, Lewis County, and other parties. NBLF will submit the plan for FERC approval prior to the start of construction.

There are currently no minimum flow requirements at Lyons Falls Mill, and aesthetic flows over Lyons Falls only occur when the hydraulic capacity of the existing units is exceeded. NBLF proposes to provide a seasonal minimum aesthetic flow of 25 cfs over Lyons Falls for the duration of the recreational season (May 1 – October 31). The seasonal minimum aesthetic flow will enhance the aesthetics of the falls during the recreation season. NBLF has developed a rendering of the proposed flashboard notch based on the aesthetic flow assessment (Figure E.2-27). Following FERC's order amending the license, NBLF will conduct a site visit with the Town of Lyons Falls, NYSDEC, USFWS, and Lewis County to determine the specific location of the proposed flashboard notch to optimize aesthetic flows over Lyons Falls. NBLF will provide designs for the Town of Lyons Falls, NYSDEC, USFWS, Lewis County, and Commission approval following FERC's order amending the license and prior to the start of construction activities.

FIGURE E.2-27
RENDERING FLASHBOARD NOTCH FOR AESTHETIC FLOW



Continued or Incremental Impacts on Land Management and Aesthetic Resources

NBLF manages the lands and recreation areas within the FERC Project boundary in accordance with the existing license. NBLF proposes to develop an Aesthetic Resources Plan to avoid or minimize disturbance of existing visual resources associated with the proposed upgrade. Further, NBLF proposes to provide a seasonal minimum aesthetic flow of 25 cfs over Lyons Falls for the duration of the recreational season. NBLF expects that these PM&E measures will enhance and protect land management and aesthetic resources at Lyons Falls Mill. Therefore, NBLF does not anticipate any continued or incremental impacts on land management or aesthetic resources as a result of the proposed redevelopment.

E.2.10 Relevant Comprehensive Plans

NBLF has reviewed the federal and New York State list of comprehensive plans adopted by the Commission under Section 10(a)(2)(A) of the Federal Power Act, 16 U.S.C. § 803 (a)(2)(A). Of

the 41 reviewed comprehensive plans, 5 were deemed to be applicable to the Project. These five plans consist of the following:

- Interstate Fishery Management Plan for American Eel (*Anguilla rostrata*) (Atlantic State Marine Fisheries Commission Service [ASMFC] 2000).
- The Nationwide Rivers Inventory.
- North American Waterfowl Management Plan (NAWMP 2004).
- Fisheries USA: The Recreational Fisheries Policy of the (USFWS 1989).
- New York State Statewide Comprehensive Outdoor Recreation Plan (SCORP) (NYSOPRHP 2010).

Based on a review of these five comprehensive plans, current and proposed operations of Lyons Falls Mill have been determined to be consistent with these plans.

In addition to the comprehensive plans adopted by the Commission, based on consultation with the relicensing parties, NBLF reviewed the two plans listed below. Based on the review of the plans relative to the proposed redevelopment, NBLF has determined that the current and proposed operations of the Development are consistent with these two plans.

- Lewis County Comprehensive Plan (Lewis County Board of Legislators) 2006.
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Exhibit F - General Design Drawings

F.1 Design Drawings

The General Design Drawings show overall plan views, elevation, and sections of the principal Project works in sufficient detail to provide a full understanding of the Project. In accordance with 18 CFR Part 388, NBLF is requesting that the General Design Drawings for the Lyons Falls Project be given privileged treatment because the drawings contain Critical Energy Infrastructure Information (CEII). This request for privileged treatment is being made to the Commission in accordance with the Final Rule (Order No. 630-A) issued by the Commission on July 23, 2003 (revised August 8, 2003). Therefore, in conjunction with filing this Amendment Application, Exhibit F General Design Drawings listed below are being filed with the Commission in Volume II of this application under separate cover in accordance with Order 630-A.

Drawing Number	Title
Exhibit F – Sheet 1 of 4	Site Layout
Exhibit F – Sheet 2 of 4	Angled Intake Structure, Plan Section
Exhibit F – Sheet 3 of 4	New Conditions Longitudinal Cross Sections
Exhibit F – Sheet 4 of 4	Power Station General Arrangement Transverse Sections

Given the ongoing design activities associated with the proposed new powerhouse and intake structure, NBLF anticipates that revised Exhibit F drawings will be filed with the Commission upon completion of the construction activities. Therefore, the drawings being filed with this application will be superseded by the drawings to be filed with the Commission following completion of construction and prior to the upcoming relicensing effort.

F.2 Supporting Design Report

NBLF prepared and submitted a Supporting Design Report (SDR) in support of the last relicensing effort. Given the ongoing design activities associated with the proposed new powerhouse and intake structure, NBLF proposes that an updated SDR be filed and approved by the Commission subsequent to issuance of the amendment order and prior to commencing construction activities. This approach will allow NBLF to complete the design activities and provide the Commission with a SDR that incorporates the approved design.

Exhibit G - Project Boundary

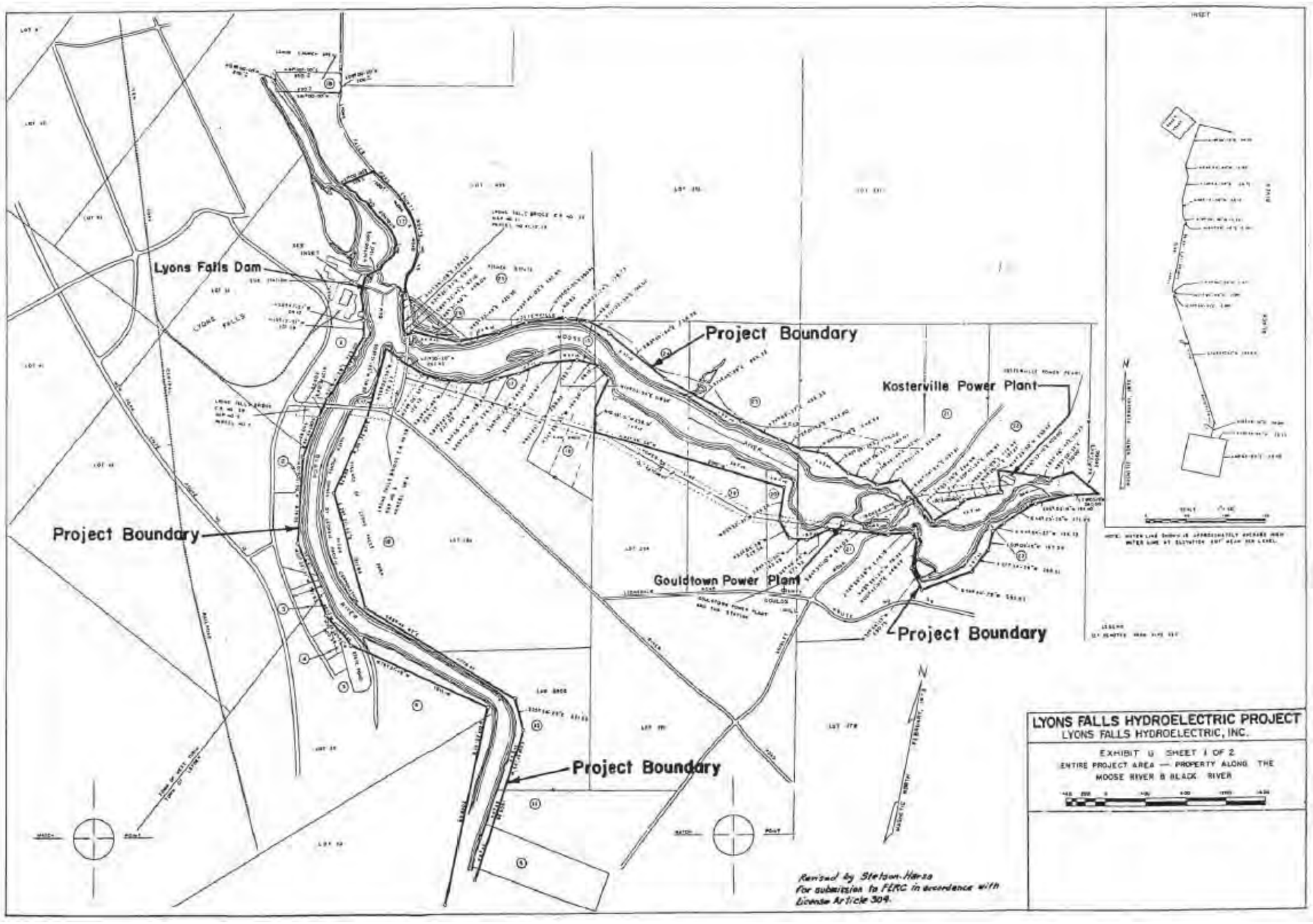
Given that the proposed redevelopment of the Lyons Falls Mill Development will occur within the Project's existing project boundary, NBLF is proposing to provide the Commission with a fully georeferenced and updated project boundary of the Project's entire project boundary, including the Gouldtown and Kosterville Developments, in conjunction with filing of the applicable as-built drawings following construction of the new powerhouse.

Given the apparent lack of modifications to the project boundary and the pending relicensing of the Project associated with the Project's May 31, 2016 license expiration date, NBLF believes that it will benefit the Commission and NBLF to develop a fully georeferenced and updated project boundary following redevelopment of the Lyons Falls Mill powerhouse and leading up to the relicensing effort.

In support of this amendment application, NBLF is submitting the Project Boundary Maps and tabulated list of parcels associated with the Project Boundary. This information is consistent with information filed with the Commission on February 11, 1993.

Drawing Number	Title
Exhibit G – Sheet 1 of 2	Entire Project Area – Property along the Moose River & Black River
Exhibit G – Sheet 2 of 2	Entire Project Area – Property along the Moose River & Black River

Table Number	Title
Table G.1	Tabulated list of parcels within the Project Boundary


Lyons Falls Dam
Project Boundary
Kosterville Power Plant
Project Boundary
Gouldtown Power Plant
Project Boundary
Project Boundary
INSET
LYONS FALLS HYDROELECTRIC PROJECT
LYONS FALLS HYDROELECTRIC, INC.
EXHIBIT G SHEET 1 OF 2
ENTIRE PROJECT AREA — PROPERTY ALONG THE
MOOSE RIVER & BLACK RIVER
Revised by Stetson-Harza
for submission to FERC in accordance with
License Article 304.

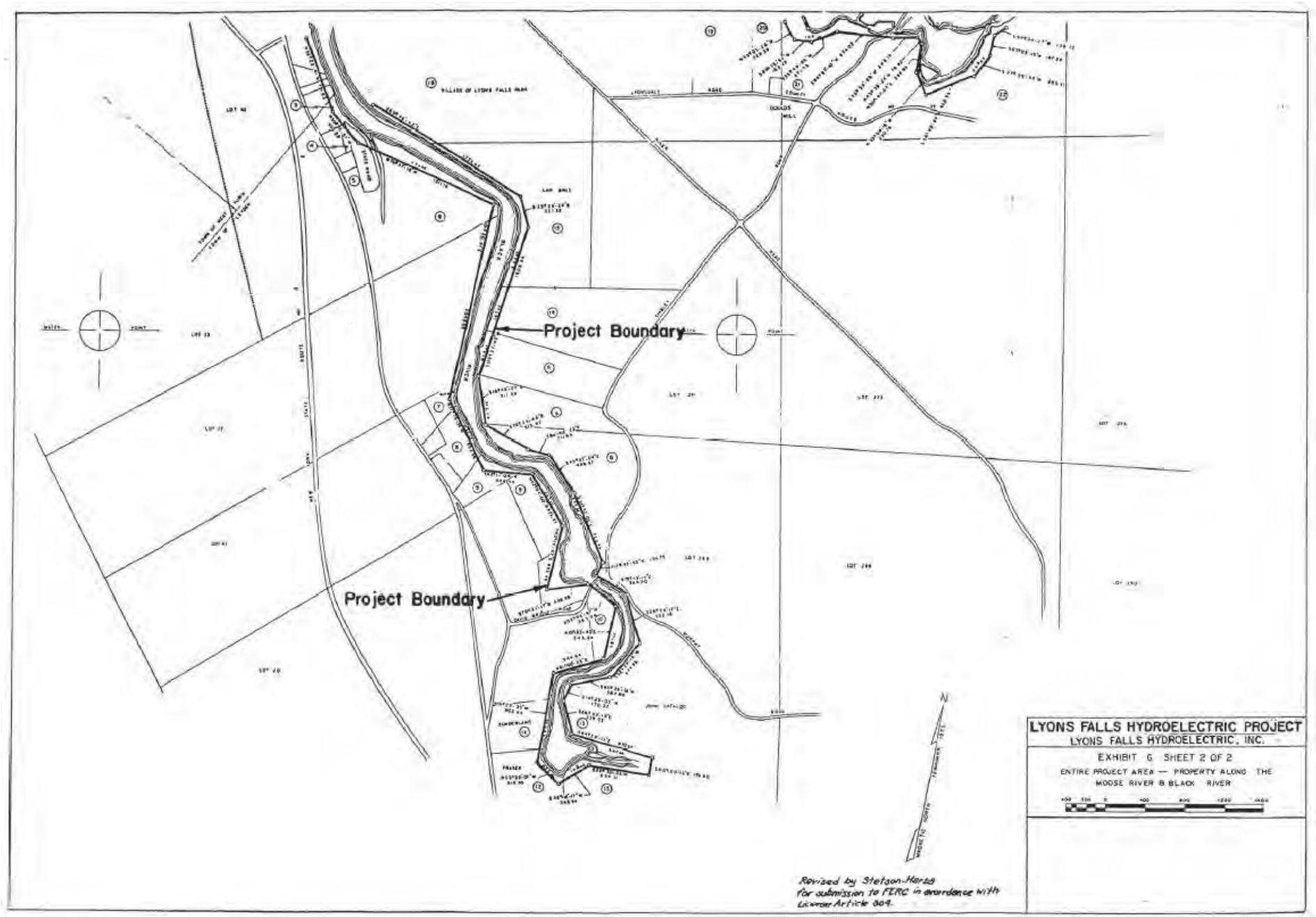

Project Boundary
Project Boundary
LYONS FALLS HYDROELECTRIC PROJECT
LYONS FALLS HYDROELECTRIC, INC.
EXHIBIT G SHEET 2 OF 2
ENTIRE PROJECT AREA — PROPERTY ALONG THE MOOSE RIVER & BLACK RIVER
Revised by Stetson-Harza for submission to FERC in accordance with Licensing Article 304.

EXHIBIT G

TABLE G-I

PROJECT BOUNDARY

A tabulated list of the various parcels of land within the project boundary is shown in Table G.I. The item numbers on Table G.1 correspond to the circled numbers on the Exhibit G Map.

The applicant owns or has agreements on all of the land in the project area. The three sites included in this project are run of the river sites and have no reservoirs. The river level does not vary due to storage but varies with the elements.

The project boundary is shown on the Exhibit G Map sheets 1 and 2. The applicant's land inside the project boundary is also shown. On parcels of land where the applicant has only a water rights easement, the land shown is a theoretical parcel between lands owned by the applicant (on either side) within the project boundary.

EXHIBIT G

LYONS FALLS HYDROELECTRIC PROJECT

LYONS FALLS HYDROELECTRIC, INC.

TABLE G.1

ands along Black River	Great Lot	Acquired From	Date Acquired	Nature of Rights	Perpetual	Limited	Date Expires	Recorded-Lewis Co. Clerk's Office Date	Book	Page
(1) G.P. Mill site. Lots 3 & 4 Block 9, G.P. Subdivision 1,2,&3, West Side of River	34 253 235	GHP Gould Julia Lyon Decamp	11-06-95 5-08-93	Deed Deed	X X			11-18-95 5-12-93	92 86	24 205
(2) Lands within the Blue Lines	42	Village of Lyons Falls	1-07-47	Deed	X			1-09-47	205	538
(3) 0.88 AC Town of West Turin and Town of Leyden	23 & 42	Leon & Susie Post	7-01-42	Deed	X			7-03-42	191	265
(4) .39 AC & .44 AC Lots	23	Ida Northrup	10-15-40	Deed	X			10-17-47	186	540
(5) N.Y.S. Lands of Black River Canal	23									
(6) Riley Farm 25,31.2,25,10,5.5 Acre Lots	22,23 271	Clarence Riley	11-05-27	Deed	X			12-29-27	155	569
(7) 2 1/2 AC	21	Alexander Riley	11-16-31	Deed	X			12-10-31	165	530
(8) 4.3 AC	21	Patrick Kelpy	5-27-30	Deed	X			5-31-30	161	471
(9) 5 & 5.56 AC Lots	21,20	James Kelpy	7-14-28	Deed	X			8-03-28	157	311
(10) 11.73 AC	20,19	Clarence & Nettie Adams	11-18-41	Deed	X			12-15-41	189	564
(11) Lands of Mrs. Douglas Sunderland	19	Mrs. D. Sunderland	3-25-75	Easement	X					
(12) Lands of Mrs. Clayton Fraser	19	Mrs. C. Fraser	6-30-81	Easement	X			9-09-81	421	2

EXHIBIT G

LYONS FALLS HYDROELECTRIC PROJECT
LYONS FALLS HYDROELECTRIC, INC.

TABLE G.1 - (cont'd)

inds along Black River	Great Lot	Acquired From	Date Acquired	Nature of Rights	Perpetual	Limited	Date Expires	Recorded-Lewis Co. Clerk's Office Date	Book	Page
13) Water Right-26" High Flashboards on Dam	288	Johnson Pulp Corporation	3-17-50	Permanent Easement	X			3-17-50	216	463
14) 31 Acres	271	George W. Kentner	7-03-29	Deed	X			7-30-29	159	483
15) Land of Law Brothers	271	Law Brothers Contracting Corp.	11-11-74	Permanent Easement	X			1-31-75	351	125
16) G.P. Co. to Lyons Falls Park Com.	253	G.P. Co. retain water rights	5-03-49	Water	X			5-05-49	214	95
17) Fisher Estate	235,253	Gerald and Marion Levy	10-25-83	Deed	X			10-27-83	939	256
18) Lagoon Site	235,217	Comille Tebsherany	10-20-76	Deed	X			10-20-76	370	37
ands along Moose River										
15) Law Brothers Lot	253	Law Bros. Contracting Corp.	11-11-74	Easement	X			1-31-75	351	126
17) Various Blocks & Lots Great Lot 253 as shown on a map "Lots Between The Rivers"-see G.P. Deed recorded 2-8-65 Bk 284 Pg. 89	253	Ella Lyon Dayan Watson Shaw Mary Geyer & Others	3-03-26 6-25-37 9-28-39	Deed Deed Deed	X X X			4-02-26 7-01-37	151 178	44 386
18) Lands for Transmission Line	253	Law Bros. Contracting Corp.	11-11-74	Easement	X			3-17-75	352	100

EXHIBIT G

LYONS FALLS HYDROELECTRIC PROJECT
LYONS FALLS HYDROELECTRIC, INC.

TABLE G.1 (cont'd)

Lands along Moose River	Great Lot	Acquired From	Date Acquired	Nature of Rights	Perpetual	Limited	Date Expires	Recorded-Lewis Co. Clerk's Office Date	Book	Page
(19) Pinck Farm	254	Anthony & Alice Pinck	5-07-38	Deed	X			5-10-38	180	495
(20) Sager Matter (Dewitt Finch, Referee to G.P.)	254	Dewitt Finch	6-20-1877	Referee Deed	X			10-1-1877	53	199
(21) Gouldtown Power Plant Shedd's Mill	255	Lyon to GHP Gould to G.P. Co.	11-06-95	Deed	X			11-18-95	92	24
(22) Mill B - see G.P. Deed			1907	See G.P. Deed	X			2-08-65	284	89
(23) G.H.P. Gould to G.P. Co. 30 AC	254	G.H.P. Gould	11-06-95	Deed	X			11-18-95	92	24
(24) G.H.P. Gould to G.P. Co. 12 AC	254	G.H.P. Gould	11-06-95	Deed	X			11-18-95	92	24
(25) Fisher Estate (Former Lyon Estate)	235	Water Rights	5-09-93	Deed	X			5-12-93	86	205
(26) Settling Pond	235 & 253	Rachel Ingals Fisher	11-27-62	Deed	X			12-03-62	273	141

APPENDICES

APPENDIX A

JOINT AGENCY PUBLIC MEETING TRANSCRIPT

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REDEVELOPMENT OF LYONS FALLS MILL

JOINT AGENCY PUBLIC MEETING

FERC PROJECT NO. 2548

March 4, 2015

* * * * * * * * * * * * * * * * * *

HELD AT: Lyons Falls Fire Hall
3907 High Street
Lyons Falls, New York

COMMENCING AT: 3:49 p.m.

REPORTED BY: Nora B. Lamica
Court Reporter/Notary Public

PRESENT:

Jim Gibson, Vice President, Hydropower Services
Jessica Eckerlin
HDR, Inc.
1304 Buckley Road, Suite 202
Syracuse, New York 13212-4311
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Dan Parker
Paule Veilleux-Turcotte, Advisor - Corporate Affairs
Gilles Cote, Manager - Sustainable Development
Melysa Furt, Intern
KRUGER, INC.
3285 Chemin Bedford
Montreal, Quebec H3S 1G5

John Bartow
Robert Caltado
Larry Dolhof
Larry Eckhaus
Rocky Fawless
Jessica Hart
Ron Hamecher
Susan Hamecher
Steve Kraeger
Mayor Katie Liendecker
Paul Liendecker
Ross Morgan
Walter Pfaff
Brian Peck
John Skorupa
Mike Skorupa

MR. PARKER: Good afternoon. Again, my name is Dan Parker with Kruger Energy North of Lyons Falls, and this is the joint agency public meeting for the FERC licensing amendment for the Lyons Falls project.

So the joint agency public meeting is one of the steps that we're required to do in this process in order to present to the public the information about what our proposal is going to be to FERC, to give you information to understand what's there now and what we intend to do in the proposal, to solicit your input, make comments, your questions or concerns, and then we'll go through the process.

We'll go through the agenda that we've got today, and we'll also give you more information on the schedule of the process that will occur after this meeting, as well.

We'll go through and introduce the folks that we've got on our team from Kruger Energy and from HDR, who is our consultant, working with us on this project. And since we've got a small group, I'd like to go around and have folks introduce themselves, if they wish to. Nobody's required

to. And if you've got any affiliation, what your affiliation is.

My name is Dan Parker. I work for Kruger Energy. Kruger Energy is an affiliate of Northbrook Lyons Falls, which is the FERC licensee for the Lyons Falls project.

MR. GIBSON: Jim Gibson with HDR.

MS. VEILLEUX-TURCOTTE: My name is Paule Veilleux-Turcotte and I'm from Kruger.

MS. FURT: My name is Melyssa Furt, Kruger.

MR. COTE: Gilles Cote. I'm the manager of sustainable development with Kruger Energy.

MS. ECKERLIN: I'm Jessica Eckerlin, also with HDR.

MR. KRAEGER: Steve Kraeger. I've lived in Lyons Falls all my life.

MR. CALTADO: Robert Caltado, Lyons Falls.

MR. MORGAN: Ross Morgan, resident from Lyons Falls.

MR. SKORUPA: John Skorupa, resident, Lyons Falls.

MR. PFAFF: Walter Pfaff, White Plains.

MR. LIENDECKER: Paul Liendecker, Lyons Falls.

MR. FAWLESS: Rocky Fawless, board member of LCDC and the IDA in Lyons Falls.

MAYOR LIENDECKER: Kate Liendecker, mayor, Lyons Falls.

MR. PECK: Brian Peck, chief of staff for Assemblyman Ken Blankenbush.

MR. BARTOW: John Bartow, executive director of the New York State Subsidized --

MR. ECKHAUS: Larry Eckhaus, New York State Department of Environmental Conservation central office in Albany.

MS. HART: And Jessica Hart, also DEC in Watertown.

MR. PARKER: Thank you very much. So as I said, Northbrook Lyons Falls is an affiliate for Kruger Energy, and is the licensee for the Lyons Falls project.

Kruger Energy is an independent power producer. The corporate headquarters is in Montreal, and our U.S. headquarters is in Lewiston, Maine. We've got about 528 megawatts of capacity currently in operation, which includes winds -- about 300 megawatts of wind, about 176 megawatts of hydro, and the remainder is biomass

biogas from landfill gas, including a recent acquisition of five megawatts of hydro in British Columbia. And we're soon to add another 135 megawatts of solar in California. So we've been active in the renewable energy industry for a number of years, both in the United States and Canada. So this is just -- the redevelopment of this project is just the latest one of our assets that we're looking to increase the value of our future generation of renewables from.

A little bit on the background and what brought us here to Lyons Falls today. The project, as many of you know, and what we were just discussing down there, which is why we were late getting back. The Lyons Falls project was built in the 1920s as part of a pulp and paper mill, was converted over to produce hydroelectricity, and over the years, through subsequent owners, the paper mill portion of it and the hydro-generation portion of it separated ownership, which ultimately led to Kruger Energy becoming the owner of the facility today.

As we said, again, for the folks that were on the site visit, I'm not sure if anybody else

showed up since then. The Lyons Falls Federal Energy Regulatory Commission, or FERC license is comprised of three developments, the Lyons Falls mill where you took the tour today, and then two projects on the Moose River, Gouldtown and Kosterville. Those three projects are all under one FERC license, which expires in 2026. Five years prior to that, we'll be starting the re-licensing of all three of those facilities.

The action that we're looking at taking or working on today only deals with the Lyons Falls mill, so we're more than welcome to take questions about all three of the projects, the development within the project, but the only action or only changes that we're planning to make through this proposal that we're going to present to you this afternoon will only involve the mill development.

So as I said, the FERC license was issued in 1986 and will expire in 2026. Originally, the capacity, which is the installed capability of the units, the equipment that's there, was much larger than it is. Of the three facilities, Gouldtown, Kosterville and the mill, the present capacity is about 8.6, I believe. The original capacity was

authorized by FERC to be 15.6. Although that was not installed at that time, FERC recognized that it was additional potential with the water falls here to generate more electricity, so FERC ordered the licensee, at that time, within five years to build up to this additional capacity, or demonstrate it was not feasible to do so.

So in the early 1990s, the licensee came back and said it's not feasible to build up this higher than 15.6 megawatt capacity; however, they upgraded one of the units here at the mill, and they upgraded, I believe, one of the units or both of the units at Kosterville and Gouldtown to increase the capacity there to bring it to current 8.6 megawatts of power.

So we're proposing, at this point, to increase just the mill component of that, and bring it closer to this authorized capacity that was done in 1986. In early '90s, the owner of the facility at that point said it's not feasible to build the entire 15.6 megawatts, but we're going to incrementally increase components of that, FERC did withdraw that authorization to get it to the present capacity of 8.6 now, which is the reason

now we have to go back to FERC and say it's economic now to build out to achieve this ultimate capacity, and have the license amended to allow us to do so.

We're proposing from the Lyons Falls mill to just the mill facility, which we looked at this afternoon, current capacity is 5.8 megawatts. We're planning to increase that to a total -- a new total of 11.2 megawatts, and that will require amendment of the FERC license.

On January 30th of this year, Northbrook Lyons Falls, which is the NBLF, with the assistance of HDR, distributed an additional consultation package, and included an amendment package. The process to -- the FERC process to go through is called a capacity amendment, and has a series of steps and a series of documents that need to be prepared by the applicant or the licensee in order to get to the point where we actually submit an application to FERC for the proposal that we wish to undertake. Because of the originally -- previously authorized capacity increased, and the work that was done in 2006 in association with that proposal at that time, and

the relevance of some of the studies that were done then, we're trying to streamline that process and combine some steps where we can, without sacrificing the ability of the public or the agencies or anyone else to have input into that process. So instead of issuing an additional consultation document, we combined that with the amendment package to put in not only what the existing situation is, but also what the proposal is, and what we think the effects will be on the environment, on recreational opportunities, on socioeconomics of the locality, and what things -- what changes in the operation -- we mentioned fish passage and we mentioned aesthetic flows down on the tour -- that we're including in our proposal to accommodate some of those other interests that we know exist at the facility.

So by putting those things into a single document, it's one less document that we generate, but it also makes sure that the time period over which the whole process may take.

MR. GIBSON: And Dan, if I can add there? So we did send out that document back on January 30th. If you have not received a copy of

that document and you would like a copy, we have disks up here, CDs that have a copy of the disk. We also have a copy here at the table you can look at. And if you indicate as such on the sign-in sheet, we'll be happy to send you a copy.

The other thing worth noting is we did place a copy in the library here in town, so folks may have already seen that. But if you go in the library, there should be a copy sitting there. It looks just like this and you can flip through it.

MR. PARKER: Backup a step. We have agendas up here if folks would like them. The way we plan to break out or conduct the meeting this afternoon and this evening is in two sessions. The first session, which we're going through now, is an overview and general description of the existing conditions and what our proposal is to change it at this facility. And then we'll take break. We'll take questions throughout this first portion and during the break. And then afterwards we'll get into describing some more of the technical work, some of the technical studies that were done in 2006, the relevance of the results of those technical studies through our proposal

today, and any other technical issues related to the environment, recreation, or socioeconomic factors of the proposal.

So people have an opportunity now to raise questions or during the break, and if folks are interested in staying for the more technical session afterwards, feel free, but don't feel like you're obligated to stay.

MR. BARTOW: John Bartow. Can you just give a snapshot of the timeline you're thinking ideally this would occur over?

MR. PARKER: Yes. We're going to get into a schedule later on in the presentation.

MR. GIBSON: At the very end, so maybe it would be good to touch upon it.

MR. PARKER: So we're having this meeting today. The initial consultation amendment package was issued in the end of January, so we'd like to get comments back by March 15th. We'll take those comments. Those comments may be on the overall proposal, the level of project effects that are described in there, the comments on the proposed changes that we're planning to make, or anything along those lines.

So once we get those comments back, we'll probably convene a conference call or another meeting to discuss those comments, accept the comments where we can, discuss the comments where we think are appropriate or are appropriate, and try to settle as many of those comments as we can, with the ultimate goal of getting an application to the Federal Energy Regulatory Commission by the end of May.

MR. GIBSON: Yeah, the April/May timeframe.

MR. PARKER: And then part of that is driven by selling the power, or being able to generate the power to make it available for sale on the market.

In 2014, NYSERDA, New York State Energy Research Development Authority, issued an RFP to sell -- or to acquire renewable energy credits. So renewable energy generators in New York State not only generate electricity, but also generate renewable energy credits. In order to be eligible for the auction, they had about a fifteen-month, eighteen-month window where the facility had to be online. And obviously given where we are in the project, we weren't eligible, because we couldn't

meet that short a timeframe.

NYSERDA has indicated it's going to come out with a similar proposal in 2015, and possibly one more in 2016, so this may be your last opportunity to be able to bid into that. We anticipate there's going to be a similar fifteen- to eighteen-month requirement to be generating that electricity in order to be eligible to bid in this summer.

So that's driving our schedule. In order to be able to make the changes that we're proposing to build this additional capacity, we need to be authorized by FERC to do so, and looking at issuing RFPs to acquire the new turbine generators, the major civil structures, all the intake, powerhouse, all the related structures, developing those RFPs, advertising those, receiving bids, negotiating with contractors. Actually doing that construction between now and the end of 2017 is a relatively tight schedule. That's a schedule we need to meet in order to meet what we expect is going to be NYSERTA's deadline for those auctions.

MR. BARTOW: Your goal would be to have

this operational by the end of 2017?

MR. GIBSON: That's correct.

MR. PARKER: In addition to that, there's the -- we've got indications that New England, which is a separate, independent system operator or electricity operator, is also issuing an RFP for renewable energy in Connecticut, Rhode Island and Massachusetts, possibly Vermont. And we expect they're going to have similar timeframes where to be eligible to bid into supply energy, into that market, we're going to have that energy available by the end of 2017, beginning of 2018 timeframe.

So obviously if the energy is what is our revenue source, we've got to have a market for that in order to justify to our senior managers and to our owner, who wants a return on his investment, that we're going to be able to get our RFPs back to build it. So we need to move forward and get those -- put in those bids on those type of RFPs to be able to sell the energy to justify the increase.

Also, we've talked with the mayor. We've talked with LCDC and a couple other folks in the

area. We presented at the Lewis County Economic Development Conference last fall that we're also interested in selling the power locally. So we're going to be approaching large consumers and other entities in Lewis County and surrounding counties to see whether they'd be interested in being able to sell that energy directly from the facility to large energy consumers.

So those are really the drivers of the schedule. That's roughly the timeframe. And we'll discuss more of the intermediate steps. Any other questions?

MR. GIBSON: Dan, if I could have one other item there?

MR. PARKER: Sure.

MR. GIBSON: So like Dan explained, we're going to take a pretty hard break here during the meeting. If you look at the agenda -- like Dan was saying, we're kind-of combining two meetings today. We're having this upfront meeting that you would typically do at the beginning of the process, but because there was so much work done in 2006, folks from Kruger and their consultants went out, they collected water samples, they

collected fish samples. The second half of the meeting, we're really going to get into that. So you're welcome to stay for just the intro. The intro's going to tell you what's there and what's proposed, and you will have a very good understanding, if you do just stay for the first part, but everybody's, of course, welcome to stay for the second part, where we will talk about water quality, sediments, and all the things that were done back in 2006, and the things that we're going to be doing to meet the requirements of turning in the application. If you stay or don't stay, we have food from Boondocks.

So when we get to the break, we will take a break. Folks are welcome to help themselves. We've got a fair amount of food there, so feel free to eat up.

MR. PARKER: Whether or not you stay, you're still more than welcome to submit comments. People can give verbal comments today, if someone feels they have a comment to make or they have a question, or they want to comment into the record.

As you can see, we've got a transcriptionist. This meeting is required to be recorded through

the transcription, so that whether anyone here wants to get a copy of that to see what was said, or FERC wants to get a copy of that to see what was said during the meeting, that's available, but that doesn't preclude you from sending in comments. So any time before March 15th, if you've got comments, you can submit written comments.

As Jim said, we've got CDs here that are available. We've got one paper copy here. There is a paper copy -- is there a CD at the library, as well, or just a paper copy?

MR. GIBSON: I don't know if there's a CD at the library. I think there's just a paper copy.

MR. PARKER: If folks want a paper copy, and this one goes tonight, by all means get with Jessica or with Jim and we'll get you a paper copy as soon as possible so we can enable you to send in comments if you'd like. You taking over from here?

MR. GIBSON: Yes, I'd be happy to. Okay. So what we'll do now is -- for the folks on the site visit, you saw some of what we're going to be

talking about, but we want to give a description of what currently exists and what's being proposed.

And as Dan said out on the site visit, there will be some references back to the 2006 discussions about -- if you folks remember, if you look over here, there was some talk about building a new powerhouse over on this side. That's not happening now, but some of what we'll talk about is some of the studies that were done/.

And now we're over on that side. So what we have here -- I think everyone is familiar with the area. If you're not familiar with the area, we've got the Black River coming through, and then we've got the Moose River flowing in, Kosterville and Gouldtown dam mentioned earlier just upstream here.

And as was mentioned out on site, what's being proposed here will have no effect on what's going on at Kosterville or Gouldtown. So everything we're talking about is just limited to the modifications here within the footprint of the mill.

Once again, I think folks are pretty familiar

with the mill and with the powerhouse, but once again, we're talking about the existing and proposed powerhouse that are located within and adjacent to the mill site. So once again, nothing over here on this side of the river. Everything we're talking about is on this side of the river here.

So in terms of what currently exists. We have the dam. You're going to see a lot of references to the L-shaped dam, and the reason why it's called L-shaped is because of just that. It's got that angle to it. As Dan said out on the site, it's got flash boards. So if you've seen the dam during the summer, it's got that extra twenty-six inches of flash boards on top. Those are normally there. They will fail at times. They are designed to fail. That is for dam safety purposes. So if the water gets too high, usually about two feet above the top of flash boards, they will fail, or obviously ice will knock them over.

And the dam is made up of a couple different sections. We've got a spillway section. We've got a gate section. And it all flows over the falls that exist there. Okay.

The impoundment itself is a 130-acre impoundment. Here's the dam. Here's the powerhouse. And when we talk about the impoundment, it's this area back here that's impounded more by the dam.

The elevation. So the elevation at the top of the flash boards is 806.5 feet above sea level. And the tailwater's here, so that's the water below where the water comes out of the powerhouse, is 734.4 meters above sea level -- or feet above sea level. So you're talking about sixty feet -- sixty feet of head here between the top of the flash boards and the tail water. We'll talk about this a couple time today, but none of that is going to change. Northbrook Lyons Falls is not proposing to change the dam, change the impoundment.

We'll talk about run-of-river operations. This plant is operated in run-of-river. You don't see the impoundment fluctuating up and down. They're not allowed to by their current license. They're not proposing to do it under an amended license. So none of that is going to change in terms of anything going on up here or along the

dam.

It was kind-of snow-covered when we were out there today, but this is that intake structure. So if we had a little bit better weather, we could see what was there. This is where water flows in. There's trash racks there, so they're just bar trash racks.

The current spacing on those trash racks is one-and-seven-eighths inches, so it's just shy of two inches. Where that's significant, and it goes back to what Dan was saying out there about the amount of ice that builds up on the bottom of those racks in the winter. Obviously we're in the north country. Water gets cold. You get ice buildup on those racks.

We'll talk in a little bit. There is interest in a number of agencies to protect fish that potentially go through those racks, so we'll talk about reducing the rack spacing on those racks. The agencies, particularly the Fish and Wildlife Service, likes to see one-inch spacing compared to the almost two-inch spacing. So we do have a proposal to have -- during the summer months and fall to have one-inch, and then during

the winter months have three inches. The three inches is to deal with the ice.

And the other item worth noting is there is a gate here right now, but like Dan said, this is all going to be replaced, all these existing structures. I think folks had a chance to see this gate structure when we were out there. So we were standing on this gate right here, this decking. Had kind-of a chance -- when we looked down -- we were standing right here and people kind-of peeked down into that stairwell. We were looking back this way. And basically what you were seeing is you were seeing the way the water flows from the gate structures, down through the penstocks and into the powerhouses. And these allow the facility to close off the penstock when they need to de-water the structure. All items that are there today would be replaced under the proposed scenario, but with very similar structures.

We talked a little bit, when were out there, about the two different powerhouses. We've got one powerhouse with just one unit. That's unit number one. And then we've got the larger

powerhouse with four units. That's units six through seven.

So once again, if we look over here on the aerial, this is that one single unit powerhouse that we had a chance to look at from the decking, and then over here we have the powerhouse with the four units. Once again, this is going to stay. It's going to be mothballed. It's going to be decommissioned. It's going to be disconnected from the penstock, so there will not be water flowing through it. That will be mothballed. This here will be fully decommissioned, demolished, and this will make way for the new structure to be built.

Okay. Now, what you see up here is this is the general operating capacities and some specs on those units.

Okay. So in terms of operations, a couple things worth noting. Once again, it operates in a run-of-river mode. Water that comes into the impoundment is either doing one of two things. It's either going through the units to generate electricity, or it's flowing over the spillway. So if there's more than enough water to go through

the unit, it's spilling. Otherwise, it's going through the powerhouse.

Currently, the lowest minimum operating range of the unit nine is 70 cfs. So I think this was one of the questions out in the field in terms of how this would change. Right now, if you had 40 cfs, 50 cfs coming into the impoundment, the smallest unit could not operate. Once it gets to 70 cfs, that unit turns on and then starts generating electricity. And then -- well, we'll talk about that in the next slide. No, it's right here. Sorry. All the way up to 1,170 cfs. So right now, everything between 70 and 1,170 is flowing through units. Below that is going over the spillway, and above that is going over the spillway. And that's essentially what this bullet here indicates, that during periods of high flow when water exceeds that threshold of 1,170, water is going over the spillway, and then during lower flow periods, below 1,170.

Kruger is doing everything they can do to stay within the compliance status of their license. Their license requires they do certain things, and to support the grid. So putting

electricity out on the grid. So that's the existing operations.

We're going to talk a little bit about how this is going to change, because these numbers change. But once again, we're going to continue to be run-of-river. We're going to continue to -- high flows flow over the dam, and during low flows, maintain compliance with the license and be able to generate electricity as the water allows. Okay.

So in 2006, a document somewhat similar to this was prepared. It was distributed to some group of folks. And once again, what it proposed to do was to build a new powerhouse on the opposite side of the river. As Dan mentioned in the field, there was a fair amount of feedback on that proposal. That proposal seemed to have some criticism, particularly as it related to the recreational opportunities on the other side of the river, the potential effects on aesthetic flows over the dam. And even though Kruger did some studies and kind-of took the process further, they decided it was not a viable option at the time. So here we are again today. We're talking

about moving everything back over from this side of the river in terms of development, back over to the current side of the river.

So we kind-of touched upon some of this already, but the ongoing demolition of the mill -- I think folks are pretty familiar with what's been going on with the mill in terms of demolition. That's what's made this possible. If the mill was still up and operating, or if the mill was not being demolished, you wouldn't have the room to do this. But with the demolition going on, this room has become available.

So once again, this powerhouse here will be replaced by a single powerhouse, and we'll look at some drawings here in a moment, which will have two units. So as compared to the four smaller units, which are in this building, it will be a new powerhouse with two units.

I think we already kind-of touched upon this, but the L-shaped dam will continue. Nothing is going to be touched there. The twenty-six-inch flash boards, nothing is going to change there. So once again, no change in the impoundment, the storage capacity, the operation of the facility.

Okay.

So here is a drawing -- and you're going to see some other drawings. Maybe if you folks are interested during the break, we've got the four drawings in the back. We've got the aerial up front here.

What this just demonstrates is what is proposed, and it's kind-of hard to see here, but you do have the L-shaped, kind-of for reference, the new intake structure, new penstock structure, new powerhouse discharge right until the tailrace. So we talk about this -- and we'll talk about it more in the second part of today's meeting, about the effects of the project on the environment, the potential effects. Really all we're doing is we're changing the box that the water flows through. The box is going to exist pretty much in the same location, exist within the footprint of the mill, and water is going to flow in, water's going to flow out. It's going to enter about the same location, exit about the same location.

The back watering that you see of the tailrace that currently exists, because when water flows out of the power plant, it forms a pool at

the base of the falls. That's going to continue to occur. You'll still have that backwater effect. So you will have water in this whole tailrace area. This area here will continue to be inundated as it is today.

Once again, I realize this is hard to read. If anybody has any questions about it, please don't hesitate to ask. And then once again, we've got similar drawings in the back.

Here are the specifications of the new units. What's worth noting here are a couple items. Once again, two units. The total rated flow of each unit is 1,236 cfs. In the total project hydraulic capacity, it's 2,684 cfs. So it's between this range now. This used to be 70, and this used to be 1,100 -- and I think we said 70. This is going to be the operating range now for the facility. So that's worth noting, and we'll talk a little bit more about the aesthetic flows that are going to be provided, fish movement flows that are going to be provided, but it's worth noting that any flows under 237 will go over the spillway. Right now it's any flows under 70 will go over the spillway. So you're actually capturing a little

more sliver of that flow, that overall historical flow that will be flowing over the spillway.

And we'll talk a little bit in a moment about -- that under the proposal, as compared to today, where you could have periods where there's no flow over the spillway. Folks have probably seen that. You look out at the dam and there's no flow. Based on the historical records of flow on this river, you will now have some flow over that dam one hundred percent of the time. And we'll talk more about why that is. I can break that down, how that flow is going to be provided, but I think that is noteworthy.

You go back to the 2006 discussions, and it seemed like there was interest of aesthetic flows over the dam. Once again, based on this proposal, you'll have some flow going over that dam at least one hundred percent of the time. Okay.

It's also worth noting -- it's really not going to affect much, but it comes into play in terms of the application, in terms of the transmission system. The generator leads will lead out of the powerhouse into the step-up transformer, which is located right over here back

over by the facility. That will then lead to a transmission line. Folks saw that on the site visit. That transmission line currently is next to a building, and then runs out to the Franklin Street substation. Given that that building is going to be demolished, it's looking like it's going to take a more direct route, straight from the powerhouse straight to that Franklin Street substation. We have a drawing here that, I think, shows that. Yes. So I think the substation's right here.

UNIDENTIFIED SPEAKER: Yes.

MR. GIBSON: So basically right now what's happening is it's running across down through here. You might see just a more direct route straight across here.

MR. PARKER: Jim, that's going to depend on ultimately -- because that's crossing the LCDC property and where they've got buildings, and it hasn't been fully decided what buildings are going to come down and what buildings are going to remain. The ultimate uses will be -- we'll be working with LCDC to provide that, so that it doesn't disrupt any of their business plans when

they develop their plans for their property.

MR. GIBSON: So really on one hand nothing is going to change. Currently the project connects with the Franklin Street substation. It's going to continue to connect to the Franklin Street substation. It just may take a more direct route.

A couple more drawings here, and you can see the same drawing in the back, but it just gives an understanding about what's going to be built from a cross-sectional view there. You're going to have the intake area with those trash racks that I mentioned. Once again, talking about three-inch spacing, particularly for the winter months because of ice, but then with seasonal overlays. Essentially as soon as the ice is out, as soon as we can get out there and do the work, we'll be putting those one-inch trash racks with the overlays in, in order to help with the fish protection. Water will then flow down through the penstock, through the two units, out the draft tube and into the tailrace area.

Once again, another cross-section. We have this one in the back, too. It just shows the

intake area. Once again, looking at the trash racks, the intake into the penstock, and then you jump over to the powerhouse, more modern powerhouse with new equipment. Water flows down in terms of the turbine, out through the draft tubes and right down into this area again. Okay.

So I think we've kind-of touched upon some of this, but I think it's worth noting again, because once again, what we're doing is changing the box the water flows through.

The obvious question is: How can that affect anything else? Once again, the facility will continue to run and to be operating in run-of-river mode. I know I keep harping on that, but I think it's important. Nothing here's going to change. Nothing down here's going to change. It's just going to be how the water is distributed in this area.

As Northbrook Lyons Falls currently does, it's going to minimize potential fluctuation. There is a little bit of fluctuation. When I say a little bit, I'm talking about inches. We're not talking feet. We're not talking three or four feet, bouncing that pond up and down, but what you

do have is you have some natural fluctuation. You've got upstream effects. You've got precipitation, rain. You've got snow melt. Try to think of it as a bathtub. You're in a bathtub and you start splashing around a little. Water's going to run up on the sides a little. It's going to go up a little. It's going to go down a little. So right now, Northbrook Lyons Falls looks to minimize that and will continue to do that.

Like I said earlier, the facility's tailrace discharge will continue to backwater. You're not going to see any difference along this beach area. You're not going to see any difference in this area here. And then you're clearly not going to see anything downstream as you continue down the Black River. Once again, what's happening in the box is changing a little bit, but what's happening outside the box is not changing.

And then I kind-of touched upon this already. The two new units will operate independently in flows ranging from 237 to 2,684 cfs. I think that question was asked in the field. Once again, you're kind-of -- let's say you have 200 cfs, the

unit's not turning on yet, 237 cfs, the unit is turning on -- just one unit is turning on. As it starts doubling, what Kruger will be looking to do is operate the units as efficiently as possible. They may run that first unit up a little bit higher than 600. They might run it up to 700, 800, and eventually that second unit would kick in. It's about seventy-four percent of the time, based on historical flows, that we're looking at flows between 237 and 2,684. So what that means is about twenty-six percent of the time, we'll continue to have flows going over the dam due to natural flows.

In addition to that, we're going to have the aesthetic flow. We'll also have the downstream movement flow provided it's seasonally. This is one of the reasons, this seventy-four percent or twenty-six percent, that when you look at the historical flows on the river, we can say that you'll have some spillage over the spillway one hundred percent of the time.

What this just shows is it just shows expected generation at the new facility. So you can see as flows are higher, April, May, you've

got some more generation. You see those higher flows in October, November, December, higher generation. You see the lower flows in the July and August, September timeframe -- lower flows, lower generation. So you could pretty much take this same table and relate this to flow down the river, and you'll get a one-to-one match-up there.

MR. PARKER: And to give you some perspective, the annual expected generation from the developed project is 63,492 megawatt hours per year. Current generation is about 37,000 megawatt hours per year, so it's almost double the generation that we're seeing here.

MR. BARTOW: Is that normal for flows or efficiency?

MR. PARKER: Both. The equipment we know is old and old technology turbines. And for folks that are hydro nuts --

STENOGRAPHER: I'm having a hard time hearing you.

MR. PARKER: The units are Francis-type units. They're not adjustable. They do have a wiki (phonetic) gauge that can adjust the flow

coming into that, but the veins are fixed. So basically the rotation is generating the amount of energy.

The type of units that we're looking to put in with the new proposal are called double-regulated Kaplan (phonetic) veins, so they're vertical -- they're like a big propeller wheel, but the veins can be shifted in a more vertical position or a more horizontal position to more efficiently use the water system. You get more energy using less water. They've got adjustable wiki gauges that surround the turbines, which also help to make the water flow more laminar, and remove more of the energy from the water than is currently being done. So the combination of new technology, bigger turbines, and more efficiency.

MR. BARTOW: And what are the peak flows?

MR. GIBSON: When you say "peak" -- so this facility is not peaking. So it's just run-of-river.

MR. BARTOW: I know, but you're taking 26 cfs.

MR. PARKER: 2,600.

MR. BARTOW: What's the maximum flow you see, historically?

MR. GIBSON: You know what? That's a good question. It gets up to a couple thousands cfs. We have flow duration curves to show what's happening. We can get you that, but I think you're probably getting into ten, fifteen thousand cfs.

MR. BARTOW: That's high. So there will be a lot of water bypassing --

MR. GIBSON: Yeah, there will be times. I don't think you're going to see anything different in that March, April, May timeframe. You get that spring runoff when that starts melting. That's just going to go over the dam.

MR. BARTOW: You'll still be pulling off your 2,600?

MR. GIBSON: Yeah, trying to generate as much as we can off of that. The reality is there's just too much water generating.

And for folks that are familiar with it, you head down the Black and you get into like Carthage and Deferiet and Dexter, you start going down the Black River, you see a lot of flow going over

those dams in the spring. I think at times you get more than fifteen, twenty, twenty-five-thousand cfs going down the Black, because that's after the Beaver comes in there.

So this slide is pretty important, and the reason I say that is because as we go through the process, and Northbrook Lyons Falls prepares the amendment application, and they work with the DEC, and they work with the Fish and Wildlife Service, and they work with all the other entities that may have interest in the project, they have to demonstrate that they've looked at the resources of interest - water quality, fisheries, recreation, those things that are of interest to parties, aesthetic flows - and demonstrate what they've done in their development plan to try to enhance those resources or not adversely impact those resources.

So when you go back to the 2006 conversation -- and in Northbrook Lyons Falls, they benefit. Like Dan said earlier, they have other facilities here in New York, and other facilities in the northeast. They've had a chance to work with the agencies on a number of occasions. They have an

expectation -- they have an understanding what the expectations are.

So when we look at the current project, once again, construction is limited to the former Georgia-Pacific paper mill site located on river left, as you look upstream, or the west side of the river. That is significant. If we were sitting back here today talking about building something over here, Kruger or Northbrook Lyons Falls would not have heard whatever they said back in 2006. They heard that, and like Dan said out in the field, they made that change. That's a significant step.

They're going to continue to run the facility in run-of-river mode. I know that's probably the tenth time you've heard that in the last half-hour, but that is significant, because when you talk with American Whitewater, when you talk with a number of non-governmental organizations -- when FERC looks at this application, they're going to want to know what's going on with that impoundment. Is that impoundment bouncing up and down, or are they trying to hold it as steady as they can? And this is what they're going to try

to do. They are going to try to hold it as steady as they can with the understanding that there's a little bit of sloshing in that bathtub effect I mentioned, but that's just little fluctuations.

Once again, there's no change in the pond elevation. I think when the original designs started, looking at it, started thinking, boy, what if you could raise that dam by a foot or two, the higher the dam, more power, but Kruger made the decision that that would not be consistent with what the agencies would be expecting, what the public would be expecting, so they decided not to raise this dam as a part of this proposal.

This next bullet here is very significant. They're going to be releasing 70 cfs, cubic feet per second, at the dam seasonally. And where that 70 cfs comes from is first of all, 45 of it, 45 cfs is going to be released from March 15th to November 30th in this area right over here in a gate yet to be developed. So it's going to be really close to the powerhouse, really close to the intake.

The purpose of that 45 cfs is to provide a movement flow for fish that want to move

downstream. Currently, that doesn't exist. Currently, if you're a fish and you come up to the dam, and there's no spill over the dam, you're going through the turbines or you're waiting for high flow. But based on Kruger's consultation with the agencies, and even when you look back to 2006, this is something the Fish and Wildlife Service asked for. They said that they wanted downstream movement flow of approximately two percent of the flow that's going to go through the turbines.

So once again, 45 cfs through a gate right here. And later on we're going to talk about it. There has been a conceptual layout design for how that will work. So you can put a fish through the gate, but where is the fish going to go? The idea is you've got to create a little channel down through there so they have kind-of a smoother ride down the falls. So that's where 45 of the 70 cfs is going to come from. The other 25 is going to come from this area over here, and it's going to be a flow specific just for aesthetics. So the idea is if you have 45 coming over here, which is going to fan out a little bit, and you have

another 25 coming over here that's going to fan out, the idea is you've got 70 cfs coming over the falls for both fish and for aesthetics.

Now, this is going to be providing an aesthetic flow if we look at it from a recreational perspective. So I think we said May 1st through October 31st, the recreation season. So that's when you would get that additional 25 cfs for aesthetics.

Now, going back to what I was talking about a moment ago. In addition to this 45, in addition to this 70 --

UNIDENTIFIED SPEAKER: 25.

MR. GIBSON: I'm sorry. Total of 70, in addition to this 45 and this 25, just naturally you have, twenty-six percent of the time, more water than you know what to do with. That's going to flow over here too.

Once again, how can you say there's going to be, a hundred percent of the time, some water flowing over the dam? It's because in the new license, amended license, there's going to be a requirement from March 1st -- excuse me, March 15th through November 30th to pass 45 over

here, through May 1st to October 31st 25 over here. So you could see how that's covered, and then you start getting into those natural flows that occur anyhow. And once again, as we said, if you're under 237, that's going to pass over the dam, because the units won't be able to operate that low of a range. And over the 2,000, some of it's going to flow over the dam.

So these are the primary -- what we call protection mitigation enhancement measures. It's just a -- it's a term that FERC and other agencies use. What are your PM&E? What are your protection mitigation enhancement measures? These are kind-of the bigger ones that came out of the 2006 consultation, as well as just working with the agencies over the years knowing what would be expected.

MR. KRAEGER: Steve Kraeger. Currently on river right there is no control to control that 25 cfs, correct?

MR. GIBSON: That's correct.

MR. CRAIGER: Are there plans to put some kind of a controlling -- so there will be construction on that site?

MR. GIBSON: There's going to be this. So we've got the flash boards. So we're going to notch the flash boards. So if you think about it as -- let me just step over here. You've got the flash boards that -- if I can open this -- this is a brand new box. Okay. You've got the crest of the dam. And then you've got these twenty-six-inch flash boards. These are just the posts that hold the flash boards. So this brings your height of your crest up to twenty-six inches, okay? These are actually not twenty-six-inch boards. These are a series of smaller boards that make up twenty-six inches.

So we've done the calculations to see what it takes to pass 25 cfs. The idea is that's compared to having our twenty-six inches to pass that 25, you just take off a part of one of those sections. So that's what would provide the 25 cfs. So you wouldn't have to do construction, okay?

And if folks are interested, I'd be happy to jump ahead. Maybe we can do it just before the break for those that may not be sticking around for the second part of the meeting. I can show you those calculations that show kind-of the width

you need to pass the 25 cfs, assuming kind-of a rough rare flow through that section, okay?

In addition to those PM&E measures, protection and mitigation measures, a couple other items. We mentioned the rack spacing. Once again, ice is an issue here. We kind-of saw it when we were out there today. They've got the bubbler system going. So once again, we're talking about putting in three-inch spaced trash racks for year round use, but then there will be one-inch clear seasonal overlays. Once again, when the ice is out and it's available to do that, you put them in and then you take them out later in the year. This would be done in consultation with the Fish and Wildlife Service, the DEC and other parties regarding the schedule, and a trash rack management plan will be developed that defines how that's done. Okay. And that's common. You look at the Black River, you go down the Black River, see a number of facilities with seasonal overlays in place. It's not a big document. It just tells you, okay, this is what the rack spacing is. This is the dimensions. This is when it's suppose to go in. It gives you

some requirements for reporting, particularly to the DEC, to make sure that they get put in in time.

There will be construction. So as a result of construction, there's going to be erosion settlement control plans put in place. There will be consultation with the DEC. There will be a temporary emergency action plan put in place. There will be all those things to make sure that during construction, things are done properly.

There's going to be an aesthetic resource plan. The aesthetic resource plan deals with the management of that 25 cfs, and also in terms of visual aspects associated with the powerhouse.

And last thing here, there's been consultation with the State Historic Preservation Office. Based on that consultation, it does not appear that the State Historical Preservation Office has real interest in this. The mill's being torn down. They see the powerhouse as a part of the mill. We have a letter from the SHPO's office, the State Historic Preservation Office, that says it's okay, go ahead and tear down what you need to tear down, but we will

continue to consult with that office just to make sure there's nothing else that needs to happen there.

The one other thing I'll mention here is, with everything we're talking about here, particularly as it relates to fish protection, and we have a figure here in a little bit, the trash racks that are going to be installed are going to be angled, and that just goes back to a fair amount of consultation with the Fish and Wildlife Service and with the Department of Environmental Conservation over the years. If you could picture fish swimming up to a rack and they have that attraction flow, they're going to want to keep going forward. And the idea is -- the reason why you put in the smaller rack spacing is they get there and they bump their nose and they look around for someplace else to go. By angling that rack, and particularly angling that rack towards the opening for the downstream movement where that 45 cfs is, the fish, instead of coming and hitting something, they're going to come, hit something and be guided that way towards the opening of the 45 cfs.

I've had the chance to get -- I'm over from Syracuse, as well as Jessica, and there's always that interest in putting in angled racks. This gets back to Kruger's interest in making this process move forward in an expedited fashion. By agreeing to those angled racks, that is a pretty big step forward.

So once again, I just want to make sure everybody -- we've got a figure later on that shows that -- that once again tying into that 45 cfs fish movement flow, that angled rack will move the fish towards that opening. Okay.

So with all that, that takes us to the break we talked about earlier. What we've done here is we have gone through what particularly occurs at the very beginning of the process. We described what currently exists. We described what is being proposed. We described the protection measures that Kruger is proposing. As we move into the second part of the meeting, as I mentioned earlier. We're going to really get into the macro inverter grates, and the water flowing, and the pH level of the water, because that's typically something you do later on down the road, and we're

compressing the schedule.

So I'll throw out a couple things. If anyone has questions, now is a great time to ask them. If anybody wants to see any of those other slides that I referred to, we can jump ahead and just kind-of cherry-pick a couple of them.

Like I said earlier, we do have food. If anyone is hungry, we probably have more than enough over there, but we're going to take a least a good ten-minute break here and then we'll pick up the second half of the meeting.

Any questions or anything anybody -- it's a good time, if you have any comments about the project. If you want to get anything on the record, now's an excellent time to do that.

MR. KRAEGER: Steve Kraeger. How soon are they talking about converting the river, as far as basically shutting down the power plant?

MR. PARKER: We wouldn't be allowed to do that until we get the amended license. So we expect, again, the schedule -- if everything goes as planned in the schedule, we expect to have that by the end of this year. So we may be -- but then we are into winter, which as you know, is not a

good time to try to divert water, tail water, in the Black River. So it would be in the summer of 2015.

MR. GIBSON: 2016.

MR. PARKER: Thank you. I stand corrected.

MR. GIBSON: And just for my clarification, when we say divert the water, you're talking about to shut down the units to start construction?

MR. PARKER: What we envision is we would put a coffer dam across in front of where the present trash rack is located, and tie that into the existing dam, and everything from the trash rack, penstock and powerhouse would be done in the dry. Similarly, we would have another coffer dam installed in the tailrace. If you can highlight on the poster there, it's just a small area. That area there is to isolate the location for the demolition of the existing powerhouse and installation of the new powerhouse.

As you look on the section drawing in the back here, one of the section slides that Jim showed you earlier, the new turbines are set quite a lit lower than the existing ones. So there's a fair amount of excavation that needs to be done,

and that's to reduce cavitation and reduce water erosion over the life of those turbines.

So there's an additional excavation for the new powerhouse that we need to do. So that coffer dam will be installed to de-water that area. So other than those two coffer dams, all that water will continue to flow over the spillway as it currently does. Does that answer the question?

MR. GIBSON: Dan, let me ask you this question, then. Is it fair to say -- I keep referring to this box, and what we're doing is we're changing the box. Things upstream of the box aren't changing. Things downstream of the box aren't changing. Is it fair to say that during construction, the only difference that's going to happen is the box is going to close? No water is going to enter the box, therefore, no water can leave the box. All water coming down the river is going to go over the spillway.

MR. PARKER: That's correct.

MR. GIBSON: And so when we say divert, and I guess you could say divert it and it won't be going through the turbines. The entrance to the box is going to close and everything is going to

flow down here throughout construction?

MR. ECKHAUS: Dan, just so I understand. So at this point, you do not intend to run the current generators during the new construction phase?

MR. PARKER: No. That was Larry Eckhaus. We had looked at that option, because earlier on, we were looking to try to reduce the loss generation, so reduce the time period when you lose generation. So we looked at various construction phasing options to try to maintain a generation, whether it was just in unit one, in a separate powerhouse, or some part of the overall generation at the existing facility for as long as possible.

Given -- when we talked a little bit about the schedule earlier on, some of the drivers are -- some of the RFPs coming out to sell the energy have varied to meet commercial operation date deadlines. We're not going to be able to do that. So we need to have a short construction window, which means we have to shut everything off to the river, and dry it out, and build everything within probably fifteen to eighteen months.

So again, it kind-of offsets. Either we try to keep the generation going and have a longer construction period, or we shut everything off and have a restricted construction period. And I think we end up about the same. Excellent question.

MR. ECKHAUS: Larry Eckhaus. During construction, the amount of water flowing over the dam will still be managed somewhat because of the flash boards, right, or will they be up, will they be down?

MR. PARKER: Dan Parker. We have a current FERC license, and it requires us to have the flash boards up when we dam it. So we'll continue to have the flash boards up when we dam it. If they get washed out, particularly if construction is going to occur in 2016 and into 2017, if in the spring of 2017 flow was operational, and the flash boards wash out, then when we can, we would be required to move them back in. So we would continue flash board maintenance as we do now.

MR. ECKHAUS: What I mean is if the water level drops and flow over the dam declines, would you be removing some of those boards to get the

flows to be what you would have after the generation, as it stands?

MR. PARKER: I'm not sure what you're asking. Oh, excellent point. I'll get to that in just a second.

One thing that Jim didn't say, which is very important, is that those 45 and 25 are when inflows are that amount. If inflows, which I don't think ever occur, were not dropped below 45, we would pass out whatever is coming in.

So that goes back to -- so since there's always inflow coming in, the pond is always going to be at the top of the flash boards, or at the crest of the dam. If the flash boards get washed out in the spring and we put them back in, there will be no flow as the water goes up.

So that occurs now and will continue to occur. What we can do during those periods is open -- and again, we'll have to do some consultation to see what folks want and what the agencies want. We could open the flood gates a crack and pass water while it's spilling. It will take longer to fill, but you're still passing some flow. So if that's attractive, attractive from an

agency standpoint for an environmental benefit or an aesthetic benefit, we can look at that too.

MR. GIBSON: Yes.

MR. CALTADO: From May 1st I think it is until October 1st, do you lose 320 cubic feet per second, take it out of the Black River at Forestport or the Barge Canal?

MR. GIBSON: Yeah. And I think that's incorporated in the historical flow we have. So what we've done is we've done modeling of the river, the Moose River and the Black River, and it accounts for diversions that are already occurring.

Once again, as a run-of-river facility, if those diversions stop and the water increases, there's just more spilling over the dam. Regardless of what happens, if more diversions are taken out upstream somewhere, under this proposal, they'd still be providing the 45 cfs, the 25 cfs, and then whatever they don't use for generation is spilling over the spillway, as well. Any other questions, thoughts?

MR. PARKER: Jim and I and other folks will be around the room, so as people get up and help

themselves to refreshments, come to the back here and take a look at the posters, and get a little bit closer view of some of the drawings that Jim presented up there, or we can have other conversations. If any other questions come to mind, let us know.

MR. GIBSON: And if I had to guess -- we just went through twenty-five slides. The next part of the presentation is eighty slides. So once again, you're welcome to stay, but I just want to give you a little perspective. We just went through twenty-five. We've got -- I'm sorry. We've got ninety -- ninety slides to go. So just plan accordingly. With that, we'll go off the record here until we reconvene.

(Whereupon, a brief recess was taken.)

MR. GIBSON: We're going to get started again. Like I said, we do have some slides to go through here.

And once again, the context of this is this is later in the process. Once again, what we're able to do here is leverage some of the work from 2006, leverage the consultation from 2006, and then based on some conversations a couple months

ago, we have done some activities over the last couple months. Just kind-of what would a conceptual layout look like for fish flow? What would it look like for aesthetic flow? We did some of those items.

So prior to submitting the application with the Federal Energy Regulatory Commission, we did have a meeting, like the second half of the meeting, where we could just go through the studies that were performed and how they relate to the resources. So that's what we're moving into now.

I will reiterate that what we're talking about here is in this document, so kind-of take in that document, take in section by section as I'm presenting it.

And the way that this agenda lays out, you see overview of resource areas, studies and results, A through J. That's what we're going to be going through now, those topics. Okay. I'm going to go through them. Just kind-of move through them rather quickly. If anybody has any questions, please don't hesitate to raise your hand. I'd be happy to clarify or talk about any

different aspect of what we're talking about.

One of the things we have to do in this report is just talk about general settings. I think folks are pretty familiar with this, but the projects located here is about forty-two miles north of Utica and forty miles south of Watertown just about.

The existing dam, the two powerhouses, and the impoundment are located at the confluence of the Black and the Moose Rivers, and we're about eighty-two miles, river miles, upstream of Lake Ontario. So once again, if you go down the river, in about eighty-two miles you're going to hit Lake Ontario.

What's relatively important there is in the watershed, there's about thirty-nine hydroelectric developments, with twenty-one of them being on the main stem of the Black River. So sometimes we talk about fish migrations up from Lake Ontario. There's obviously a number of barriers between here and Lake Ontario. And particularly not only those hydroelectric facilities, but natural barriers such as high dam -- or high falls downstream of here. So that's why we're not

talking today about eels or salmon or some of the other species, that if you're on another river or further downstream, you might be talking about. There are these natural barriers, as well as manmade barriers between here and Lake Ontario.

We talked a little about geology and soils, because we needed to know something about the sediments, about the project. In general, this area is a part of the Black River basin, an extension of Lake Ontario lowlands. The Black River valley separates the two predominant geologic features in the area, which are the Tug Hill Plateau to the west and the Adirondack mountains to the east.

What's significant here is particularly the soils that the project is located on. There are unclassified soils located along where the powerhouse is, and characterized as manmade soils. I think that's pretty obvious to everybody. The area where the project sits, where the work will be taking place, are pre-disturbed. We're not looking to disturb something that's never been disturbed. We're working within the footprint of the mill facility.

And just in general, here you see the watershed. Basically all this is is just a fancy way of showing how the elevation came -- I think everybody knows this. As you go from Lake Ontario, up through the Black River watershed, the elevation increases. Pretty common sense.

Okay. What we have to do is -- and you're going to see this a couple times -- we talk about a resource like sediments and soils. We give some background, and we talk about in terms of this project, what is being incorporated into the project in order to minimize any potential impacts, once again, when we talk about protection mitigation enhancement measures.

So as it relates to impoundment, the first thing that happened is the characterization of sediments. So back in 2006, Northbrook Lyons Falls conducted an evaluation characterizing accumulated sediment with the Lyons Falls mill footprint. That was of particular interest back in 2006, because you were talking about this additional development over here and what is over there. So there was work done, and in particular, the results indicate there was relatively little

accumulated fine-grained sediment in the impoundment, and that which does exist is dominated by sand. And we see that other places on the Black River, near the sandy watershed, kind-of remnant of glacial -- glacial periods. So you do get sand flowing down the river. The bulk of this material is on the right. So as you're looking downstream, that's the east side. The bulk of that material is over here. Once again, if you think about that, it would kind-of make sense. You've got the low velocities over here, because of the attraction flow to the units. You've got flow going on over here, whereas the slower waters on this side of the river, so that causes the sediments and the sand to drop out. So when we talk about sediment, it appears that there's more sediments on this side of the river.

The average sediment depth in the impoundment is less than half a foot. And a small sediment wedge, consisting primarily of gravels and sand, exists along a portion of the upstream face of the dam. And that just shows in the impoundment, what was found, once again back in 2006 when the

transect was performed and the sediment was looked at. You see a fair amount of sand. You've got the bedrock, the boulders, cobble. You're looking at fine silts, less than one percent, and then four percent gravel.

So once again, in terms of PM&E measures, what is going to happen here, and we have to do this with every resource area, is the construction is going to be related to the footprint. It's not going to go out there, dredging in here, dredging down here, or making changes in those areas. Once again, it will continue to be run-of-river mode. You will hear that a number of times as we continue through this. No changes to the impoundment level, not going to have any pound of fluctuation that would cause any erosion along here or change the slope of the banks up and down the impoundment.

And once again, we're going to have an erosion and sediment control plan prepared, and a temporary emergency action plan to deal with any potential sediment generated from the construction activities. So that's geology soils as a resource. And we're going to do some measures in

here during the construction, not to cause them any problems down the river.

That then takes us to water quality. That's the next item on the agenda. What we have to do is we have to evaluate how the water is used in the river. So there are no other existing or proposed uses for the Black River or Moose River water in this general vicinity. It's being used for hydroelectric. It's also being used for some recreation.

If you're familiar with the classification of waters in the state, the Black River through this area is classified as Class C from Carthage upstream to the Moose River confluence. So that includes all this here, and obviously downstream to Carthage. So Class C. And then it says Class C is best used for fishing and human consumption of fish. That's Class C. And based on the work that's been done, the water here associated with the project is rated a Class C classification.

Above the Moose River confluence, it's classified as Class C(T). So that "T" is significant for trout. You can have B(T). You

can have C(T). Once again, the indicator for trout, indicating that the water quality standards best be maintained for trout. And the lower most 1.8 river miles of Moose River, and that includes part of this impoundment, is classified as C(T) water. Where that becomes important is dissolved oxygen, and you can see right here on this next bullet.

For Class C, you've got to keep dissolved oxygen levels above five milligrams per liter, but for C(T), for trout, it has to be kept above six milligrams per liter, and also for pH. That's something else the state measures between 6.5 and 8.5.

We're going to talk about it in a moment, but there's been a fair amount of sampling by the DEC, and then back in 2006 by the folks from Kruger, and those standards are being met, not only for just C class but C(T). So they're staying above that 6.0 milligrams per liter.

In terms of water quality as it relates to the Black River and the Moose River, and this is pretty typical of the Adirondacks. Most contaminants that are found are usually associated

with atmospheric deposition. So we're talking about acid rain. We see that with the pH. There's a concept called episodic acification. So after a larger rain event, or particularly after a snow melt, you've got that acid rain and that lower pH that's tied up with the snow or comes with the rain. When you get a rain event or a snow melt event, you get that kind-of rush of water into the system. The river cannot buffer that, so you get those drops in pH, and that happens throughout. That was observed in this river back in 2006. There was a rain event, samples were taken, and you had the lower pH.

So in terms of -- once again, we have to look at water quality in its entirety. The things that we're seeing are consistent with what we saw or are seeing elsewhere in the state, once again tied to acid rain deposition and pH as a result of that.

So that's -- oh, the one other thing worth mentioning here is there are no specific fish consumption advisories for the Black River or the Moose River. However, there's a general advisory for sports fishing in the Adirondack region in

general. And it is worth noting that the Black River, within the Lyons Falls area, was not listed as impaired by the DEC in its recent Section 303(d) report. So once again, given that background of what's going on with water quality in the area.

So we went back and we just took a look at what else has been done in this river, and typically it's broken up by river. So there's been some work done in the Black River. There's been some work done in the Moose River, but because the project impoundment deals with both the Black River and the Moose River, we looked at both.

So with regard to the Black River, the DEC conducted what's called Rotating Intensive Basin Studies (RIBS) back in 2002 and 2003. It included a 22.5 mile stretch of the river from Lowville upstream of Lyons Falls. So a pretty big stretch, but it included this area. The RIBS data was reported in 2007 and indicates the water quality in the Black River in the vicinity of Lyons Falls is generally in very good to excellent condition, based on the DEC.

From a biological standpoint, because the DEC would do it, and Kruger did in 2006, they collect macroinvertebrates, an indicator of water quality. Based on the biological macroinvertebrate sampling, it indicated that it was slightly impacted water quality near the Black River near Lyons Falls because the invertebrate community was dominated by certain species, caddisflies, midges and mayflies. What tends to happen there is there's interest to having a very diverse community. The idea is the better water quality, the more diverse the macroinvertebrate community. Here it was dominated by a number of macroinvertebrates, so it was indicated as slightly impacted. Additionally, the DEC evaluated the characteristics of the fish community and assessed water quality, and based on that characterization, determined it was a good water quality.

So once again, what we did is we went back into the records, we reached out to the DEC, we reached out to a number of parties and said, "Hey, we're looking for any data that you can give us." And this is some of the information we found.

Getting back to this idea of acid rain and disposition from precipitation. The DEC concluded that elevated mercury and aluminum levels in the Black River, from Lowville to Lyons Falls, were not unusual for areas of the State affected by atmospheric deposition of mercury and subject to acid rain. Once again, it was seen in the water, but once again, tied back to the acid rain and pretty common of the general area.

Zinc concentrations were also determined to be elevated, but the DEC found that overall sediment quality is not likely to cause toxicity to the sediment-dwelling organisms.

So based on the RIBS data, these included the Black River from Lowville to Lyons Falls, there are no significant water quality impacts, and uses of the stream are considered to be fully supported. Once again, this is what's out there and we had a chance to document that.

In addition to the water quality, macroinvertebrate data collected from 1972 to 2002, so obviously a pretty wide span there, thirty years, the DEC categorized water quality in the Black River from Dexter to Port Leyden, which

includes Lyons Falls, as slightly impacted. That was the definition. Upstream from Lyons Falls to Hawkinsville, the DEC classified the water quality in the Black River as not impacted. In 1996, benthic invertebrate sampling was conducted by the DEC upstream and downstream of the former mill and it was determined that no significant impairments had resulted from the paper mills discharges. Because the mill had subsequently shut down, it is likely that water quality at Lyons Falls mill has remained non-impacted or has improved.

So once again, we're talking about a pretty large area, not only geographically, but a spacial perspective temporally from thirty years. We've seen very similar discussions in other rivers here in New York, particularly with the paper mills industry. You think back to 1972, the Clean Water Act was just coming into effect. We see, in general, the water quality in the rivers are improving.

So everything we just talked about is the Black River. Very similar to that, work was done in the Moose River. Once again, RIBS sampling or RIBS monitoring was performed in the lower Moose

River in 2003. The results of the macroinvertebrate sampling indicated that non-impacted water quality conditions were prevalent in the lower portion of the Moose River and its confluence to the Black River. According to the DEC, the macroinvertebrate community is well-balanced, diverse, and dominated by clean water mayflies.

Just continuing on here. The DEC sampling in the Moose River indicated that mercury and aluminum were parameters of concern. So once again, very similar to the Black River, tied to acid rain, you have some chemicals in the water, but the DEC concluded that sediment chemistry analysis for these and other metal contaminants showed no metals present above established levels of concern, and no compounds present in concentrations likely to cause adverse biological effects. So very similar to the Black River again. Of interest are the mercury and aluminum concentrations.

It is fair to say, for folks that haven't dealt with hydro plants as much, you're not going to affect the aluminum content or the mercury

content of any water by passing over a spillway or through a turbine. Depending on where you get the water in the water column, you could affect temperature, and depending on what that temperature is, you could affect dissolved oxygen, but in this case, we have surface-level withdrawal intakes, so you wouldn't have that here.

So once again, what we've done in this document is we've documented everything about water quality, even those things that the plant will not have an effect on.

So I think this last slide is on just the Moose River. The DEC also collected macroinvertebrate data for the lower Moose in '76, '82 and '91, and as a result, it indicated non-impacted and reflective excellent water quality. So once again, a pretty large span, '76 to '91, those were the conclusions back then. So that's all the background information on water quality.

You then look at what Northbrook Lyons Falls Kruger did in 2006. As a result of a meeting that occurred in 2006, a consultation with the agencies, Northbrook Lyons Falls went out and did

some sampling of their own. They conducted water quality studies in support of the 2006 proposal. They looked at dissolved oxygen pH, conductivity. And water temperature during the low flow period in the summer of 2006. That's typically done as compared to sampling for a full year, sampling for dissolved oxygen. Dissolved oxygen levels are going to decrease as temperature goes up. So you tend to focus on that low flow/worst case portion of the year, and that's what they did back in 2006.

So according to DEC guidelines, measurements were taken at five intervals throughout a twenty-four-hour period at six sample sites, six different locations, different depths within the water column. In the Lyons Falls impoundment, DO and water temperature measurements were taken at one-foot intervals from the surface to the bottom to create a vertical profile. River rain samples were taken at a depth of one foot. You didn't have that depth to work with. Instead, you had that one-foot to work with. And it also cites that conductivity and pH were also measured at one-foot depth. Data was collected in the

morning, late morning, early afternoon, early evening and evening from the afternoon of August 23, 2006 to August 24, 2006.

So this just shows where samples were taken. These are the modern sites right through here. And this just shows details of those locations, where they were, the dates sampled and the time sampled.

The summary of the mean dissolved conductivity and water temperatures are here. So we have the river under Site ID. BR1 is Black River 1, BR2 is Black River 2, and then MR1, Moose River 1, and then we've got the upper impoundment, the middle impoundment, and the lower impoundment.

Remember a moment ago we talked about that DO threshold, the five milligrams per liter or the six milligrams per liter, what would be considered that low flow/worst case scenario during the year. Readings -- average readings were about 8.7, 8.5, and you see in the impoundment 8.7. You've got your temperatures, you've got your conductivity and your pH. And then this is your percent saturation. One hundred percent is based on temperature, based on zone. What's the maximum

amount of DO that can be absorbed in the water? You see these are close to a hundred percent. So those are the average or the mean numbers for each site.

We also, because they did the profiles, looked at water depth. So once again, collected at one foot, two foot, three foot, four foot. They collected the profile down the impoundment and here's the DO level. So -- and here is your times. So in the upper impoundment, five different times went out there and collected profile samples, started at one foot, went down to eleven feet. And you see once again -- here we talk about eight. Once again, of interest would be that five down here somewhere or six in here somewhere, and everything was up in this area, which is a good indication of dissolved oxygen.

Here we've got the lower impoundment. I'll go through these a little bit quicker. X-axis, Y-axis. Here is the eight, so you see how high we are here. And here's the middle impoundment, well above eight. Water temperature, rightfully so. Water temperature is going to stay pretty constant. What's notable here is you don't see

the stratification, so unless you see some impoundments that are deeper impoundments, less of a river rain impoundment -- you see sometimes where you get about six feet, seven feet, eight feet down, you see a real drop in the temperature because the impoundment has stratified, and then you've got that colder, lower DO water down below. And like I said, that becomes an issue or a point of interest when you have a low water intake and you're taking that colder, lower DO water. Not only do we not have that with this structure, but we don't have that stratification occurring, so I think that's noteworthy.

So this is the upper impoundment, the middle impoundment, and the lower impoundment. Again, if you saw -- for folks that have seen other hydro plants, you'll see a line and you'll just see a straight drop and it picks back up, because you hit the thermal line where the stratification occurs. Okay.

So then we move over to pH. We looked at DO, we looked at temperature, now we're looking at pH. And this is pH for all sites. We see Black River 1, Black River 2, upper impoundment,

lower impoundment and you see this bouncing around. I mentioned earlier the episodic acification that occurs. That is what this is being attributed to. You just had a surge of higher acidified water. Based on the 2006 work, there had been rain the night before, and that would be consistent with what we're seeing here. Okay.

So this really just summarizes what I just said. With the few exceptions of pH measurements, all results indicated that DO and pH met or exceeded New York State standards for both Class C and Class C(T) waters.

So it talks about that rainfall. On the night of August 23rd into the morning of August 24th, that rain may have influenced the pH. Conductivity had some variations, but the DEC doesn't have a standard for conductivity.

And -- well, I'll just go ahead and read that. "The results of the monitoring undertaken by Northbrook Lyons Falls in 2006 indicate that DO, pH, water temperature and conductivity are not adversely affected by the operation of the Lyons Falls mill facility. Values observed upstream,

downstream and within the Lyons Falls impoundment showed little variation and were in compliance with New York State standards. The DO and temperature profiles in the impoundment indicate that neither thermal nor chemical stratification occurs at the low-flow, high-temperature period of the summer." That's a take home message of the water quality work that was done back in 2006. And it kind-of goes back to what I said before. We're changing the box, the inside of the box, but we're not changing anything outside that box. So we do think that this work that was done in 2006 is still applicable, because there's nothing that's being done here that would change that stratification over anything down there. Okay.

As I mentioned earlier, when you look at water quality, you also look at macroinvertebrates. Macroinvertebrates give you that indication of what's going on with water quality from a biologic standpoint. And in 2006, Northbrook Lyons Falls did do a macroinvertebrate survey in order to take a look at water quality from that perspective. There was a comparison for the two communities between the impoundment and

the tailrace based on common metrics completed after collection, sorting and identification of the specimens. This information was then used to get a better understanding of water quality at the facility.

So a total of twelve samples were collected with kick nets. People got out there, and kind-of got everything stirred up, and collected things in nets. What you do then is you get that sample, you take it to the shore, you sort it, you pull out the macroinvertebrates, you preserve it, you send it off to a lab to do more sorting, and then they determine what the populations are. And everything was done in accordance with DEC and EPA procedures there.

What you see here is the locations for that sample. Sampling was done up here, downstream, downstream, downstream, and over here is the upstream areas. I guess if folks have questions about this, I can go into more detail, but protocols say that you're going to see five indices, and five indices were looked at: Total taxa richness, a modified family biotic index.

So take a look at -- if you think back on

file and class order, family genus species type stuff that we were forced to memorize at some point, look at it from a family perspective, what's out there. They look at the total number of mayflies, stoneflies and caddisflies. They look at EPT richness. So they look at that from a percentage, as well as richness, as well as the ratio. So these are all ways to measure water quality from a biological standpoint. And at the end of this process, what was determined was that what is being seen here at Lyons Falls, upstream in the impoundment and downstream in the tailrace, is consistent with what you see at other impoundments and tailraces in New York. Nothing special. Nothing really different there. We have this in the report, and I think as the application gets finalized and gets sent out, folks may have more interest in this. Just practical renditions of what was collected back in 2006, and this gives you some of those numbers that were looked at from those five perspectives.

So once again, any questions? I'd be happy to touch upon that. But once again, the take home message is, be it Lyons Falls, be it down in

Watertown, be it over on the Raquette River, be it on the Indian river, you're seeing very similar macroinvertebrate populations indicative of water quality in this general vicinity of the state. And this kind of just reiterates that. It just says that in the ponded and impounded waters, in the warmer waters, with the softer substrates, they were finding macroinvertebrates consistent with those types of habitats. We were talking about tailrace, with the faster moving water, more bedrock you find those types of species. Okay.

So once again -- so what is Lyons Falls in terms of the redevelopment? What's Northbrook Lyons Falls going to do to try to insure that water quality is maintained? A couple things. Once again, working within the footprint of the mill, not going out there and doing something different, continue the run-of-river operations. Folks have heard that a couple times today. No changes in the pond and elevation. We're not going to do anything to mess with anything outside the box. And once again, develop a sediment erosion control plan and temporary emergency action plan.

We're going to move from water quality to fisheries. It's a little bit more interesting. So historically we have forty-eight species of fish known to occur within this basin. For whatever reason, manmade reasons, anthropogenic, there is the divide, once again, at high falls -- I'm sorry, the sixty-foot high waterfalls, which we have here, which is natural and divides the Black River fishery into two distinct fisheries, a public cold water fishery going up shore, upstream, and lowland, more of a cool water downstream. So we kind-of have this natural break here.

So more recently, the introduction of non-native fish species through active fisheries management or otherwise have resulted in a more homogenous fish community with approximately seventy species distributed throughout the watersheds. That's what we have right now. Historically we had about forty-eight. Now we have about seventy.

This is what I was getting at. I was jumping ahead. The extent of the natural upstream migration of -- species in the Black River is

limited by high falls in Watertown. So once again, not seeing eels, not seeing salmon, not seeing this species getting this far upstream, because that's about sixty miles from here downstream. It's where that natural barrier exists.

Back in '92 and '93, the DEC conducted a comprehensive fish study. Lyons Falls was reported to be the dividing point between the middle and upper regions of the Black River. Once again, not necessarily the dam, but the falls themselves. The reason why it's the dividing point is to separate that cool water fishery from the cold water fishery. DEC reported that the fish community below Lyons Falls, so downstream, is composed of approximately thirty-four species.

The fish community is diverse, with a few dominant fish species. Common species include rock bass, walleye, yellow perch, small mouth bass, bullhead, white sucker and fallfish. Upstream of Lyons Falls, the fish community consists of approximately twenty-eight species, more dominated by white sucker, rock bass, small mouth bass. So once again, you've kind-of got

that break there at the falls. Additional fish surveys conducted by the DEC in the Black River in '95, and '98 in Lyonsdale and Port Leyden area, indicate that northern hog sucker, pumpkinseed, chain pickerel, rock bass and walleye are common in this region.

So once again, what we did was, on behalf of Kruger, we went out and did a bunch of research, and this is the research that we were able to put our hands on. And there's nothing very surprising. This is what you typically see in this general vicinity, and you see that on other rivers, where you have a natural falls, which really creates that divide, what's going on upstream and downstream.

This is the 1993 data, and we're not going to go through all this, but it just gives you a list of some of the fish that were collected. You see a lot of white sucker, you see rock bass, NG is not gathered. And once again, this is all in this document. So if you're really interested, take a copy of the disk if you want a copy of the document. It's right in there.

So the Moose River is managed by the DEC as a

cold water trout fishery. Typical species of the Moose can include black nose, long nose dace, common shiner, brook trout, white sucker.

In the 70's, the DEC conducted a trout tagging survey, the results of which indicate a decline in the quality of the trout fishery. The DEC concluded that the presence of small mouth bass, increased water temperatures and low pH had adversely affected the trout fishery.

So in response to that, the trout fisheries on the Black River and Moose River are supplemented through stocking efforts. Folks are probably familiar there's stocking going on on an annual basis. Approximately 5,000 brook, brown and rainbow trout are stocked annually in the Black and Moose, near Lyonsdale in the Black River, as well as the Moose River near Lyonsdale, and stock fish generally range in size between seven and thirteen inches. If you do any fishing, you're familiar with the stocking that goes on, but that is currently taking place.

Riverine habitat in the Black River below the Lyons Falls dam consists of primarily uniform, low-gradient flatwater and tailrace habitat. So

once again, you start getting downstream of here, you get that kind of habitat.

And impoundment is more of a mixed habitat with a well-defined littoral zone. The maximum depth in the impoundment is approximately seventeen feet near the intake. So once again, two different types of habitat that shows that difference with the falls. And it is worth noting, and I think this gets back to the C(T), trout fishery, that it is being managed as a trout fishery, particularly upstream of here.

So just like we did with water quality, just like we did with macroinvertebrates, we went out and collected some information. On top of that, back in 2006, Northbrook Lyons Falls went out and did their own fish surveys. Both daytime and nighttime electrofishing surveys were conducted within the tailrace and within the impoundment on November 8, 2006. Specifically, though, they went out looking for walleye, because based on the 2006 comments, there was interest in walleye at the time. So in order to address that, a nighttime boat electrofishing survey was conducted during the evening hours of November 9th, specifically to

look for walleye. The survey was focused on shoreline habitat, both left and right banks, as well as along the habitat associated with the instream island. Mesh gill nets were put out for a period of sixteen hours, particularly looking for walleye. And also, beach seining was also conducted in shallow margins of the impoundment.

So the way I would summarize that, there was pretty much a two-day intensive effort. We went out there and did boat electroshocking, electroshocked the shorelines, put out some nets, and put out some seines, looking particularly for walleye and other species.

So this is where -- the shoreline electrofishing -- you see where -- once again, we're looking upstream here at the Black River. You've got the Moose River. Electrofishing was done all the way through here, wherever you see that dotted line, and all the way down through here, both sides of the river. So not just the side they were looking to develop, but over here as well, and along this island. The gill nets were put out. You see an area here where the gill nets were put out, downstream, up here downstream,

across here, across here.

And going back to those study reports, that was based on field observation and logical places to put out the nets. And this is what came out of the tailrace sample. So you see some pickerels, bullheads, some rock bass, perch, day sucker, on and on. You see one trout, a brown trout, some bass. So once again, that's in the tailrace as a result of the daytime and nighttime electrofishing surveys in November.

And then with regard to the impoundment, the same thing, daytime and nighttime electrofishing surveys in November. In the impoundment, you see some shiner, pickerel, bullhead, pumpkinseed, perch, sucker. I see some bass. You don't see any trout there, though, and you didn't see any walleye. You didn't see any walleye as a result of these two efforts. And this is just kind-of a comparison, just showing nighttime, daytime, what's going on there. This here was in the tailrace area. Okay.

So basically at the end of the day, the sampling was done. It showed representative of the typical coolwater and cold water communities

known to occur in the Black River. Didn't see anything special. Species composition is similar to what I described in earlier studies.

So once again, we went back and we looked at back in 2006. They did the same thing, what has been identified during previous surveys. This 2006 survey was very typical of what was found then, a total of eighteen species, representing 197 fish. And you see the dominant species, and you saw it on the table, chain pickerel, brown bullhead, yellow perch, golden shiner, and pumpkinseed. Once again, a single trout was captured, and no walleye of this age class was captured during this survey. So that's just the summary of what was resulted from the 2006 effort.

So in support of the upgrades, Northbrook Lyons Falls, in addition to doing the fishery survey, also did a habitat study to look for spawning areas, because particularly back in 2006, there was some concerns about -- or at least there were some comments made about where are those spawning areas, potentially for walleye. And if you're going to be doing things over there, how do

you know if you are or are not effective. So they went out and did some habitat assessments to determine if spawning habitat existed.

And cross-sectional locations, and transects were done here and here, but we'll look at those transects in a second. But at each cross-section, and these were done based on consultation with the DEC back in 2006, information was collected such as water depth, velocity, and dominant substrate. When you think about fish spawning, those are some of the primary characteristics you've got to be thinking about. What is that substrate they're going to be spawning in? What's the velocity of the water? What's the depth of the water? So velocity, depth and substrate data was collected along each transect every five to ten feet. In addition, an underwater camera was used to characterize the substrate composition. So they dropped a camera down there to figure out what's going on. And that's pretty much it there.

The tailrace habitat study found that sand is the dominant substrate in the tailrace, which makes sense. A large depositional area, directly in the center of the channel in the middle of the

tailrace, which has resulted in the formation of a small, sandy island. So that's this area here. A larger, low-velocity back eddy also occurs in the middle of the channel upstream of the island. So it's down there. And along the east bank of the tailrace, cobbles and boulders are prominent. After that, it's really what are the substrates like in this area. This is downstream. So here's that island we were just talking about. Here is the sand that we were just talking about. There's more boulders through here, the white and red area. And then you've got this cobble gravel on either side.

Essentially what you're looking at there is if you think about the velocities of the water coming over the spillway and coming out of the draft tubes, you can see how that's been collected. These are the transects that were worked with.

And, you know, this is what we just talked about. Velocities were higher along river right. Depth in the tailrace was found to be the greatest in the plunge pool immediately below the falls. That's going to be important here as we talk about

downstream fish movement, and there are some deeper plunge pools here, which will be beneficial. Okay.

And I know this is very hard to read from where you're sitting. Once again, it's in the report. This shows the velocities along the transects. See velocities 2.48 feet per second, see 1.5, see .5. These are the velocities of the water moving through here, and these are the depths.

So once again, hard to read, but you see twenty-seven feet, nineteen feet, seventeen feet, fifteen feet. You've got some shallow areas up here, fourteen feet, eight feet, but once again, this was all done with the thought of: What is the habitat downstream of the dam? What could be taking place with spawning? I would contend that this is good information to have, but once again, it kind-of gets back to that box concept. We don't see this affecting anything outside the box, so we don't see it affecting anything out here, but once again, the data exists, and it's worth noting what's going on here.

MR. PARKER: Jim, Dan Parker. If you go

back to that slide, please? This study was more pertinent in 2006 because, at that time, the existing discharge would be on our left as we're looking at this picture from the powerhouse, the proposed discharge. While we're going to continue to keep the discharge on the left, there's going to be an additional discharge on the right bank at some point here, and I'm not exactly sure, from this picture, where that's going to be. That's no longer the case. The existing discharge is on the left. The new discharge, although it will be at times higher volume, is going to be in the same vicinity. So we would expect relatively the same patterns of velocity flows deposition that are occurring now.

So back to Jim's point. The box that's being proposed in 2015 is much more like what's existing now than what was proposed in 2006 with regard to impacts on the tailrace water line.

MR. GIBSON: And this just shows the average velocity and average depth across those transects. So you see feet per second, depth, maximum velocity, average velocity.

Okay. Walleye and small mouth bass spawning

appears to exist based on the velocity and the depth of the substrate. It does appear to exist in the tailrace area. The primary section of usable habitat is likely the large cobble and boulder areas on the east bank, so that's across from where the powerhouse currently is, opposite of where the proposed construction is. It is worth noting that, as you get further away from the facility, this drops off. You just -- there is some potential spawning habitat over here.

A couple other things here. This slide here. Species comprised a relatively small percentage of overall fish community, small mouth bass about 2.5 percent. And based on all the information we have, walleye about .5 percent. So the conditions are there for spawning, but at least at this point, we're not seeing the spawning.

Also performed an angler use survey in 2007 to get an understanding of the fishing pressure and recreational fishing at the mill, so just the general area. This kind-of overlaps between two studies. One, to get an understanding, is from angler use, to help us understand how much fishing is going on, and fishermen are going to go where

the fish are. They're not going to waste their time where they're not. So that's a good indication of fish, as well as it gives us an understanding of recreation.

Use data was obtained daily at three sites at the Lyons Falls mill: The canoe launch in the tailrace, the boat launch up in the impoundment, and the Lyons Falls picnic area located upstream of the impoundment at the Lyons Falls community park. Those three areas were looked at.

Throughout the study period, which was April 2nd through October 16, 2007, a total of 413 anglers were observed in those three areas. Average angler use at the site was about 2.6 anglers a day. So take the total and divide by the number of days, and it was based on that. It determined that both the tailrace and impoundment are being fished. So that was information that, back in 2006, we didn't have a really good handle on, and now we do have that information for this document moving forward.

MR. PARKER: Jim, another point. The operators who were here, certainly all the daylight hours of everyday and many of the night

hours for at least the last two years, possibly the last three years, have been doing daily recreational observations at all the existing recreation sites. I gave that data to Jessica. So HDR will be assembling that data to give us, almost current, almost realtime, of not just fishing, but what other types of recreation uses are, by day, by time of day, by season of the year. So we'll have a lot more additional information, and Jim doesn't know this. This is information I just got today. We will make sure it gets put into this document, as well.

MR. GIBSON: So for those that didn't realize it, if you've been doing recreation around this facility, you've been watched.

MR. PARKER: And there's one spot -- they did it for the whole project, if you look at the Lyons Falls mill right now -- but if you're familiar with the Gouldtown project up on the Moose River, there's a great spot along the east part of the river that's great for sunbathing. I'm sure my operators were spending an inordinate amount of time in that area.

MR. GIBSON: So we keep talking about old

data that we went out and collected, the 2006 work, but as Northbrook Lyons Falls has been looking at this proposal, we have done some more recent study activities. And this is one of those areas where we've done some more study activities. We can appreciate the concept that here you have a facility. There's roughly 1,200 cfs going through the facility, going into the box, and now we're talking about increasing it up to around 2,400 cfs going into the box.

What's that going to do to fish? There's two terms that get thrown out a lot, impingement and entrainment. Impingement is when a fish gets on the racks and gets stuck on the racks. They get impinged. Entrained is when it goes through the racks into the turbine and through the turbine. So impingement and entrainment.

So we did a standard impingement and entrainment mortality study just in the last -- well, last couple months. The idea was to support this document. So these results have just gotten finalized in the last couple weeks. They were not in this document. As we move from this document onto a final document, we'll make sure this gets

incorporated.

But what we did is we took species data from 2006, with historic sampling from the DEC, and we used that to identify the target species to be looking at. It doesn't make sense for us to be looking at stripers or looking at salmon if there's no salmon in this area. We focused in on the target species that are associated with this facility.

We did a blade strike analysis. So the idea is if a fish gets into the turbine. Based on the type of turbine that's being proposed, we did a blade strike analysis on what happens if that fish gets struck with a blade. And we used the Department of Energy's advanced hydro turbine model for that analysis. That's a standard institute practice. Also, entrainment risk was evaluated using EPRI, Electric Power Resource Institute database, and then the local fishery information. So pretty typical.

When you talk about doing every database study or a blade strike analysis, we used that same methodology. And what this shows is a couple things. We looked at, first of all, what would be

the target species. And we were going back to '92, which is a comprehensive sampling, and 2006, which was a comprehensive sampling. These are the number of fish that were collected. These would match up with that table we looked at earlier. And it's just a percent, just a composition. So that helps us narrow down the target species that we would look at.

We then looked at different rack sizes. If you think about what we've been talking about, it's being proposed to use three-inch racks for a portion of the year, and then the one-inch overlays for another portion of the year. So what we did was we looked at the scaling factor of these fish, and when I say "scaling factor", you take the proportion of the total length based on proportional measurements of the target species. So that's the scaling factor, just by species, by width.

What's typical of a width is if you have a trout versus a long perch versus shiner, they typically have a body, same affected ratio. And then the maximum size reported here in the state, DEC 2015, and then going back to Smith Periodical

from 1985.

So we picked our species. We picked our typical size. We looked at what would be excluded. So if you had a black crappy at ten inches, that wouldn't get through the one-inch racks. It would get through the three-inch racks. The same thing with large mouth bass. A twenty-two-inch large mouth bass would not get through the three-inch racks; it's a pretty good size fish, but a seven-inch -- and a seven-inch would not get through a one-inch, because what we want to do is we want to get an understanding of what kinds of fish are we dealing with, and what fish should we look at from the perspective of what goes -- what's able to get into the box. These fish of different sizes can't get in the box.

We then took a look at fish length, one-inch up to twenty-two-inches average. We've looked at the blades that are being proposed. So there's different types of turbines. There's pump wheel, there's Francis. We took a look at the type of turbine we proposed here, based on what's getting in, and then you look at what's the probability,

the average, of getting through the unit without a problem.

There's that general thought that if you have a fish that goes into a rack system and goes into a draft tube, it's like a big blender, it's like a chop-o-matic, that the fish is getting chopped up. That's not the case. There are some units out there -- the ones that are being proposed are not that -- that these numbers, these percents, would be much lower, but with the percentages that we're talking about -- or with the units that we're talking about, these are the percentages of survival through those units.

So something that is one-inch has a ninety-eight percent chance. Something ten-inch has an eighty-eight percent chance. So that -- once again, something gets into the units, what's their blade strike survivability percentage?

So what we did is this, then. And once again, this is the standard study. We took a look at a number of factors. We took a look at the fish that are in this vicinity based on the studies that have been performed. We looked at seasonality. We looked at flows. We looked at

the rack spacing. We looked at -- I should say this. This is conservative in that it does not include the angle racks. Remember we talked earlier about the angle racks? This does include the 45 cfs fish flow. It just doesn't include the angle racks. And the reason we did that is we wanted to be conservative, build a little buffer there.

So fish size, fish species. We looked at impingement from the perspective of -- you talk about a fish -- we talked about a fish going through the unit and being struck by a blade. The question also is what's the potential of being stuck on the racks? And the definition -- the factors of being stuck on the racks are at approach velocity, you can measure yourself being closer to some suction. How fast is that velocity?

And once again, I guess you can consider this a PM&E measure. Northbrook Lyons Falls has designed these units to be about the approach velocity of about two-feet per second about a foot outside of the racks, based on the design criteria that's been established.

So this also -- and the other factor, with regard to impingement, is the fish's berth speed. So think about it. If it's yourself, and you're getting sucked towards something, the question is, are you strong enough to get away from it? A fish's berth speed will allow it to get out of that suction and move on. So with all that said, obviously there's a little bit more than just lows and mediums and highs here, but this is how this laid out in the end.

Once again, using the DOE methodology you see with rock bass. So you see a lot of low. You see low, medium -- and you see medium. Those are the three here. What you see is yellow perch, white sucker, spottail shiner, rock bass. And the medium, in the summer months here -- and you have some low mediums.

What we'll be doing in this document, and what I know FERC will be looking at, is looking for population level effects. So is it possible that some rock bass may die or be -- suffer mortality? Is it possible yellow perch will? It's possible. But what we don't see here is population level effects. You currently have --

on this, you have approximately two-inch racks, not quite two-inch, one-and-seven-eighths-inch. You've got five units. I don't think anyone -- we have no indication that folks are seeing fish floating down the river as a result of the turbines. We're not getting any indication we're getting fish stuck to the racks here. My point is, we did this study because we needed to do this study, but what you're not seeing is you're not seeing highs here, and we don't think we're seeing population level effects to the community. Okay? So if anybody has any questions about that, I'd be happy to answer them, or if anybody has any question as a followup, I'd be happy to followup after this meeting.

So I think this is the last slide on fisheries. So once again, in order to -- for PM&E measures as they relate to fish, once again, construction will be in the same footprint. We'll have the fish movement flow that we've been talking about from March 15th to November 30th. Once again, nothing like that exists right now. We're going to have the angled racks. The angled racks will help direct the fish towards that

45 cfs. The -- there will be some sort of a gate here, like a gate and a gate structure. We'll have a diagram, here in a second, where you have the existing gate, and you have the fish grouping gate inside that.

We already talked about seasonal overlays. So that be as soon as possible, providing that's out and removed in October. And we'll have consultation with the DEC and the fish and wildlife group regarding those overlays. Continue run-of-river mode and no change in the impoundment. So we don't see an adverse effect to the fisheries or the fishery population as a result of the modification.

I keep referring to the 45 cfs downstream gate. These are the calculations that we did. What we were looking for is past 45 cfs, and then the questions became, what does that gate have to look like? And we do appreciate that there's times that the boards are on and times that the boards are off. So you want to continue to pass that 45 cfs under both conditions.

So based on a discharge coefficient, based on this information, takes you to this. This is what

we calculated will be necessary. It will be a gate of approximately three feet with a height of approximately 1.1 foot. When -- 1.1 is when you're at the crest of the dam. When the flash boards are on, it's 1.3 feet high. But if you can envision this being a gate, and then there will be a gate inside that gate where fish will come down and move downstream from here. This is -- particularly the Raquette River.

You go back to the late '80s, like '86 through '92, and the Raquette River has a number of plants. Go down, starting with Tupper Lake and start moving downstream. You've got Pierce Field, and Carey Falls, you've got Rainbow Falls. You get down to like the Potsdam area down to Raymondville. This same concept has been solved at most of those plants. There was interest in having a downstream movement flow, and that's how this was accomplished. Very similar.

And here is -- I talked earlier -- so we talked about the angle racks. So you're seeing this drawing elsewhere in the back of the room, and we had it earlier. Here is that angle rack. Here is the conceptual layout for the fish

downstream movement flow. This general area here. And you have a series of pools and channels down into the tailrace. There's a design standard of having one-foot of water depth for every four-feet of fall. So if you have a total fall of, let's say, eighty feet, the requirement is to have twenty feet of depth. If you do a series of falls, let's say three twenty-foot falls, you'd have to have five-foot plunge pools on the way down for every twenty-foot drop. So as this gets finalized, you're going to see that design in this area right here.

We're at slide 87 of 113, so we're less than twenty slides away here -- well, thirty slides, but we're getting close.

With regard to terrestrial, there's not much here to note, but because we're going through this process, we've got to look at all resources. So there is a couple things worth noting here. Obviously where we're talking about doing this work is -- characterizes industrial building. We're not going through any non-disturbed areas. Even the transmission line is in an area that's been disturbed, and we're not cutting down any

trees or anything like that. That's pretty much it. We go in more depth here that there's -- there is wildlife areas in the general area. I think everybody knows here, you don't have to go far out of town and you get into wooded areas. You get into farmland. That does exist in this general vicinity, but this is a disturbed area.

So in order to -- in terms of PM&E here, all construction will be, once again, within the footprint. We're going to continue run-of-river. That's important here, because if you did start bouncing that impoundment up and down, we would want to take a look at the wetlands that exist potentially up here in the impoundment to see if you're draining wetlands, and that's not happening. So there's no change in pond elevation. And we'll have a sediment erosion control plan in place. So that is terrestrial wildlife.

We have to look at botanical, too. That's something that FERC will be looking at. There's no substantial botanical resources in this area. It just doesn't exist. Once again, outside the mill area, there's a fair amount. We described

that in the report. But in this area, we're talking about urban and then rocky shoreline.

We did take a look at the wetlands. The wetlands got looked at back in 2006, but it makes sense just to dust it off and make sure everything is still the same. So we looked at the Fish and Wildlife Services, national wetland inventory maps, and we looked at DEC's GIS wetland maps. And the DEC did not identify any wetlands in this area of construction or in the general vicinity. The NWI maps, which are -- get down to more detailed wetlands, identified six classes of wetlands. And here you see kind-of the map that we have and then also the wetlands. At the end of the day, are there wetlands in this general vicinity? Yes. There's water, there's wetlands. But is this project going to affect any of these wetlands by what we propose? That does not appear to be the case. So once again, we have to look at it, but like we've been talking about other things, and we've been putting PM&E measures in place to offset that, we don't see a wetland impact. If there were to be a wetland impact, we'd have to find some sort of compensation or

something on improving that wetland somewhere else, and if that were the case, Kruger would be doing that, but that's just not the case here.

So in terms of botanical, once again, it's going to look pretty familiar. We're going to limit construction to this area. We're going to continue run-of-river, and we're going to keep the pond levels, once again, not to impact any wetlands. We're going to implement soil erosion control and make sure we don't have additional sediment level for the river, and there will be a temporary emergency action plan.

Just like we did with wetlands, we took a look at threatened endangered species, and we reached out to both the Fish and Wildlife Service, who has responsibility for threatened endangered species inland, as compared to NOA, who has it out in the oceans. We also looked at the DEC with their natural heritage program.

Reaching out to the Fish and Wildlife Service, they came back with two species of interest. One is Indiana bat. That's endangered. They also came back with the northern long-eared bat as being proposed endangered. So what we're

going to do on this front is we have no indication there's any bat species habitat within this footprint of construction. The Fish and Wildlife Service has put out a guidance document in terms of construction, and what to do and not to do as it could relate to potentially affecting bats. We want to make sure that's incorporated in construction plans, but the biggest thing we have seen to date is the potential cutting of trees, particularly trees over three inches in width during a particular time of the year. That is significant when it comes to bat habitat. We're not cutting any trees, much less trees of that size.

And with regard to the natural heritage program with the DEC, we got a response just recently saying that we have no records of rare or state-listed animals or plants, or significant natural communities at your site or in its immediate vicinity. And we gave them a pretty large area. We did not give them a little footprint. We drew a pretty large polygon around this area, and they came back and said, "No. There's nothing there."

So once again in terms of this, we're going to develop and implement an Indiana bat and northern long-eared bat management plan that incorporates fish and wildlife's guidance. That's what's going to be done here. We don't see anything happening where we would affect such species.

So recreation. Like we did elsewhere, we looked at what's going on, and we looked back at existing documentation. Both the Moose and Black Rivers provide a variety of opportunities for outdoor recreation, including canoeing, kayaking, angling, sightseeing, whitewater boating, and picnicking. The Black River is primarily flat in this vicinity; therefore, it's appropriate for both motorized and non-motorized boating. Public boat access is provided at five launch sites around the surrounding area.

Due to the hydrological nature of the Moose River in the vicinity, only non-motorized boating, canoeing and kayaking occurs. The gradient is such that it's more conducive for kayaking and canoeing, and it's popular for that. It's actually a positive thing that this gradient

exists, because it attracts a fair amount of this type of activity.

And the bottom Moose River from Fowlersville to Lyons Falls has an average gradient of seventy-two-feet drop per mile, with twelve major rapids. So I think some folks are pretty familiar with this. Parts of the Moose River get some pretty active canoeing and kayaking.

Not to get too far ahead. We're not seeing it in this area, but once again, what we're doing here is not going to affect any of that canoeing or kayaking. It's still run-of-river. This is going to be maintained. This is going to be maintained. Nothing that's going to be done here would have adverse impacts upstream on any of those kayaking activities.

Like we said before, angling is also a popular recreational activity along the Black and Moose Rivers. Approximately fifteen miles of Moose River and eight miles of the Black River are designated as New York State wild, scenic and recreational rivers, so there are portions of the river designated as such. However, none of the area that we're talking about, and that's not just

this little footprint, but when we talk about wild and scenic river designations, none of this is classified as such. It's either further upstream or further downstream.

The Black River was designated a Blueway Trail back in June of 2005, and Lewis County provides many opportunities for land-based outdoor recreation, including the ones that are listed up here.

We also had a chance -- just trying to reach out to as many people as we can, we've had conversations with Trout Unlimited. We had a conversation with American Whitewater. They do not appear to have any issues with what we're talking about doing here. They are familiar with the Moose River, and in our conference call they had a number of questions about the Moose River, but when they realized what we were talking about, he said, "No. We're more interested upstream."

So at the Lyons Falls mill facility, recreation facilities include boat access, portage opportunities, fishing, picnicking, walking, sightseeing. And improved canoe/kayak access downstream of the dam provides parking, a

hand-carry boat launch, and angling access to the eastern shore of Black River. Northbrook Lyons Falls provides access to the impoundment at a gravel vehicle-access boat launch. We were talking about that. There's a carry-in boat access area provided by Northbrook Lyons Falls approximately 1.5 miles upstream, and then there's an informal recreational access point and vehicle pull-out located on the east side of the Black River, just downstream from the dam. So that's kind-of like what exists today.

Okay. Additional recreational resources upstream Lyons Falls on the Moose River is a canoe/kayak access site. That makes sense, because we were talking about what's going on upstream. In addition to these recreational sites, public access to project lands is permitted. As such, informal recreational activities such as hunting, angling, hiking and cross-country skiing occur in the general vicinity.

And then lastly, the Lyons Falls community park exists, which was donated by the former owner. So this is -- you guys probably know all

this better than I do. Those items we just talked about, this just identifies where they are on the map.

As Dan was describing a moment ago, there was some recreational studies done, and those surveys continue to be done. So back in 2007, from the recreation season of May 6th through October 16th, monitoring was performed on 147 days -- yeah, 147 of 164 days. So if you look between May 6th and October 16th, that's the total, 164 days. Of those days, 147 surveys were performed, which is ninety percent, and this includes the peak holiday, Memorial Day, 4th of July, Labor Day, Columbus Day, and data was collected in three areas, the Lyons Falls boat launch access, Lyons Falls canoe access, and the Lyons Falls picnic area. And based on this, these were the observations that were made on weekdays, weekends and holidays, how often, for example, boating was performed, picnicking was performed, and other activities.

And I guess for additional information, there's some more on this. So basically it just looked at the total number of days. That will

tell you how they calculated that. If anybody was seen, it was assumed a full day. If you had multiple people there, if you had ten people there, that's ten recreational days on one day. That's how those numbers are calculated.

MR. BARTOW: On that slide, one thing. John Bartow. Route 12 is a designated scenic byway. I don't think this is -- your project is going to affect it at all adversely, but one of the things that's interesting here, about a quarter of your recreational days are sightseeing, and that's a big part of what Lyons Falls is hoping to capture is drawing people off that scenic byway to the Blueway and to appreciate some the aesthetics. So I think there's a positive spin-off with it, but that is a big part of what Lyons Falls is trying to do is drawing the recreational user into the community. And I'd argue that the improvements you're talking about all can only help that. That it is a state scenic byway on Route 12, and this is a gateway community.

MR. PARKER: And we have been working with Kate with the village, and with Eric at the county

level, as both the hydro project and the paper mill get redeveloped.

UNIDENTIFIED SPEAKER: And maybe some observations. I know that's all there.

MR. PARKER: I think we're even going to offer them one of the old permits, if they want it, for display.

COURT REPORTER: I'm having a hard time hearing you again. I'm sorry.

MR. PARKER: So what I said is we've been working with the village and county to promote tourism. And we're looking at opportunities for interpretation, as we redevelop the hydro project and as we redevelop the paper mill project, even to the extent of offering them one of the permits for display.

UNIDENTIFIED SPEAKER: So yeah. It is something to note. It may come up.

MR. GIBSON: Okay. Thank you. So I think these last couple slides we'll get through pretty quick here.

But in terms of recreational resources, once again, we talked about these. This kind-of gets its fingers in a couple different areas.

The one-inch overlays. That's going to help with fish, because angling is a recreational activity.

The seasonal fish flow. Once again, that's going to support the fishery, support angling.

Continue operation and maintenance of the recreational facilities. That's something that's going to continue under the proposal.

The 25 cfs minimum aesthetic flow we've been talking about, that's going to occur.

Once again, this gets back to the idea that a hundred percent of time we see some flow over the dam.

You've got the construction erosion sediment control, and run-of-river, and then the aesthetic resources plan. Those are things that are being done in support of this resource area.

Cultural resources, I don't think we have to spend a lot of time talking about this. Like I said early on, there was recently a letter from the State Historic Preservation Office indicating that the demolition of the mill is not adversely impacting a cultural resource. We had the same indication with modifications to the hydro plant.

We will continue to work with the SHPO's office if there are any cultural resources. Obviously if during the demolition and construction, if archeological finds are made, then we'd have to reach out to SHPO's office, but that's as much as we see happening here.

The last couple items we have to address in this report is land management and aesthetics. Land management, in general, talks about the general vicinity, what happens within this footprint, and what happens in the general area. You can see here in this table, generally as we talk about Lewis County land use, the number of square miles, agriculture, residential, commercial, industrial. These are the types of things that are taking place.

Obviously within this area, we're talking about an industrial area. I think the improvement on the powerhouse will be consistent with the eventual overall improvement with the area.

And then with regard to aesthetics, we've talked about this on a number of occasions now. Obviously, back in 2006, there were discussions about aesthetics flows. Everything we have been

talking about today, about flows over the dam, aesthetic flow between May 1st and October 31st, that's to support the aesthetics associated with the falls.

And these are all PM&E measures that we've already touched upon, the 25 cfs seasonal minimum aesthetic flow, wooden flash boards. That's how it's going to be provided, that 25 cfs.

Continue consultation with resource agencies, local officials and others to define the 25 cfs. And what I mean by that is we think we know how it's going to be provided. Kind-of the proof is in the pudding. The idea would be to agree to 25 cfs, and then a group would go out sometime this summer and look at 25 cfs and say yeah, that makes sense there.

And I think here's where we have just the calculations that were done. So if your target flow is 25 cfs, you've got the height of the boards. So this is essentially what I drew over there. Here is a flashboard. Here is a notch taken out of a flashboard. You've got the height of one foot. You've got a discharge flow coefficient of 3, which is right in the middle of

the coefficient, and then you've got the length there. And where it's being proposed at this time is right over here in the corner, and the reason why the corner is because there's a channel that flows down through here and kind-of cuts across. And the idea is if you were to release it right here, you see that outcrop there. It's going to continue down there and cover this area.

So what's in this proposal and what would get filed with the Federal Energy Regulatory Commission is the commitment to the 25 cfs, the idea of how to provide it, and then this idea that it will be observed as a confirmation. We obviously couldn't do that today. Based on the flows we've been talking about, you couldn't do that in March or April. It's just going to be too high. It's going to probably be in July or August. There' a notch put in there and you go observe it.

Okay. We're down to the last three slides. One of the things that we have to do, and something that Kruger has done in support of this document, we have to take a look at what's called comprehensive plans. The Federal Energy

Regulatory Commission takes a look at all the comprehensive plans that are submitted to them, and we have to look at those comprehensive plans then to make sure that this proposal is consistent with these plans. And we looked at these plans and we do think we're consistent. Once again, eel are not getting up in this area, so they become a non-factor.

Nationwide Rivers Inventory. We're not expecting anything that's scenic or not designated with a special designation through here.

Water foul management plan. Once again, we're not affecting upstream of the box or downstream of the box. We're not going to be affecting water foul.

The fishing policy in the United States, we had a chance to look through that that plan. There's nothing in there that we're going to be affecting.

And the last bullet, Statewide Comprehensive Outdoor Recreation Plan talks about what kind of needs there are by county, and we're not doing anything here inconsistent. In fact, all of the PM&E measures that we just noted will probably be

enhancing what's going on in this area.

Okay. So I know a question was asked a while back about schedule. So we distributed the document, once again, back on January 30th. There was a notice that went out in the Boonville Herald back on February 18th. That's this meeting. That's how some folks may have heard about this meeting. We're here today on March 4th, having this meeting. We're looking for comments by March 16th. And the reason why we're looking for the comments by then is we had a chance to talk with some of the agencies, like the DEC and fish and wildlife, back in January, with the idea that if we get them this document by then, they could get their comments to us by the 16th. We're going to have to look at the comments. We are targeting early April for the filing of this document as final. A lot of them depend on the comments. If there's little to no comment, I think we're in a position to incorporate some additional information, get it revised, and then get it submitted. So that's the schedule.

And lastly, I have cards with me, and it's got my contact information, but if anybody has any

questions coming out of this -- I know a lot of information has been thrown at you. Particularly because we would normally do this over two nights -- we combined the two. But if anybody has any questions, please don't hesitate to reach out to one of us and we'll get your questions answered.

MR. BARTOW: John Bartow. In terms of your list of comprehensive plans, you might want to add that scenic byway to that. That was filed with FHWA, the Federal Highway Administration.

Also the Blueway Trail. We haven't made reference to it yet, but Lewis County also has a comprehensive plan. I noticed that was mentioned in your report, but if you had them, I don't think there's anything inconsistent with what you've been saying.

MAYOR LIENDECKER: Our village has a comprehensive plan that was done five years ago.

MR. GIBSON: We'll take a look at those. One of the best kept secrets out there -- if you submit your comprehensive plan to FERC, they'll get it on this list. What we do is we reach out to FERC and say, "Hey FERC, what comprehensive plans do we have to look at?"

MR. BARTOW: Okay.

MR. GIBSON: They give us the list, and that's all they're looking for us to do. So like your village plan, it's worth submitting to FERC. They'll say, "Okay. Thank you." They'll update the list every six weeks, eight weeks, and then the next time somebody is doing this, when they hand out the list, your plan will be on it. You'd never know that. They don't advertise it very well.

MR. MORGAN: Ross Morgan. One of the things that was mentioned was that the physical plant itself would be moved downstream some. Do you know how much that is? Are we talking twenty yards, thirty yards, ten feet?

MR. GIBSON: Dan, you might be able to answer better than I. Do you know --

MR. MORGAN: The reason I ask is because you're going to have twice the flow rate, and a more concentrated flow rate, because it's going to be coming out two tubes instead of four, and there's a huge sand bar there. And I'm just wondering what's going to happen with that, or anything as far as that goes?

MR. PARKER: Dan Parker. So the one -- the further upstream unit will be in the vicinity of two of the units that are there now, and that discharge will be the same. And next will be adjacent to that, so at least fifty, sixty, seventy feet further downstream. So it will shift about fifty feet.

MR. MORGAN: And there will still be a wall or something there that makes it go out to the center of that?

MR. PARKER: Right now there's a short wall that goes out there.

MR. MORGAN: Yes.

MR. PARKER: If we stay upstream of that wall, we utilize that wall. If our construction is going to be downstream of that wall, obviously we'll have to cut that back downstream.

You will also notice we don't have similar pictures for the existing plants, but if you look -- if you stood on the other side of the river and looked back - you can't really see it on that picture - the draft tubes are above the water level --

MR. MORGAN: Correct.

MR. PARKER: -- and discharge down into the water. Because of the design of this, the one that's horizontal to vertical, and the one that's Francis style to Kaplan style, the setting of the turbine relative to the tailwater is opposite what we have now. So the turbines will be under the tailwater, and discharge will be sixteen to eighteen feet under water. So you're going to be pushing against some resistance in the tailwater. You're not going to see much of that on this river. So we'll take -- we need to take a look at what the change in currents will be in the tailrace after we do this design -- we'll take a look at that in regard to the substrates, as well.

MR. MORGAN: Thank you.

MR. PARKER: Dan Parker. Two other things. We're coming up -- we're developing a website for this proposal. So it will be lyonsfallshydro.com. That should be available in the next couple weeks. So we'll get information out to folks when that is active. That will be another source of information.

And the second item was, I had an opportunity to talk to a young gentleman that just left. He's

a member of the fire department, and he requested -- and I'd like to get this on the record. That's why I'm saying it now. He requested if we could design in a dry hydrant for the fire department as we do the design work for the intake, and I think it's a fantastic idea and fully support it. So we're going to try to incorporate that into our design as we go forward, so they have ready access to the water. Thank you.

MR. GIBSON: Any other questions? Once again, good opportunity to put a comment on the record. Okay. Well, if there's no other questions or comments, we'll go ahead and formally end the meeting. And then myself, Dan, and others from Kruger are available for questions or just talking afterwards.

(Whereupon, the Hearing concluded at 7:01 p.m.

C E R T I F I C A T I O N

I, **NORA B. LAMICA**, Shorthand Reporter and Notary Public within and for the State of New York, do hereby CERTIFY that the foregoing record taken by me at the time and place noted in the heading hereof is a true and accurate transcript of same, to the best of my ability and belief.

NORA B. LAMICA

Dated: March 23, 2015

APPENDIX B

CONSULTATION CORRESPONDENCE

LYONS FALLS HYDROELECTRIC PROJECT

CONSULTATION SUMMARY

This consultation documentation is a supplement to Exhibit E, which has been prepared in accordance with 18 CFR Section 16.8(f). This appendix provides a chronological list of the consultation, as well as copies of correspondence with Project stakeholders, including resource agencies, non-governmental organizations, and other interested arties.

Initial Consultation

In order to gain a better understanding of the potential resource areas of interest that may be associated with the redevelopment of the Lyons Falls Mill powerhouse, as well as to determine how the consultation and study activities associated with the 2006 and 2007 amendment effort could be incorporated into this amendment process, NBLF conducted a series of conference calls and email exchanges and an initial November 18, 2014 meeting and site visit with the parties that routinely participate in FERC licensing and amendment proceedings in New York.

Through initial consultation with the New York State Department of Environmental Conservation (NYSDEC), U.S. Fish and Wildlife Service (USFWS), Trout Unlimited (TU), and Lewis County, NBLF was able to identify the resource areas of greatest interest, study activities in addition to the 2006 and 2007 studies that would be required to address the parties' questions, and potential protection, mitigation, and enhancement (PM&E) measures consistent with the parties' interests. Furthermore, with these initial activities NBLF and the parties agreed upon the consultation process appropriate to integrating the 2006 and 2007 effort with the activities to be performed in 2014 and 2015. Through this consultation, it was determined that NBLF would supplement the results of the 2006 and 2007 study activities with the following: an evaluation of fish entrainment and impingement, a desktop survey of area wetlands, and consultation with the USFWS and NYSDEC regarding potential threatened and endangered species associated with the project area. In addition, NBLF consulted with the New York State Historical Preservation Office (NYSHPO) and the Oneida Indian Nation regarding cultural and historical resources, consulted with the New York State Department of State regarding the location of the project relative to the State's coastal zone, and incorporated the results of the recreational surveys associated with FERC's Form 80 reports into the amendment process. Consultation regarding cultural and historical resources included conference calls with the NYSHPO and a conference call and site visit with a representative of the Oneida Indian Nation.

In addition to consultation with NYSDEC, USFWS, and TU, NBLF engaged in consultation with American Whitewater, the Village of Lyons Falls, Lewis County, Lewis County Development Corporation, the Development Authority of the North Country, and several New York State and Federal elected officials.

Subsequent Consultation

Subsequent to the consultation activities described above, NBLF prepared and distributed an Initial Consultation and Amendment Package (ICAP), which served as both an Initial Consultation Document (ICD) and a draft Amendment Application. The ICAP was distributed to the parties more than 30 days prior to the March 4, 2015, Joint Agency Public Meeting and Site Visit. This schedule allowed the parties to review and provide initial comments on the proposal prior to the March 4th meeting and site visit. Following the March 4th meeting and site visit, the parties were provided 60 days to submit comments regarding the proposal. In support of the consultation process, the March 4th meeting and site visit were publically noticed in the Boonville Herald on February 18, 2015, and a copy of the ICAP was maintained in the Village of Lyons Falls library. A copy of this final amendment application will also be maintained in the library. In addition, a transcript of the March 4th Joint Agency Public Meeting was developed and is presented as Appendix A to this application.

Resulting Proposal

NBLF's proposal is based on the comments received during the 2006 consultation process, as well as consultation performed in 2014 and 2015 as described herein. In particular, as compared to the 2006 proposal, NBLF's proposal is to construct a new powerhouse within the footprint of the former paper mill facility, and, therefore, all operations would remain on river left (west side of the river). Based on the consultation record, remaining on river left is a significant PM&E measure that addresses a number of the parties' concerns. Additionally, NBLF's proposal includes a seasonal downstream fish movement flow, a seasonal aesthetic flow, the installation of an angled trashrack structure with seasonal overlays, and the continued run-of-river operation of the Development. These proposed PM&E measures were developed through the consultation process described above and with parties interested in this amendment process, as well as the upcoming relicensing process. As noted in this application, NBLF's proposal does not influence any operational or structural aspect associated with the Project's upstream Gouldtown or Kosterville Developments.

CONSULTATION LOG

Date	Type	From	To	Subject
June 14, 2013	Letter	Ruth Pierpont (NY SHPO)	Steven Eckler (O&G)	No impact associated with paper mill demolition
November 18, 2014	Meeting	NA	NA	Initial Agency Meeting and Site Visit
January 14, 2015	Meeting	Dan Parker (NBLF)	Lewis County Board of Legislators	Presentation of proposed redevelopment
January 16, 2015	Conf call	Jim Gibson (HDR)	Stakeholders	Amendment process and status of Initial Consultation Amendment Package (ICAP)
January 17, 2015	Letter	USFWS	NBLF	List of potentially occurring threatened and endangered species
January 23, 2015	Letter	Jim Gibson (HDR)	Matthew Maraglio (DOS)	Request for Coastal Zone Consistency Determination
January 23, 2015	Letter	Jim Gibson (HDR)	Jean Pietrusiak (NYNHP)	Request for threatened and endangered species information
January 29, 2015	Letter	Jim Gibson (HDR)	Ruth Pierpont (NY SHPO)	Request for Historical and Cultural Information
January 30, 2015	Letter	Jim Gibson (HDR)	Stakeholders	Distribution of Initial Consultation Amendment Package (ICAP)
February 3, 2015	Letter	Jim Gibson (HDR)	Stakeholders	Distribution of Initial Consultation Amendment Package (ICAP)
February 4, 2015	Conf call	Jim Gibson and Rob Quiggle (HDR), Daniel Parker (NBLF)	Bob Nasdor (American Whitewater)	Overview of proposed project and amendment process
February 16, 2015	Conf call	Jim Gibson (HDR)	Stakeholders	Discussion of ICAP materials
February 18, 2015	Public Notice	NA	Public	Public Notice of March 4, 2015 Joint Agency Public Meeting and availability of ICAP document for review at Village of Lyons Falls Library

Date	Type	From	To	Subject
February 19, 2015	Conf call	Jim Gibson and Rob Quiggle (HDR), Daniel Parker (NBLF)	Dave Corr (TU)	Discussion of ICAP materials
February 20, 2015	Letter	Nicholas Conrad (NYNHP/NYSDEC)	Jim Gibson (HDR)	State listed species
February 21, 2015	Letter	Dave Corr (TU)	Jim Gibson (HDR)	Comments on ICAP
March 4, 2015	Meeting	NA	NA	Joint Agency Public Meeting and Site Visit
March 13, 2015	Letter	USFWS	Jim Gibson (HDR)	Comments on ICAP
March 13, 2015	Call	Daniel Parker (NBLF) and Rob Quiggle (HDR)	Anthony Opalka (SHPO)	Discussion of cultural resources in the Project vicinity
March 16, 2015	Memo	Daniel Parker (NBLF)	Larry Eckhaus (NYSDEC)	Summary of March 3, 2015 conference call
March 25, 2015	Email	Dave Corr (TU)	Jim Gibson (HDR)	Comments on proposed project and clarification of February 21, 2015 letter
March 31, 2015	Meeting	Daniel Parker (NBLF)	Jesse Bergevin (Oneida Indian Nation)	Tour of Project and discussion of new construction
April 8, 2015	Conf call	Jim Gibson (HDR)	NYSDEC	Discussion of proposed PM&E measures
April 29, 2015	Letter	Jesse Bergevin (Oneida Indian Nation)	Dan Parker (NBLF)	No adverse affect on historic properties of significance to the Nation
May 8, 2015	Letter	Ruth Pierpont (NY SHPO)	Rob Quiggle (HDR)	Section 106 Correspondence
May 12, 2015	Letter	Michael A. Tabolt (Lewis County Board of Legislators)	Kimberly Bose (FERC)	Letter of support for NBLF Project
May 12, 2015	Letter	Larry Dolhof (LCDC)	Kimberly Bose (FERC)	Letter of support for NBLF Project
May 12, 2015	Letter	Catherine Liendecker (Village of Lyons Falls)	Kimberly Bose (FERC)	Letter of support for NBLF Project

Date	Type	From	To	Subject
May 13, 2015	Email	Matthew Maraglio (DOS)	Jim Gibson (HDR)	Coastal zone determination
May 14, 2015	Email	Jessica Hart (NYSDEC)	Jim Gibson (HDR) and Dan Parker (NBLF)	Email regarding amendment process.

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

Division for Historic Preservation
P.O. Box 189, Waterford, New York 12188-0189
518-237-8643

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

June 14, 2013

Steven Eckler
O'Brien & Gere
333 W. Washington Street
Syracuse, New York 13221

Re: ESDC
Demolition of Former Lyons Falls
Paper Mill, Center Street
LYONS FALLS, Lewis County
13PR02686

Dear Mr. Eckler:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Deputy Commissioner for Historic Preservation

Redevelopment of the Lyons Falls Mill Development

FERC Project No. 2548

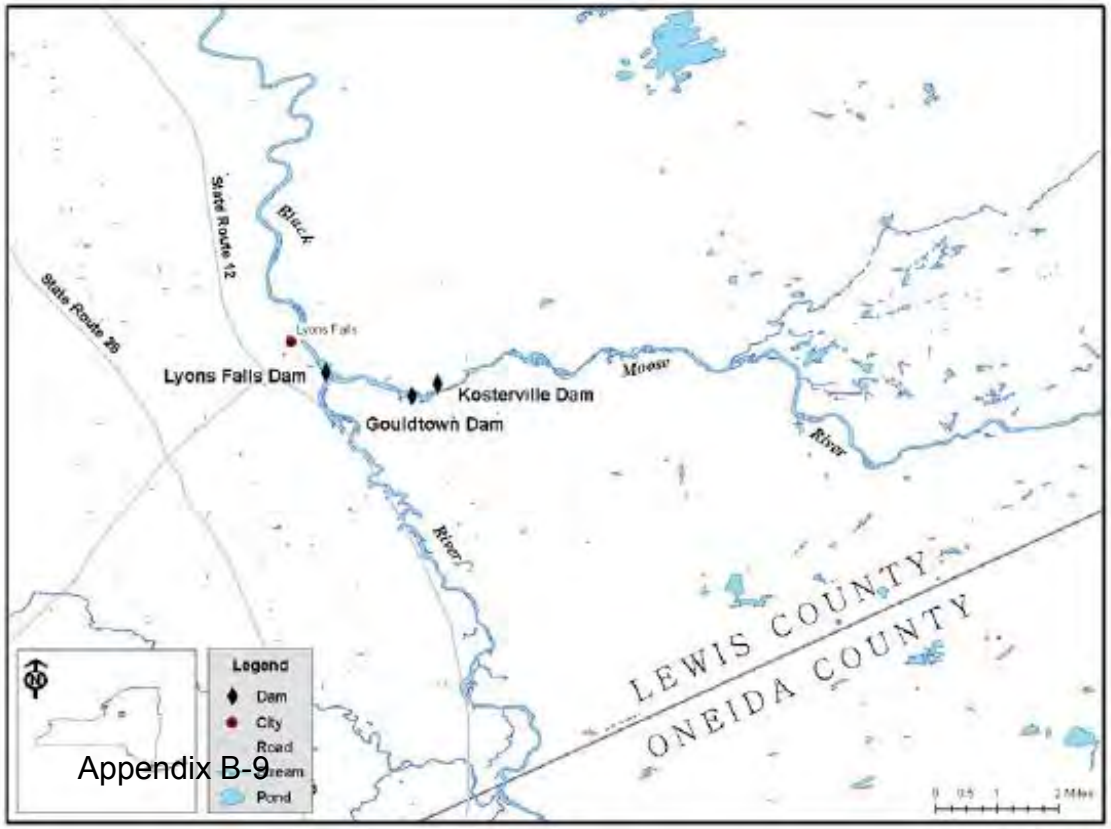
Lyons Falls Mill

Project Overview

Lyons Falls Mill

Project Overview

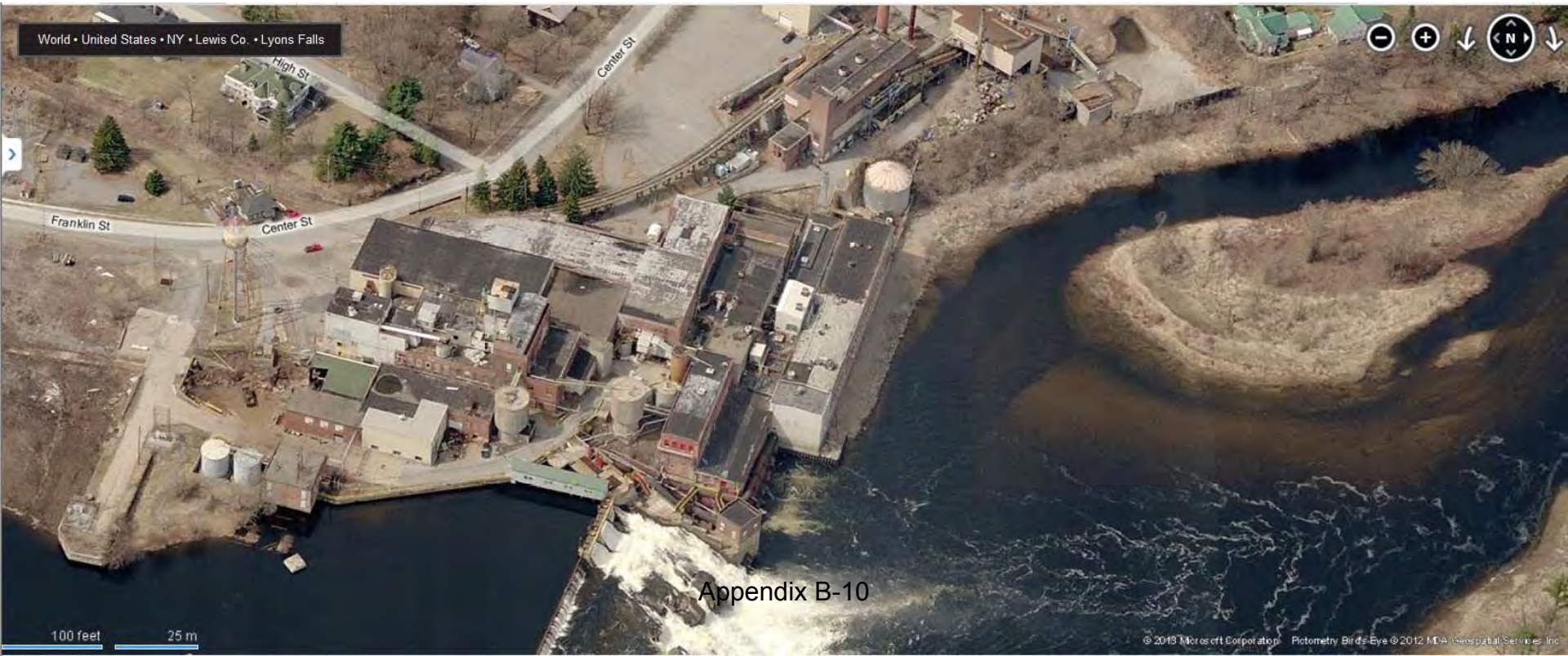
- The Lyons Falls Project consists of three separate hydropower developments – Lyons Falls Mill, Kosterville, and Gouldtown
- Located on the Moose and Black Rivers in Lewis County
- Constructed in 1920
- Existing FERC license expires on May 31, 2026
- Total authorized Project capacity of 8.63 MW
- Originally licensed to include capacity increase to 15.63 MW
- Then amended in 1987 to current authorized capacity
- The proposed redevelopment is limited to the Lyons Falls Mill



Lyons Falls Mill

Project Overview

- Northbrook Lyons Falls, LLC (NBLF) is a wholly owned subsidiary of Kruger Energy, Inc.
- The redevelopment is being pursued by NBLF as the owner and FERC licensee of the Lyons Falls Project



Lyons Falls Mill

Project Overview

- All existing generating equipment is located on the west side of the river (river left – looking downstream)
- Located within and adjacent to the former mill site

Lyons Falls Mill

Principal Project Facilities

Dam, Spillway, and Impoundment

- 430-foot-long, 10-foot-high L-shaped concrete gravity dam
- 26-inch wooden flashboards on the 360-foot spillway maintain a 130 acre impoundment with a gross volume of 730 acre-feet at an elevation of 806.5 above mean sea level (msl)
- Normal tailwater elevation of 734.4 msl, results in a gross head of 68.1 feet

Lyons Falls Mill

Principal Project Facilities

- Generating units
  - Five turbines – four horizontal runners and one vertical runner located in two powerhouses
  - Total authorized Capacity of 5.8 MW
  - Operated in a modified run-of-river mode with a total facility hydraulic capacity ranging from 70 cfs (approximate minimum operating point of unit 9) to 1,170 cfs (maximum capacity of all five generating units)
- Intake
  - 1 and 7/8 inch clear spacing on the existing trash racks
  - An existing 3.75-ft. wide by 6-ft high manually operated, bottom-opening gate is currently used to flush debris from the intake area

Former mill area decommissioning plan

Appendix B-14

Lyons Falls Mill

2006 Proposed Redevelopment

- In 2006, the proposed redevelopment consisted of a new powerhouse on the east side of the river (river right)
- In 2006, there was no additional space on west side of the river to allow for redevelopment
- NBLF distributed a June 2006 Initial Consultation Document (ICD) and held an August 24, 2006 Joint Agency Public Meeting
- Received a series of comments regarding concerns associated with developing on the east side of the river
- Based on the closing and ongoing decommissioning of the mill site, the opportunity now exists for redeveloping the hydro facility on the west side of the river and within the footprint of the former mill

Lyons Falls Mill

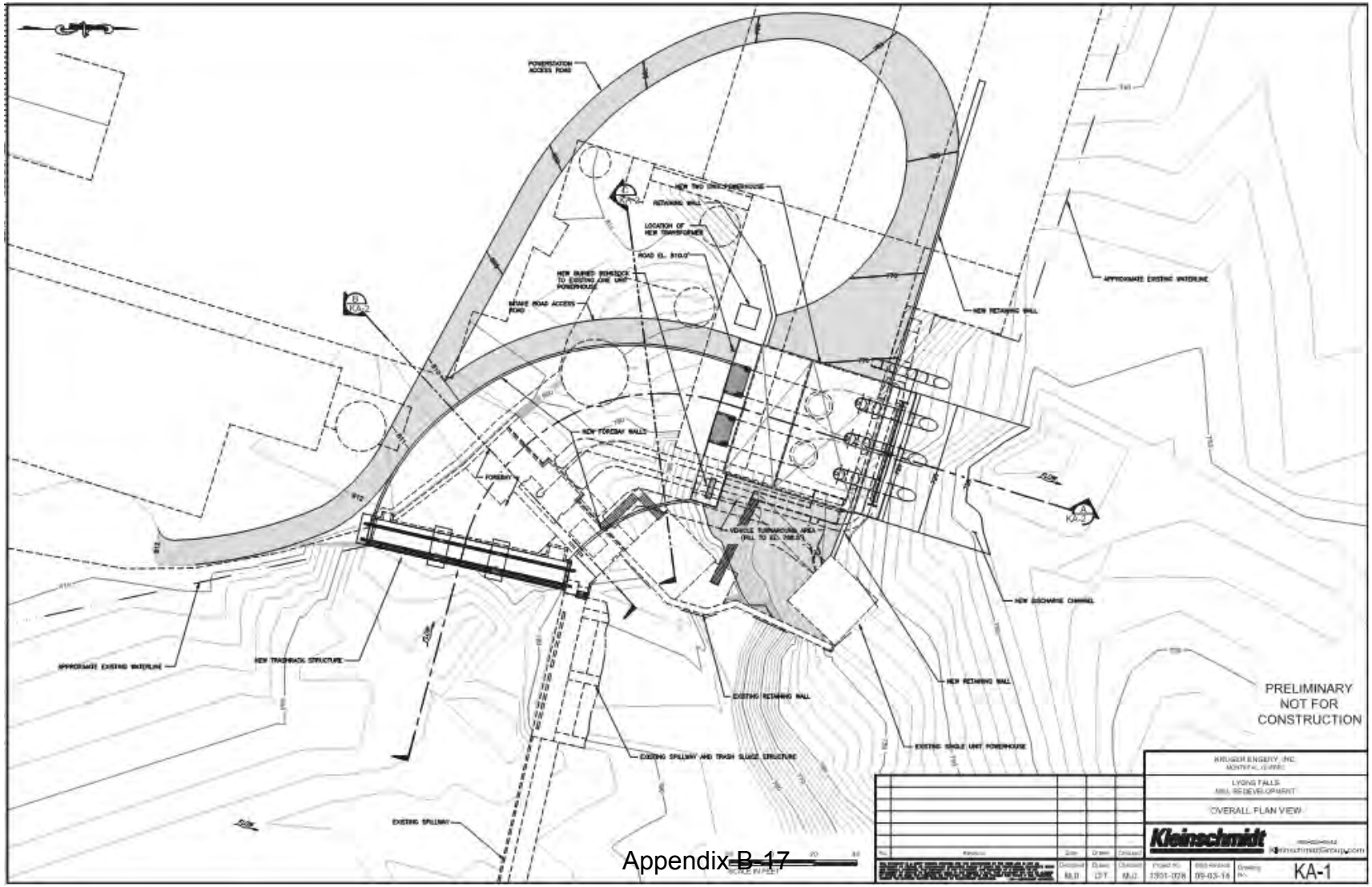
Primary Comments on 2006 Proposal

Primary comments associated with the 2006 proposal focused on:

- Northbrook should consider alternatives for developing the facility on the west side of the river (river left adjacent to or within the mill site)
- Development on the east side of the river will adversely impact recreational, scenic, and potential cultural resources
- Northbrook needs to evaluate the land use and wetland designations associated with the east side of the river
- Maintain an aesthetic flow over the falls

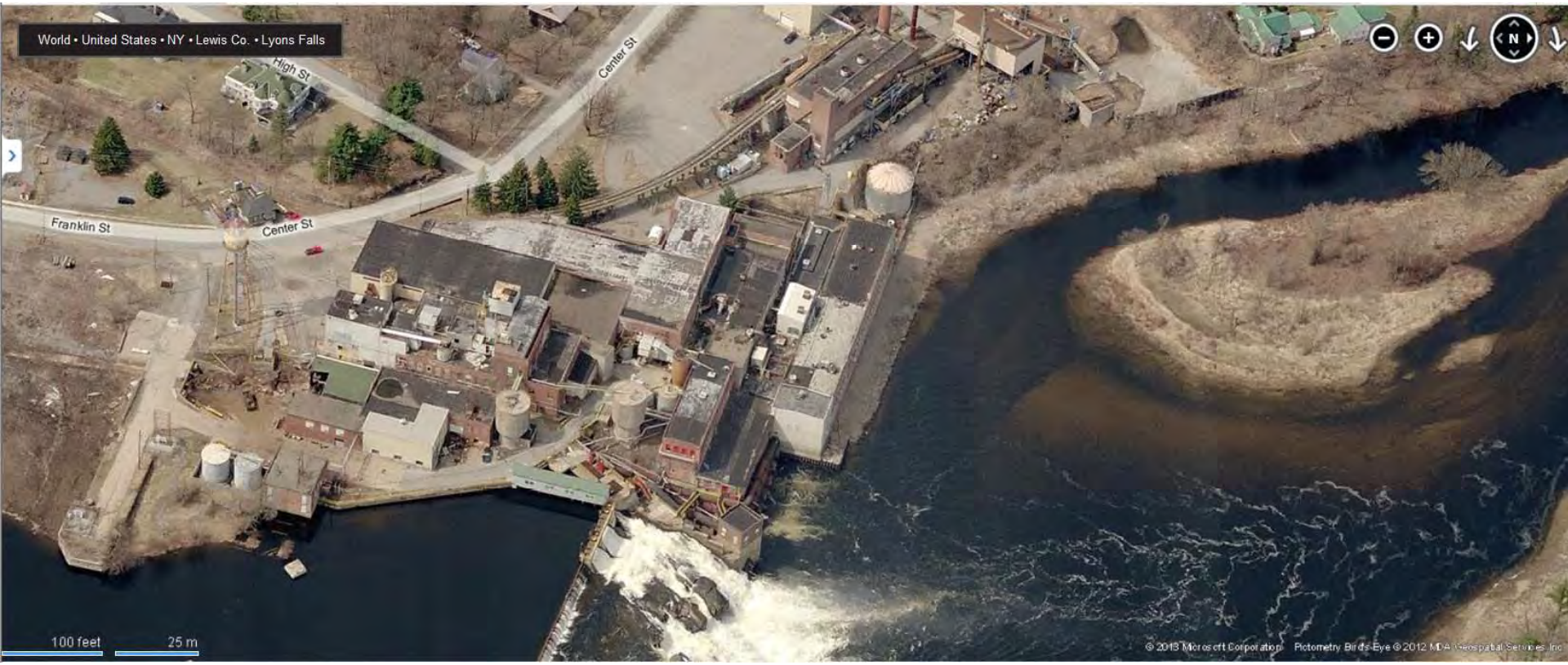
Lyons Falls Mill

Proposed Redevelopment



Lyons Falls Mill

Proposed Redevelopment



Lyons Falls Mill

Current Proposal Includes

- All redevelopment activities will be on the west side of the river and within the footprint of the former mill site
- Demolition of the existing main powerhouse, mothballing of the existing single unit powerhouse, and decommissioning of existing five generating units
- Construction of a new powerhouse with two new vertical generating units with a total nameplate capacity of 12 MW
- Coordinating construction schedule activities with the ongoing decommissioning of the mill

Lyons Falls Mill

Current Proposal Includes

- All redevelopment will be on the west side of the river and within the footprint of the former mill site
- Installation of permanent trashracks with 1-inch clear spacing or seasonal overlays with an installation plan developed in consultation with the NYSDEC and USFWS
- Design criteria that includes an average approach velocity of 2 feet per second
- Maintain current impoundment level and modified run-of-river operations
- Downstream fish movement flow to be developed in consultation with NYSDEC and USFWS

Lyons Falls Mill

Amendment Process

- Based on the Project's license expiration date (May 2026), NBLF is not pursuing the redevelopment through the eventual relicensing process
- Given the 2006 consultation activities and the ability to redevelop the facility within the footprint of the former mill, NBLFs would like to work with the Project Stakeholders to streamline the amendment process
- Similar to other recent amendments in New York, NBLF would like for Project Stakeholders to consider an approach more similar to a non-capacity amendment process

Amendment Process

Potential process considerations include:

- A single document (combined ICD, draft application, and final application)
- Public meeting to present project
- Description of amendment process to be used would be outlined and filed with FERC by the Project Stakeholders
- Review of single document by Project Stakeholders and follow up consultation to finalize application
- Base application on existing data and potential desktop evaluation(s)

Lyons Falls Mill

Proposed Schedule

ACTIVITY	PROPOSED DATE
Initial Stakeholder meeting to introduce redevelopment	11/18/2014
NBLF to provide a more detailed plan and amendment schedule	12/5/2014
Call to review plan, schedule, and streamlined process	12/17/2014
Submit request to FERC to use streamlined process	12/30/2014
Distribution of Amendment Application	1/16/2015
Public Meeting	1/29/2015
Comments on Amendment Application	3/16/2015
File Amendment Application with FERC (pending comments)	4/3/2015

Lyons Falls Mill Photographs

Lyons Falls Mill spillway looking downstream

Lyons Falls Mill spillway looking upstream

Lyons Falls Mill area below spillway

Lyons Falls Mill looking upstream

Lyons Falls Mill main powerhouse

Lyons Falls Mill powerhouses

Lyons Falls Mill single unit powerhouse

Former mill area

Lyons Falls Mill

Further Information

Mr. Dan Parker
Project Manager
Kruger Energy, Inc.
330 May Road
Potsdam, NY 13676

dan.parker@kruger.com

Tel: (315) 261-2158

Mr. Jim Gibson
HDR
1304 Buckley Road
Suite 202
Syracuse, NY 13212

jim.gibson@hdrinc.com

Tel: (315) 414-2202

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
PHONE: (607)753-9334 FAX: (607)753-9699
URL: www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Code: 05E1NY00-2015-SLI-0342 January 17, 2015
Event Code: 05E1NY00-2015-E-01036
Project Name: Lyons Falls Mill Redevelopment

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (

http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Lyons Falls Mill Redevelopment

Official Species List

Provided by:

New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
http://www.fws.gov/northeast/nyfo/es/section7.htm

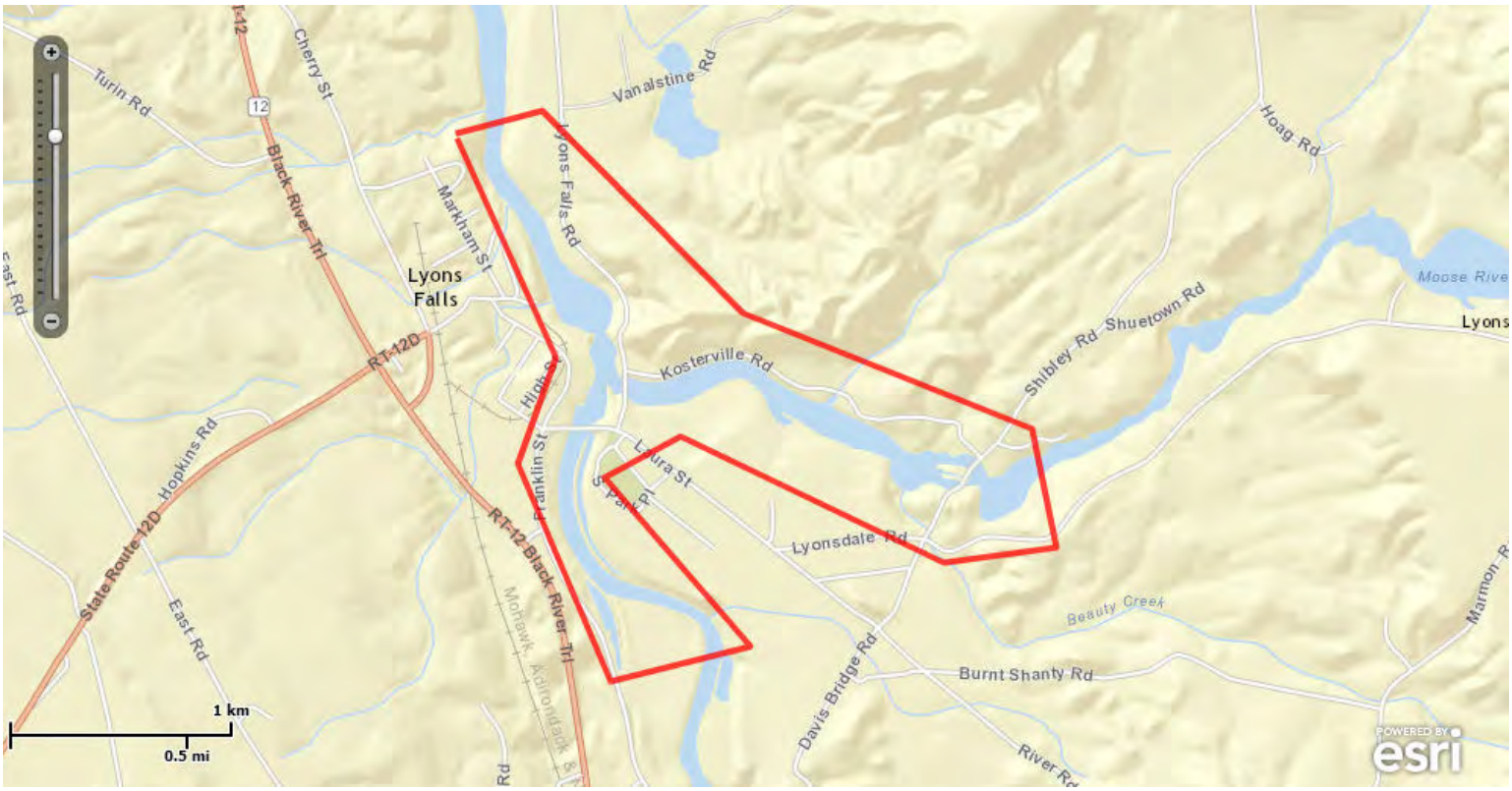
Consultation Code: 05E1NY00-2015-SLI-0342
Event Code: 05E1NY00-2015-E-01036

Project Type: Dam

Project Name: Lyons Falls Mill Redevelopment
Project Description: Redevelopment of existing hydropower powerhouse.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-75.360907 43.6277757, -75.3608989 43.6277756, -75.3608915 43.6277723, -75.3495647 43.6195107, -75.3332602 43.6147892, -75.3332542 43.6147863, -75.3332494 43.6147815, -75.3332466 43.6147755, -75.3318733 43.6099283, -75.3318728 43.6099196, -75.331876 43.6099115, -75.3318823 43.6099056, -75.3318906 43.6099029, -75.3382421 43.6092815, -75.3382506 43.6092825, -75.3530923 43.614438, -75.3573455 43.6127752, -75.3491317 43.6058985, -75.3491269 43.6058927, -75.3491246 43.6058856, -75.3491252 43.6058781, -75.3491284 43.6058713, -75.3491339 43.6058662, -75.3491409 43.6058635, -75.3570373 43.604434, -75.3570454 43.6044342, -75.3570527 43.6044376, -75.3570581 43.6044435, -75.3622938 43.6133306, -75.3622962 43.6133368, -75.3622964 43.6133434, -75.3622945 43.6133496, -75.3601537 43.6176895, -75.3657268 43.6266272, -75.3657295 43.6266345, -75.3657293 43.6266423, -75.3657261 43.6266494, -75.3657204 43.6266548, -75.3657131 43.6266575, -75.3657053 43.6266573, -75.3656982 43.6266541, -75.3656928 43.6266484, -75.3601138 43.6177012, -75.3601113 43.6176949, -75.3601109 43.6176882, -75.3601129 43.6176818, -75.3622539 43.6133416, -75.3570307

43.6044759, -75.3491901 43.6058953, -75.357397 43.6127662, -75.3574021 43.6127726, -75.3574042 43.6127806, -75.3574029 43.6127887, -75.3573984 43.6127956, -75.3573915 43.6128001, -75.3531 43.6144779, -75.3530931 43.6144793, -75.3530861 43.6144782, -75.3382416 43.6093217, -75.3319183 43.6099404, -75.333282 43.6147539, -75.3495792 43.6194733, -75.3495854 43.6194763, -75.3609081 43.6277348, -75.3657919 43.6268045, -75.3657997 43.6268045, -75.3658068 43.6268076, -75.3658123 43.6268131, -75.3658152 43.6268204, -75.3658152 43.6268282, -75.3658121 43.6268353, -75.3658066 43.6268408, -75.3657993 43.6268437, -75.360907 43.6277757)))

Project Counties: Lewis, NY

United States Department of Interior
Fish and Wildlife Service

Project name: Lyons Falls Mill Redevelopment

Endangered Species Act Species List

There are a total of 2 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	**Status**	**Has Critical Habitat**	**Condition(s)**
Indiana bat *(Myotis sodalis)* Population: Entire	Endangered		
northern long-eared Bat *(Myotis septentrionalis)*	Proposed Endangered		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

January 23, 2015

Mr. Matthew Maraglio
Coastal Review Specialist
New York Department of State
One Commerce Plaza
99 Washington Avenue
Albany, NY 12231-0001

Subject: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment
Coastal Zone Consistency Determination

Mr. Maraglio:

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc., is the licensee for the Lyons Falls Project (FERC No. 2548) (Project), located along the Moose and Black rivers in Lewis County, New York. The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986 and which expires on May 31, 2026. NBLF is proposing to redevelop the Project's Lyons Falls Mill Development (Lyons Falls Mill) to increase the efficiency and overall energy output of the hydroelectric facility. On behalf of NBLF, HDR is gathering information in support of a proposed capacity related amendment to the Project's existing FERC license to authorize redevelopment of Lyons Falls Mill.

Consistent with this effort, HDR is requesting a determination from your office regarding the applicability of the State's Coastal Zone Policies to Lyons Falls Mills. Based on a review of applicable information, we do not believe that the project is located within the State's Coastal Zone and are requesting confirmation of this determination from your office. In support of this confirmation, we have included a map indicating the location of this facility.

We respectfully request a response to this request within 30 days of the date of this letter. If you have any questions or need additional information regarding this project or its location, please feel free to contact me at (315) 414-2202 or jim.gibson@hdrinc.com.

Thank you for your assistance with this request.

Jim Gibson
Project Manager

Attachment

cc: Dan Parker (NBLF)

hdrinc.com

1304 Buckley Road, Suite 202, Syracuse, NY 13212-4311
(315) 451-2325

Appendix B-42

Lyons Falls Development

Basemap Source: MASS GIS, Esri, USGS, NOAA
Projection: Mass State Plane East Zone, NAD 83, US Feet(c) 2010 Microsoft Corporation and its Data Suppliers

Path: C:\Users\tdecker\Documents\Lyons Falls\241398_Lyons Falls\map_docs\USGS General Location Map.mxd

January 23, 2015

New York Natural Heritage Program – Information Services
New York Sate Department of Environmental Conservation
Attn: Jean Pietrusiak
625 Broadway, 5th Floor
Albany, NY 12233-4757

Subject: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment
Request for Threatened and Endangered Species Information

Ms. Pietrusiak:

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc., is the licensee for the Lyons Falls Project (FERC No. 2548) (Project), located along the Moose and Black rivers in Lewis County, New York. The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986 and which expires on May 31, 2026. NBLF is proposing to redevelop the Project's Lyons Falls Mill Development (Lyons Falls Mill) to increase the efficiency and overall energy output of the hydroelectric facility. On behalf of NBLF, HDR is gathering information in support of a proposed capacity related amendment to the Project's existing FERC license to authorize redevelopment of Lyons Falls Mill. In support of this process, HDR is requesting information regarding the following within the project area:

- State-listed threatened or endangered species;
- Species proposed for listing as threatened or endangered, or species of concern;
- Designated and proposed critical habitat; and
- Candidate species.

The attached map shows the area for which the information is being requested and the general location of the area relative to the facility.

NBLF is currently gathering information in support of the amendment application and respectfully requests a response within 30 days of the date of this letter. If you have any questions or need additional information regarding Lyons Falls Mill or its location, please feel free to contact me at (315) 414-2202 or jim.gibson@hdrinc.com.

Thank you for your assistance with this request.

Jim Gibson
Project Manager

Attachment

cc: D. Parker (NBLF)

hdrinc.com

1304 Buckley Road, Suite 202, Syracuse, NY 13212-4311
(315) 451-2325

Appendix B-44

Lyons Falls Development

Basemap Source: MASS GIS, Esri, USGS, NOAA
Projection: Mass State Plane East Zone, NAD 83, US Feet(c) 2010 Microsoft Corporation and its Data Suppliers

Path: C:\Users\tdecker\Documents\Lyons Falls\241398_Lyons Falls\map_docs\USGS General Location Map.mxd

January 29, 2015

Ruth Pierpont
New York State Division for Historic Preservation
New York State Office of Parks, Recreation & Historic Preservation
Peebles Island State Park
P.O. Box 189
Waterford, NY 12188-0189

Subject: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment
Request for Historical and Cultural Resources Information

Ms. Pierpont:

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc., is the licensee for the Lyons Falls Project (FERC No. 2548) (Project), a hydroelectric generating facility located along the Moose and Black rivers in Lewis County, New York (see attached map). The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986 and which expires on May 31, 2026. NBLF is proposing to redevelop the Project's Lyons Falls Mill development (Lyons Falls Mill) to increase the efficiency and overall energy output of the hydroelectric facility. On behalf of NBLF, HDR is gathering information in support of a proposed amendment to the Project's existing FERC license to authorize redevelopment of Lyons Falls Mill.

Redevelopment of the Lyons Falls Mill facility will take place entirely within the footprint of the former Lyons Falls Paper Mill located along river left (looking downstream). The Lyons Falls Paper Mill is currently undergoing demolition, and your office has previously determined that demolition of the paper mill would have No Impact on cultural resources listed in or eligible for inclusion in the State or National Register of Historic Places (please see attached correspondence). The existing hydroelectric facility formerly provided power to the mill.

The ongoing demolition of the paper mill structures will allow for all redevelopment activities to occur within the footprint of the former paper mill site. Upon approval of the redevelopment, the existing primary hydroelectric powerhouse at Lyons Falls Mill will be demolished and a single-unit powerhouse will be mothballed. A new powerhouse would be constructed to house two new generating units.

As noted above, the New York State Historic Preservation Officer has previously indicated that demolition of the Lyons Falls Paper Mill will have no impacts on properties listed in or eligible for the State or National Registers. Because the Lyons Falls Mill hydroelectric development is within the footprint of the paper mill (and was originally constructed to provide power to the mill), NBLF anticipates that the proposed redevelopment of the hydroelectric facilities at the site will similarly not have any adverse effect on historic properties.

hdrinc.com

1304 Buckley Road, Suite 202, Syracuse, NY 13212-4311
(315) 451-2325

On behalf of NBLF, HDR is requesting information from your office regarding the proposed redevelopment and to identify any known historical or cultural resources that may affected.
We respectfully request a response to this request within 30 days of the date of this letter. If you have any questions or need additional information regarding this project or its location, please feel free to contact me at (315) 414-2202 or jim.gibson@hdrinc.com.

Thank you for your assistance with this request.

Jim Gibson
Project Manager

Attachments (2)

cc: Dan Parker (NBLF)
Rob Quiggle (HDR)

Appendix B-47

Lyons Falls Development

Basemap Source: MASS GIS, Esri, USGS, NOAA
Projection: Mass State Plane East Zone, NAD 83, US Feet(c) 2010 Microsoft Corporation and its Data Suppliers

Path: C:\Users\tdecker\Documents\Lyons Falls\241398_Lyons Falls\map_docs\USGS General Location Map.mxd

January 30, 2014

TO: Attached Distribution List

SUBJECT: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc. (Kruger), is the licensee for the Lyons Falls Project (FERC No. 2548) (Project). The Project was initially constructed in 1920 and is located along the Moose and Black Rivers in Lewis County, New York. The Project's hydroelectric developments include (from downstream to upstream) Lyons Falls Mill, Gouldtown, and Kosterville, and the Project has a total installed capacity of 8.63 megawatts (MW). The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986, and which expires on May 31, 2026. NBLF is proposing to redevelop the Lyons Falls Mill facility to increase the facility's efficiency and overall energy output. Redevelopment of Lyons Falls Mill will increase the capacity of this facility from 5.8 MW to 11.2 MW. The proposed redevelopment requires an amendment to the Project's existing FERC license.

In support of the proposed redevelopment and license amendment, NBLF has prepared the enclosed Initial Consultation/Amendment Package (ICAP). The ICAP provides information on current and proposed facilities, operations, and environmental conditions. The ICAP also summarizes proposed protection, mitigation, and enhancement measures associated with redevelopment.

NBLF also invites your participation in the upcoming Joint Agency Public Meeting and Site Visit currently scheduled for March 4, 2015. Additional details regarding the March 4, 2015 meeting and site visit will be provided in the coming week.

Should you have any questions regarding the enclosed ICAP or the proposed redevelopment of Lyons Falls Mill, please contact the undersigned at (315) 414-2202 or Dan Parker, Project Manager with Kruger, at (315) 261-2158.

Sincerely,
Henningson, Durham and Richardson Architecture and Engineering, P.C.

Jim Gibson
Vice President

Enclosure

cc: D. Parker (NBLF)

Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment

Initial Consultation/Amendment Package Distribution List

Stephen Patch
Fish and Wildlife Biologist
US Fish & Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Jessica Hart
Region 6, Environmental Analyst I Project Manager
NYS Dept. of Environ. Conserv.
317 Washington Street
Watertown, NY 13601

Erik J. Latremore
Bureau of Habitat
NYS Dept. of Environ. Conserv.
317 Washington Street
Watertown, NY 13601-3787

Bill Wellman
Region 5 Vice President
Trout Unlimited
7 Helen Street
Plattsburg, NY 12901

Russell McCullough
NYS Dept. of Environ. Conserv.
317 Washington Street
Watertown, NY 13601

Liz Swearingin
County Manager
Lewis County Court House
7660 North State Street
Lowville, NY 13367

Eric Virkler
Economic Development
Lewis County Court House
7660 North State Street
Lowville, NY 13367

Catherine Llendecker
Village of Lyons Falls
4059 Cherry Street
Lyons Falls, NY 13368

Larry Eckhaus
Senior Attorney
NYSDEC Office of the General Counsel
625 Broadway, 14th Floor
Albany, NY 12233-1500

David Corr
Trout Unlimited
28 Stranger Avenue
New Hartford, NY 13413

February 3, 2015

SUBJECT: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc. (Kruger), is the licensee for the Lyons Falls Project (FERC No. 2548) (Project). The Project is an existing hydroelectric generating facility that was initially constructed in 1920 and is located along the Moose and Black Rivers in Lewis County, New York. The Project's hydroelectric developments include (from downstream to upstream) Lyons Falls Mill, Gouldtown, and Kosterville, and the Project has a total installed capacity of 8.63 megawatts (MW). The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986, and which expires on May 31, 2026. NBLF is proposing to redevelop Lyons Falls Mill to increase its efficiency and the overall energy output of the development. Redevelopment of Lyons Falls Mill will increase the capacity of this facility from 5.8 MW to 11.2 MW. The proposed redevelopment of Lyons Falls Mill requires an amendment to the Project's existing FERC license.

In support of the proposed redevelopment and license amendment, NBLF has prepared the enclosed Initial Consultation/Amendment Package (ICAP). The ICAP provides information on current and proposed facilities, operations, and environmental conditions. The ICAP also summarizes proposed protection, mitigation, and enhancement measures associated with redevelopment.

NBLF invites your participation in the upcoming Joint Agency Public Meeting and Site Visit scheduled for March 4, 2015. The site visit of Lyons Falls Mill facility will begin at 3:00 PM at the facility. The Joint Agency Public Meeting will follow the site visit at 4:30 PM. The meeting will be held at the Lyons Falls Fire Hall located at 3907 High Street in Lyons Falls, New York.

If you need additional information regarding the upcoming meeting and site visit, or if you have any questions regarding the enclosed ICAP or the proposed redevelopment of Lyons Falls Mill, please contact the undersigned at (315) 414-2202 or Dan Parker, Project Manager with Kruger, at (315) 261-2158.

Sincerely,
Henningson, Durham and Richardson Architecture and Engineering, P.C.

Jim Gibson
Project Manager

Enclosure

cc: D. Parker (NBLF)

NOTICE OF JOINT AGENCY – PUBLIC MEETING
LYONS FALLS HYDROELECTRIC PROJECT (FERC NO. 2548)

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc., is the licensee for the Lyons Falls Project (FERC No. 2548) (Project),located along the Moose and Black Rivers in Lewis County, New York. The Project's hydroelectric developments include (from downstream to upstream) Lyons Falls Mill, Gouldtown, and Kosterville, and the Project has a total installed capacity of 8.63 megawatts (MW). The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986, and which expires on May 31, 2026. NBLF is proposing to redevelop Lyons Falls Mill within the footprint of the former paper mill facility on the west side of the river in order to increase the facility's efficiency and overall renewable energy output. Redevelopment of Lyons Falls Mill will increase the capacity of this facility from 5.8 MW to 11.2 MW. The proposed redevelopment requires an amendment to the Project's existing FERC license. In support of the proposed redevelopment of Lyons Falls Mill, NBLF is seeking agency and public input.

TAKE NOTICE THAT NBLF, in accordance with the applicable provisions of 18 CFR § 4.38(b)(3-4) and 4.38(g), will hold a Joint Agency – Public Meeting on March 4, 2015 at 4:30 PM at the Lyons Falls Fire Hall located at 3907 High Street in Lyons Falls, New York, 13368. The agenda for the meeting will consist of (a) a brief introduction and description of the existing Lyons Falls Mill, (b) a description of the proposed redevelopment of Lyons Falls Mill, (c) a discussion of resource issues related to the proposed redevelopment, and (d) obtaining the views of agencies and the public regarding resource issues to be addressed in the amendment application. A site visit will precede the Joint Agency – Public Meeting, and is scheduled for 3:00 PM on March 4, 2015. Parties interested in participating in the site visit should meet at the Lyons Falls Fire Hall no later than 3:00 PM on March 4, 2015.

In January 2015, NBLF prepared an Initial Consultation/Amendment Package (ICAP) for the proposed redevelopment of Lyons Falls Mill. The ICAP provides information about the proposed redevelopment, existing resources, and a summary of studies conducted by NBLF. A copy of the ICAP is available for review at the Lyons Falls Library, located at 3918 High Street in Lyons Falls, New York 13368. A copy of the ICAP can also be requested by contacting Dan Parker with Kruger Energy, Inc. at (315) 261-2158, or Jim Gibson with HDR, at (315) 414-2202.

DATED: FEBRUARY, 2015
PUB. DATE: FEBRUARY 18, 2015

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

February 20, 2015

Jim Gibson
HDR
1304 Buckley Road, Suite 202
Syracuse, NY 13212

Re: Lyons Falls Mill Redevelopment, Lyons Falls Project (FERC 2548)
Town/City: West Turin. County: Lewis.

Dear Jim Gibson :

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities, at your site or in its immediate vicinity.

The absence of data does not necessarily mean that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities and other significant habitats maintained in the Natural Heritage Data bases. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

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NEW YORK COUNCIL TROUT UNLIMITED

Mr. Jim Gibson
Project Manager
HDR Engineering
1304 Buckley Rd. Suite 202
Syracuse, NY 13212

February 21, 2015

Re: Lyons Falls Redevelopment Plan

Dear Mr. Gibson:

Thank you for the opportunity to discuss the issues regarding the Planned Lyons Falls Redevelopment Project. In addition I appreciate the entire effort put forth to reach out to stakeholders within the area.

Trout Unlimited is always concerned with the protection of the cold water fisheries, particularly in areas where there are native strains of Brook Trout and other species.

In this case with the Black River and with the confluence of the Moose, there are some concerns regarding the fishery that have been addressed within your proposal.

Current requirements, per the FERC license, indicates a minimum flow rate of 77cfs which you indicated, as we discussed, will be maintained by the 45cfs thru the outtakes and the overflow of 25cfs over the dam.

Lastly, we would encourage the angling of the intakes to further minimize the impacts on the fishery.

Thank you again for your efforts!

Dave Corr
NYS Region 6 VP, Trout Unlimited

Cc: Bill Wellman, NYSCTU
Ron Urban, NYSCTU

C/O NYC DEP • 59-17 JUNCTION BLVD, 19TH FLOOR • FLUSHING, NY • 11373-5108
PHONE: (718)595-3503 • FAX: (718)595-3477

Redevelopment of Lyons Falls Mill
Joint Agency Public Meeting

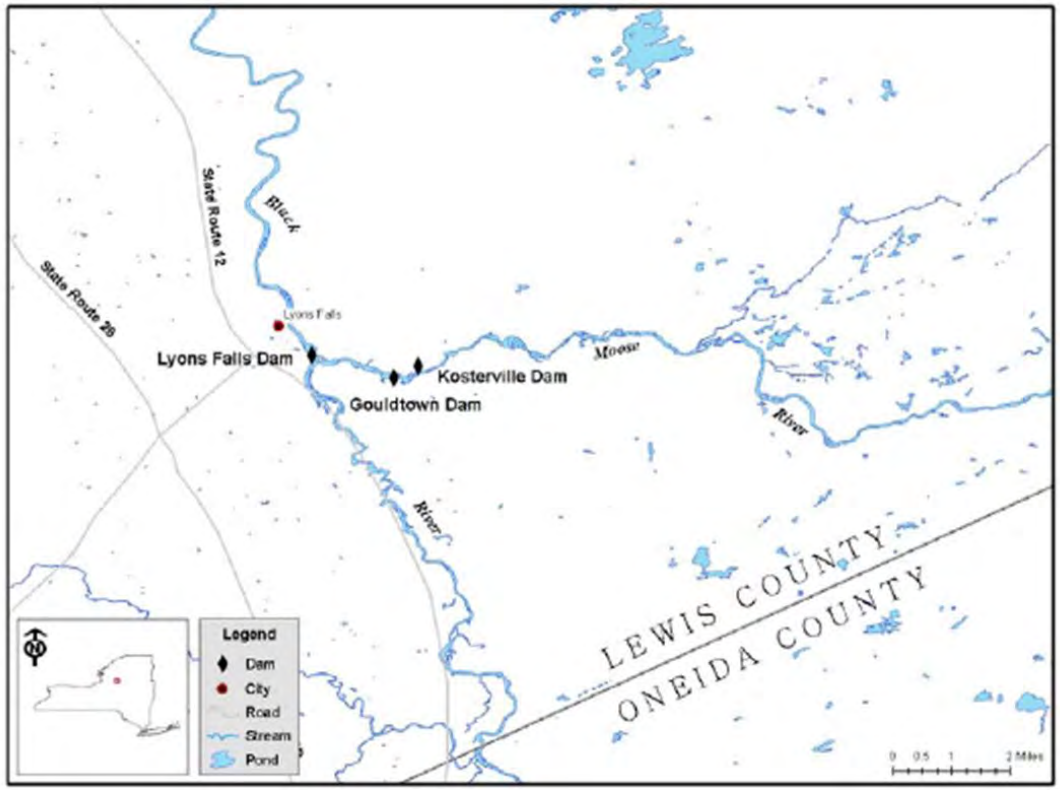
FERC Project No. 2548

March 4, 2015

Lyons Falls Mill

Project Overview

- Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc. (Kruger), is the licensee for the Lyons Falls Project (FERC No. 2548).
- The Project was initially constructed in 1920 and is located along the Moose and Black rivers in Lewis County, New York.
- The Project consists of three separate hydropower developments – Lyons Falls Mill, Kosterville, and Gouldtown.



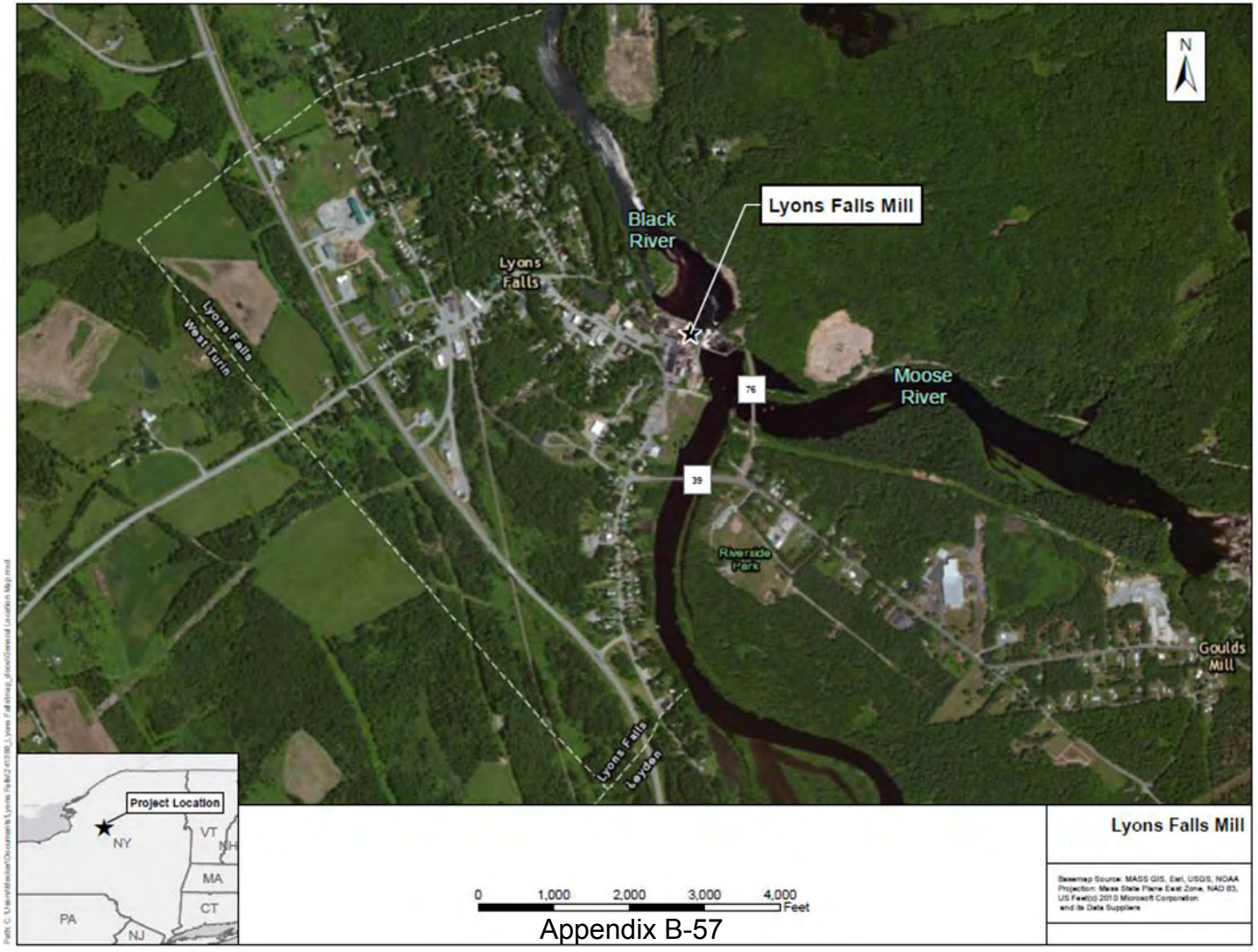
Lyons Falls Mill

Project Overview

- The Project operates under a license issued by the Federal Energy Regulatory Commission (FERC) on May 6, 1986, which expires on May 31, 2026.
  - Originally licensed to include capacity increase to 15.63 megawatts (MW) (for all three developments).
  - Amended in 1987 to current authorized capacity.
- NBLF is proposing to redevelop Lyons Falls Mill to increase its efficiency and the overall energy output of the development.
- Redevelopment of Lyons Falls Mill will increase the capacity of this facility from 5.8 MW to 11.2 MW. The proposed redevelopment of Lyons Falls Mill requires an amendment to the Project's existing FERC license.
- On January 30, 2015, NBLF distributed an Initial Consultation – Amendment Package (ICAP) to stakeholders and resource agencies describing the proposed redevelopment.
  - The ICAP describes current and proposed facilities, operations, and environmental conditions. The ICAP also summarizes proposed protection, mitigation, and enhancement measures associated with redevelopment.

Lyons Falls Mill

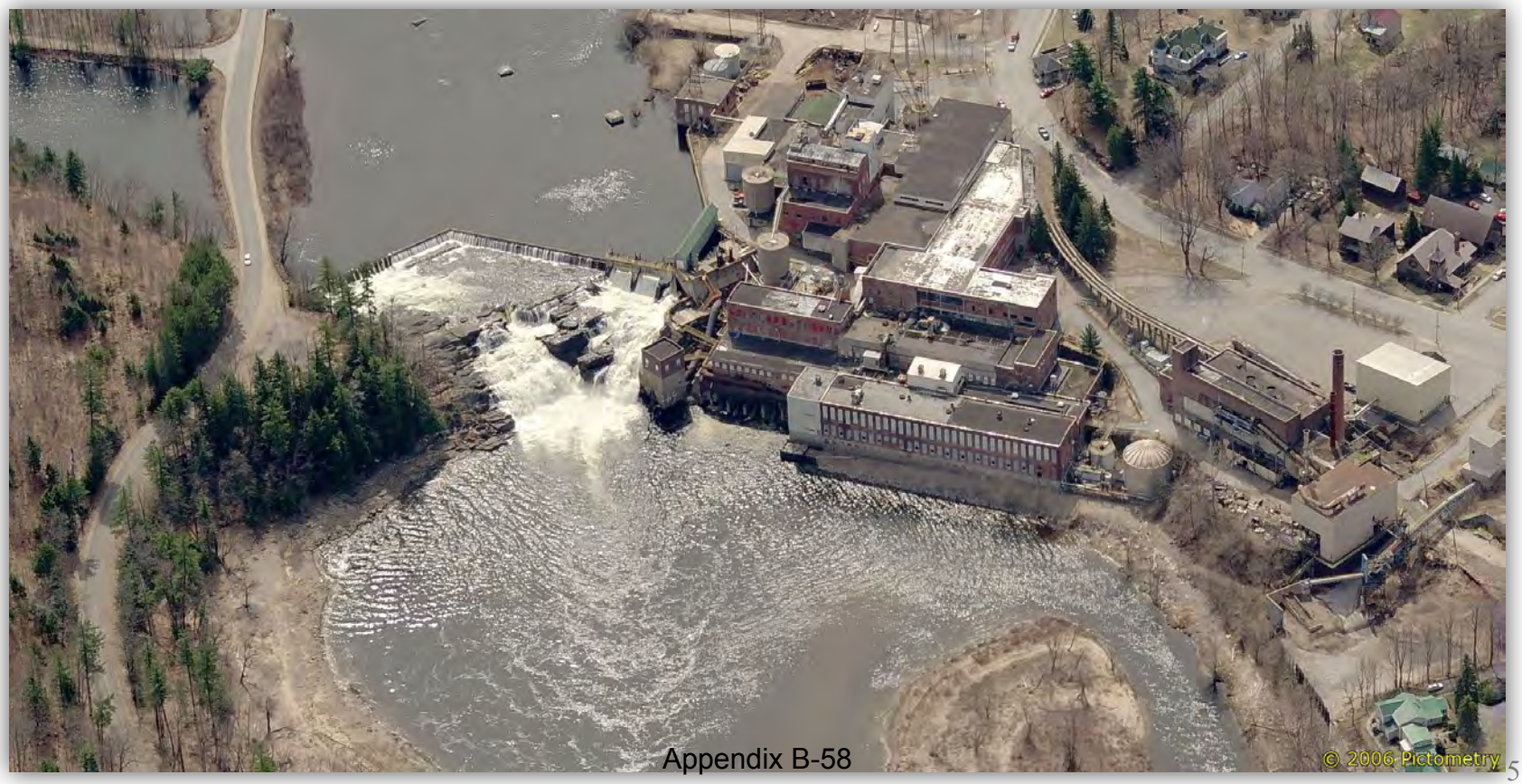
Project Overview



Lyons Falls Mill

Project Overview

- The existing and proposed powerhouses are located within and adjacent to a former Georgia-Pacific paper mill on river left (looking downstream).



Lyons Falls Mill

Existing Features

- 431.5-foot-long, 10-foot-high, “L-shaped” concrete gravity dam.
  - 362-foot-long spillway section topped with 26-inch wooden flashboards.
  - 69.5-foot-long concrete gate structure adjoining the west (river left) end of the dam.
  - The concrete gate structure contains two 6-foot-high, 25-foot-wide flood control gates and one 6-foot-high, 8-foot-wide sluice gate.

Lyons Falls Mill

Existing Features

- The dam maintains a 130 acre impoundment with a gross storage volume of 730 acre-feet at an elevation of 806.5 above mean sea level (msl) (top of flashboards)
- Normal tailwater elevation of 734.4 msl, results in a gross head of 68.1 feet

Lyons Falls Mill

Existing Features

- The intake structure is located adjacent to the river left dam abutment and is equipped with trashracks measuring 18 feet high and 89 feet wide.
- The trashracks have a clear bar spacing of 1 and 7/8 inches.
- The intake area also includes a 3.75-foot-wide by 6-foot-high manually operated bottom-opening debris gate.

Lyons Falls Mill

Existing Features

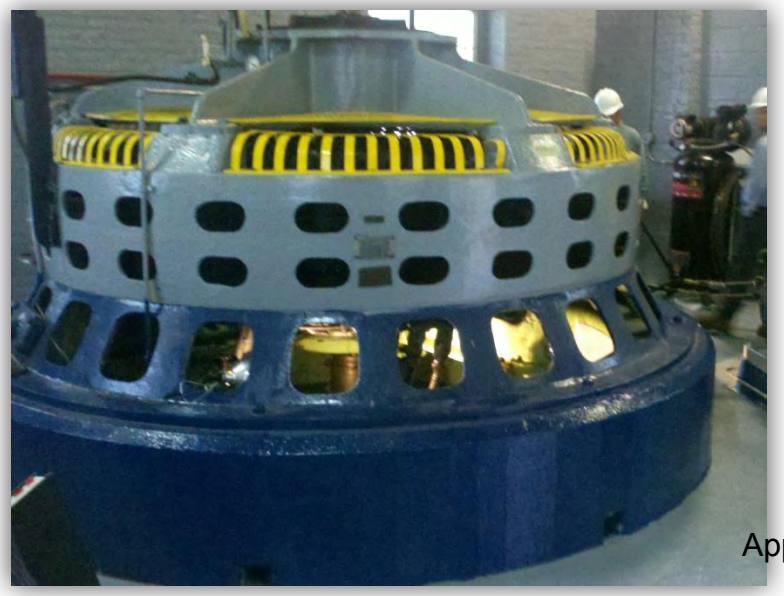
- The intake structure feeds three penstocks that lead to two powerhouses.
- Each penstock has an individual, manually operated intake gate.
- Existing generating equipment at Lyons Falls Mill is housed within two powerhouses located on river left.

Lyons Falls Mill

Existing Features

EXISTING TURBINE/GENERATING UNIT CHARACTERISTICS

	Unit 1	Unit 6	Unit 7	Unit 8	Unit 9
Unit Type (propeller)	Vertical	Horizontal	Horizontal	Horizontal	Horizontal
Rated Flow (cfs)	250	250	250	170	70
Rated Head (feet)	67	69	69	69	64
Generator Power Factor	0.8	0.8	0.8	0.8	0.8
Power (kVA)	1,500	1,500	1,500	1,608	1,125
Generating Capacity (kW)	1,040	1,200	1,200	1,286	900



Lyons Falls Mill

Existing Operations

- Lyons Falls Mill operates in a run-of-river mode, with an impoundment elevation generally maintained at 806.5 feet (top of flashboards) and limited fluctuation to account for varying flow conditions, the age of the units, and the limited size of the impoundment.
- All river flows of 70 cfs (minimum operating point for unit 9) to 1,170 cfs (maximum hydraulic capacity of all 5 generating units) are passed through the existing units.
- During periods of high flow, when inflow equals or exceeds hydraulic capacity, Lyons Falls Mill is at the full hydraulic capacity of the five turbines. Flows in excess of the hydraulic capacity are passed over the spillway, through the flood gates, or through the sluice gate.
- During low or mean flow periods, facility operation is scheduled to meet the demands of the local electric grid to the extent possible. Lyons Falls Mill is operated such that current license article requirements are complied with during low or mean flow periods.

Lyons Falls Mill

2006 Proposed Redevelopment

- In 2006, an Initial Consultation Document (ICD) proposing the addition of a new 9 MW powerhouse to Lyons Falls Mill was prepared and distributed.
- The 2006 proposal included the development of the new powerhouse on river right (east side), across from the former paper mill and the existing facility's powerhouses.
- NBLF conducted studies in support of the 2006 redevelopment proposal.
- NBLF did not pursue redevelopment of Lyons Falls Mill as originally presented in 2006.

Lyons Falls Mill

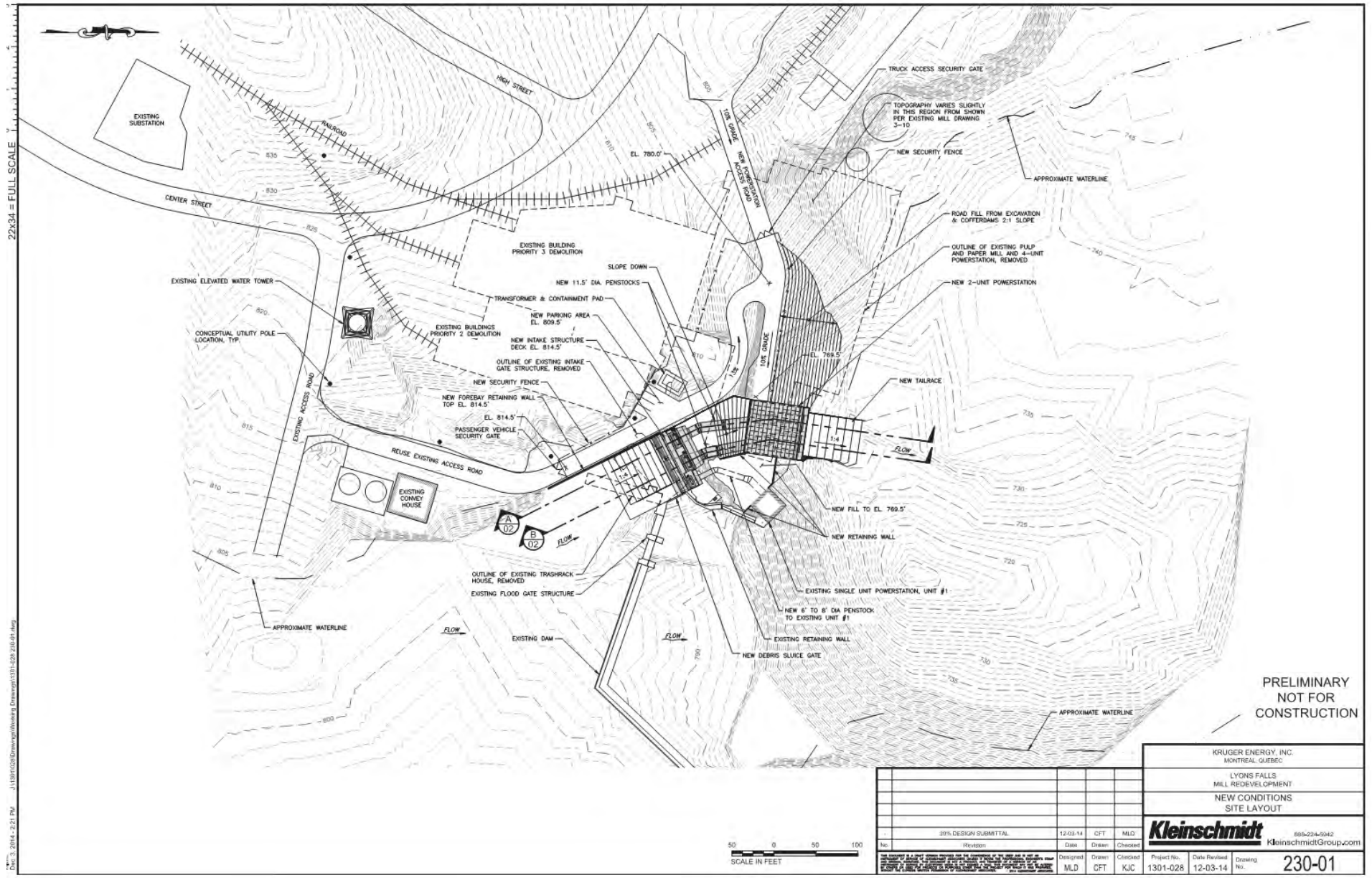
Proposed Redevelopment

- The ongoing demolition of the adjacent paper mill will now allow for all redevelopment activities associated with Lyons Falls Mill to occur within the footprint of the former paper mill site on the river left shoreline.
- In support of the redevelopment, NBLF proposes to demolish the main powerhouse and mothball the single-unit powerhouse.
- The decommissioned powerhouses will then be replaced by a single powerhouse containing two generating units.

Lyons Falls Mill

Proposed Features

- The proposed Lyons Falls Mill redevelopment would continue to use the existing “L-shaped” concrete gravity dam, including the spillway section, concrete structure adjoining the river left end of the dam, and the 26-inch-high flashboards.
- Under the proposed plan, there would be no modifications to the dam and, thus, no changes to the size or gross storage capacity of the existing impoundment as a result of redevelopment.



PRELIMINARY
NOT FOR
CONSTRUCTION

No.	Revision	Date	Drawn	Checked
1	35% DESIGN SUBMITTAL	12-03-14	CFT	MLD

Designed: MLD | Drawn: CFT | Checked: KJC

KRUGER ENERGY, INC.
MONTREAL, QUEBEC

LYONS FALLS
MILL REDEVELOPMENT

NEW CONDITIONS
SITE LAYOUT

Kleinschmidt
888-224-5042
KleinschmidtGroup.com

Project No.	Date Revised	Drawing No.
1301-028	12-03-14	230-01

22x34 = FULL SCALE

Dec 3, 2014 - 2:21 PM J:\1301\028\Drawings\Working Drawings\1301-028 230-01.dwg

Lyons Falls Mill

Proposed Features

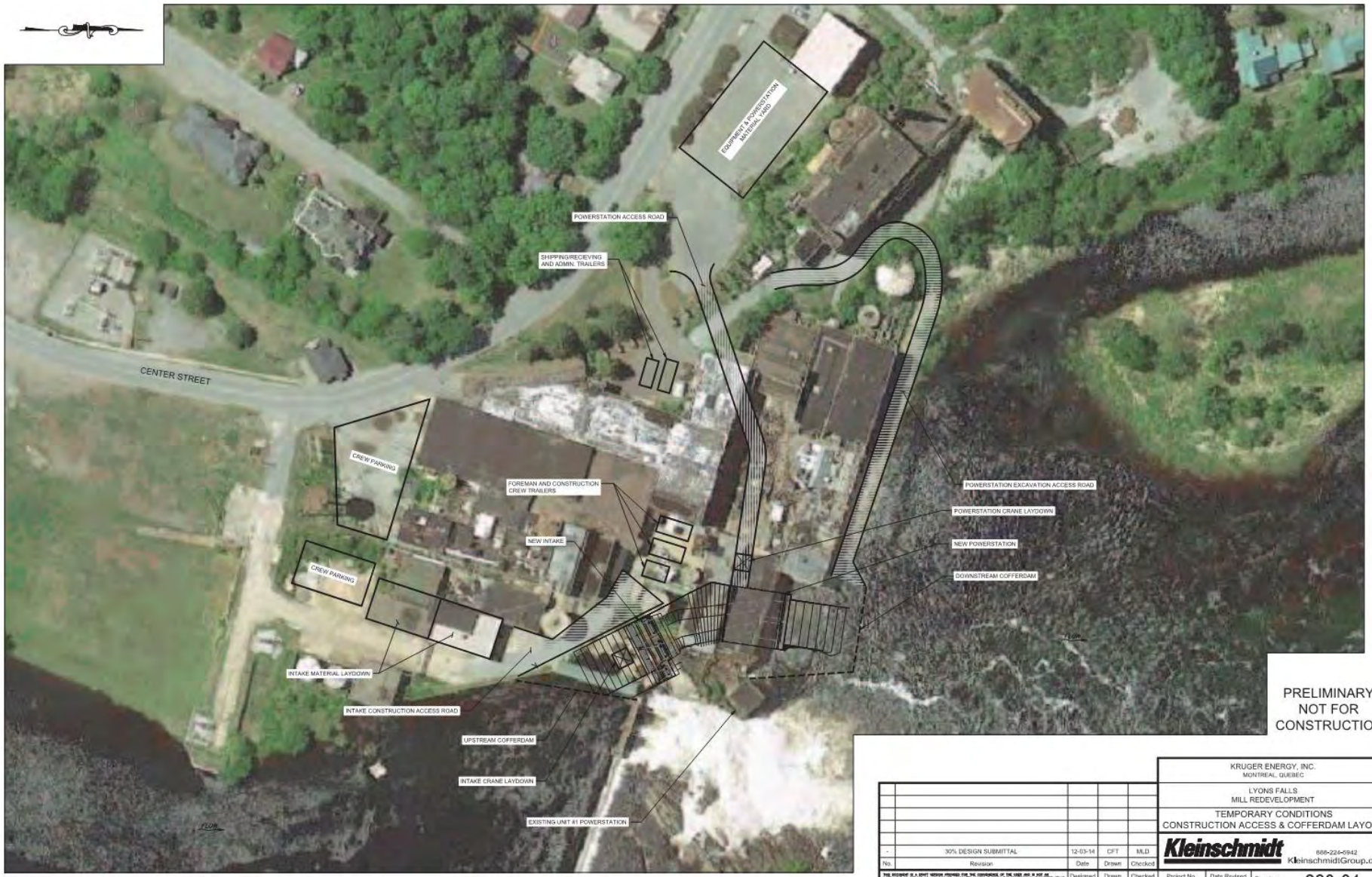
PROPOSED TURBINE/GENERATING UNIT CHARACTERISTICS

TURBINES	
Unit Type	Vertical “Saxo” Kaplan
Number of Units	2
Runner Diameter	2.25 meters
Rated Head	64 feet
Rated Flow	1,236 cfs each
Rated Horsepower (or kW)	5,600 kW
Min. Hydraulic Capacity	237 cfs each
Max. Hydraulic Capacity	1,342 cfs each
Project Min. Hydraulic Cap.	237 cfs
Project Max. Hydraulic Cap.	2,684 cfs
GENERATORS	
Number of Units	2
Voltage	4.16 kV
Nameplate Capacity (kVA)	6,251 kVA
Total Installed Capacity	11.2 MW
Average Annual Generation	63,492 MWh
Monthly Average Generation	5,527 MWh
Power Factor	0.9

Lyons Falls Mill

Proposed Features

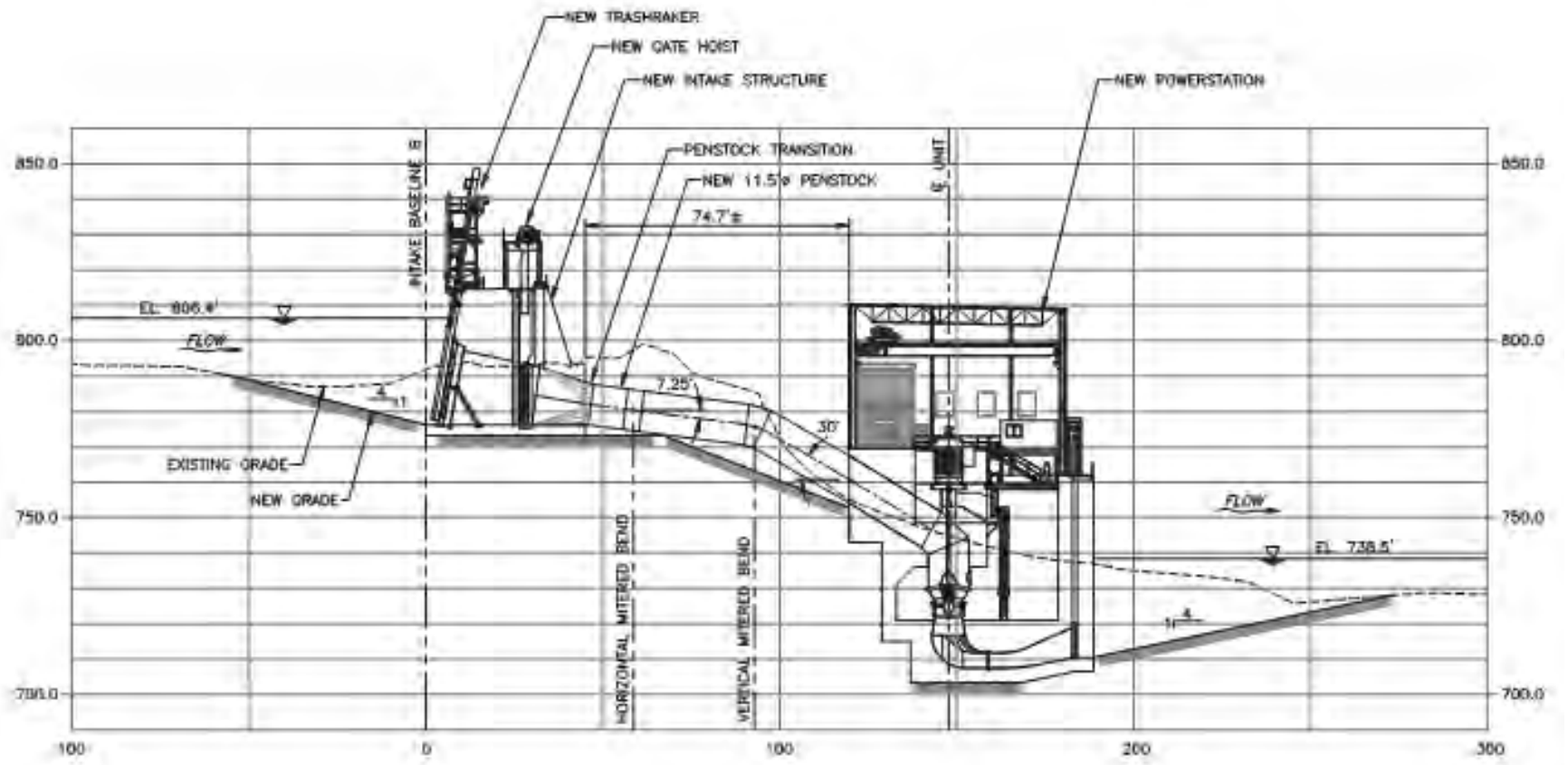
- 5 kV generator leads will extend from the new powerhouse to a new 15 MVA generator step-up (GSU) transformer to be located near the new intake structure.
  - The GSU will step-up generation voltage from 4.16 kV to the distribution voltage of 23 kV.
- A new 23 kV aerial transmission line will replace the existing overhead line and will extend 2,640 feet from the GSU transformer to the existing circuit breaker for Lyons Falls Mill.
- The existing overhead conductors will extend form the existing circuit breaker to the utility point of interconnection at the existing National Grid transformer in the Franklin Street Substation.



Appendix B-71

Lyons Falls Mill

Proposed Features



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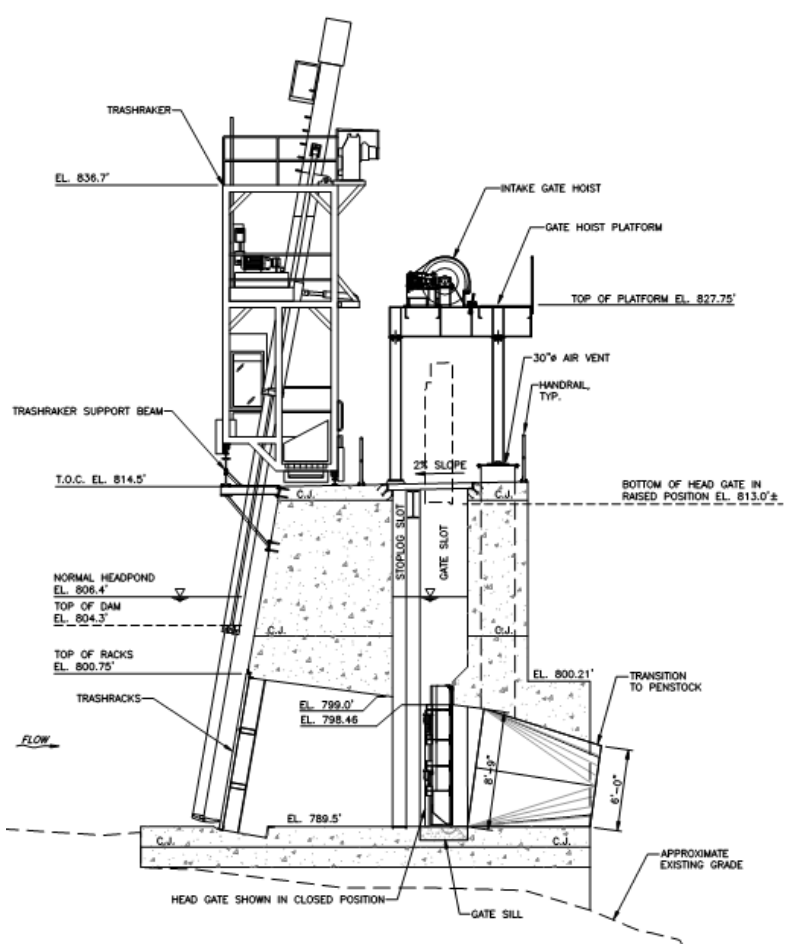
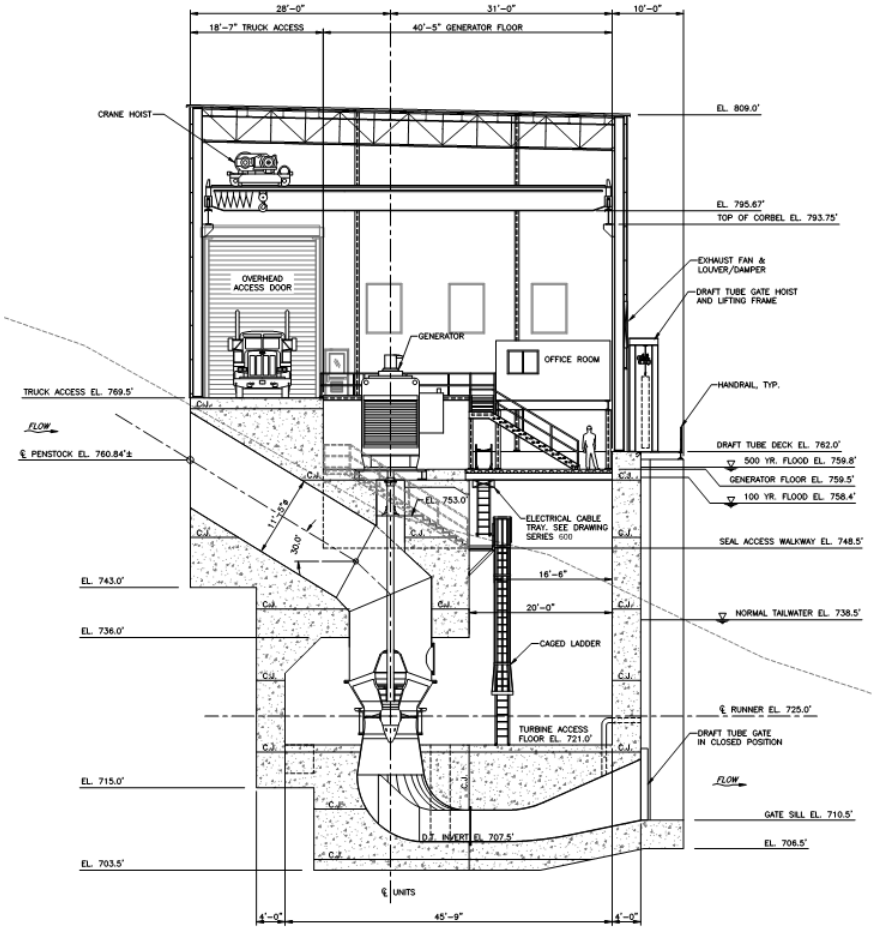
Lyons Falls Mill

Proposed Features





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Lyons Falls Mill

Proposed Operation

- The proposed facilities would continue to be operated automatically in a run-of-river mode and in accordance with the current high- and low-flow operations.
- NBLF will minimize impoundment fluctuation levels by maintaining discharges so that flow in the Black River, as measured immediately downstream from the tailrace, matches inflows to the impoundment.
- The facility's tailrace discharge will continue to backwater up to the bedrock falls upon which the facility's spillway is situated.
- The two new units would operate independently at flows ranging from 237 to 2,684 cfs, which would account for approximately 74 percent of the annual flow regime.

Lyons Falls Mill

Expected Generation

EXPECTED AVERAGE MONTHLY AND ANNUAL GENERATION

Month	Expected Average Generation (MWh)
January	5,138
February	4,586
March	6,576
April	7,965
May	6,442
June	4,638
July	3,459
August	3,052
September	3,357
October	5,610
November	6,570
December	6,099
Annual	***63,492***

Lyons Falls Mill

Proposed Protection, Mitigation, and Enhancement Measures

- Construction is limited to the footprint of the former Georgia-Pacific paper mill located on river left.
- Continue to operate Lyons Falls Mill in a run-of-river mode.
- No changes in or modifications to the existing pond elevation.
- Release seasonal minimum flows totaling 70 cfs downstream from Lyons Falls Dam, or inflow, when flows are below 70 cfs.
  - There are currently no minimum flow requirements at Lyons Falls Mill.
  - Of the 70 cfs, a minimum of 45 cfs would be released continually from March 15 through November 30 to provide downstream movement of fish.
  - A minimum flow of 25 cfs would also be released during the recreation season (May 1 through October 31) to provide a continuous flow over a portion of Lyons Falls for aesthetic purpose. However, flows from ice-out through late spring are likely to exceed plant capacity, and NBLF expects flows over the spillway to begin prior to May 1, annually, as a result of natural hydrologic conditions.
  - NBLF will consult with resource agencies and other stakeholders to define the appropriate location(s) for the seasonal minimum flow releases.

Lyons Falls Mill

Proposed Protection, Mitigation, and Enhancement Measures

- Install seasonal trashrack overlays with1-inch clear-bar spacing.
  - Overlays will be installed annually as soon as possible following ice-out and removed in October.
  - NBLF will consult with the NYSDEC, USFWS, and other parties to determine the specific schedule and notification requirements for the installation and removal of seasonal overlays.
- Develop and implement a Construction Soil Erosion and Sedimentation and a Temporary Emergency Action Plan including standard best-management practices (BMP) to address sediment and erosion control during construction and final stabilization in accordance with NYSDEC technical guidance.
- Develop and implement an Aesthetic Resources Plan to avoid or minimize disturbance of existing visual resources associated with the proposed redevelopment.
- If necessary, develop an avoidance, protection, and/or mitigation plan for historic properties.

Lyons Falls Mill

Questions?

Break

Lyons Falls Mill

Environmental Report – General Setting

- Lyons Falls Mill is located in the Village of Lyons Falls in the Town of West Turin, Lewis County, New York, approximately 42 miles north of Utica and 40 miles south of Watertown, New York.
- The existing dam, powerhouses, and impoundment are located at the confluence of the Black and Moose Rivers, approximately 82 RM upstream of Lake Ontario.
- Currently, there are 39 hydropower developments within the Black River Basin, 21 of which are on the mainstem of the Black River.

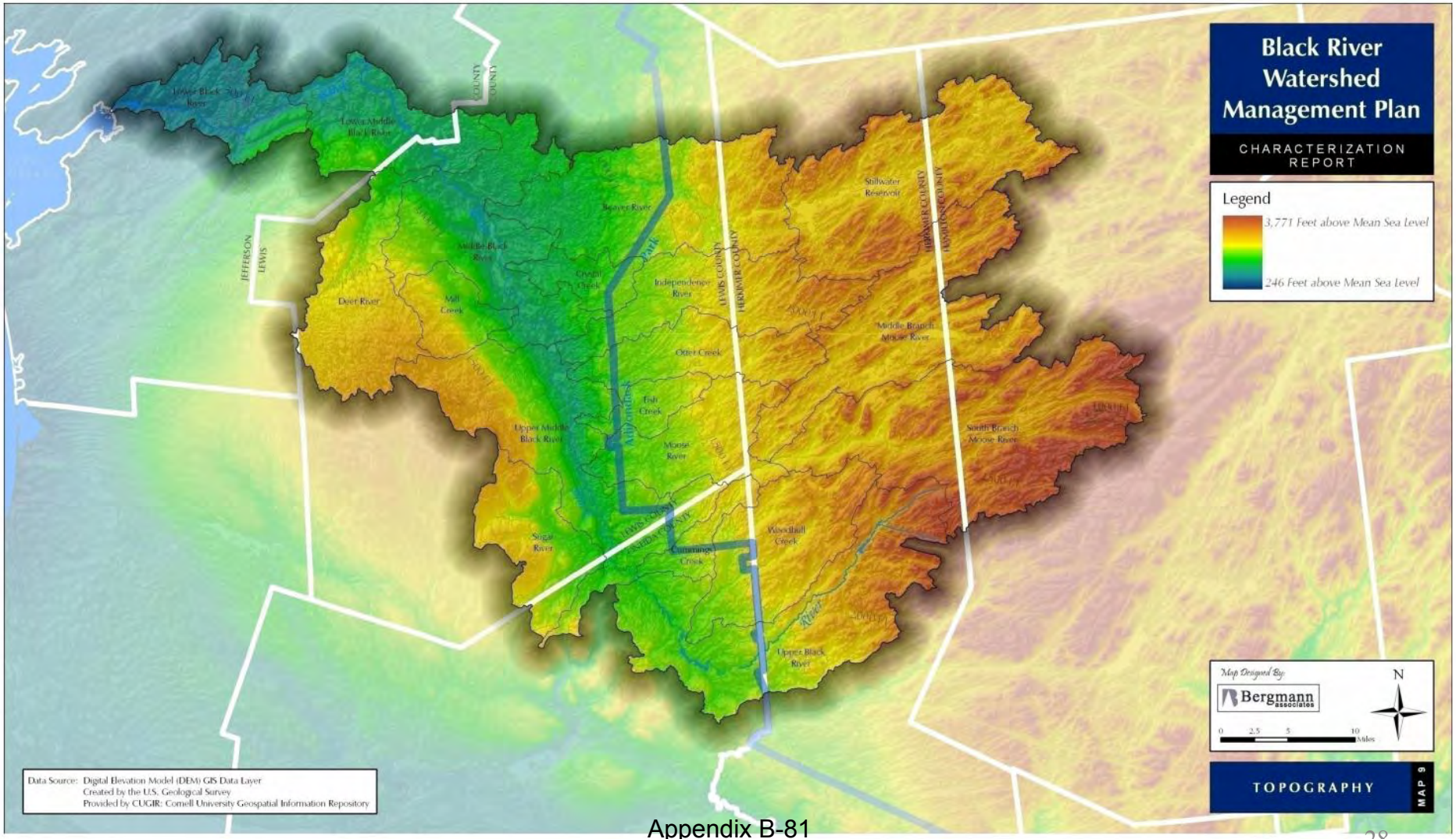
Lyons Falls Mill

Environmental Report – Topography, Geology, and Soils

- The Black River Basin is an extension of the Lake Ontario lowlands.
- The Black River Valley separates the two predominant geologic features in the area, the Tug Hill Plateau to the west and the Adirondack Mountains to the east.
- Unclassified soils are mapped along river left at the location of the former paper mill and the existing Lyons Falls Mill's powerhouses.
  - Characterized as "made land" or similar soils.

Lyons Falls Mill

Environmental Report – Topography, Geology, and Soils



Appendix B-81

Source: Bergmann Associates. 2010. Black River Management Plan. Prepared for the New York State Department of State, Division of Coastal Resources. Albany, NY

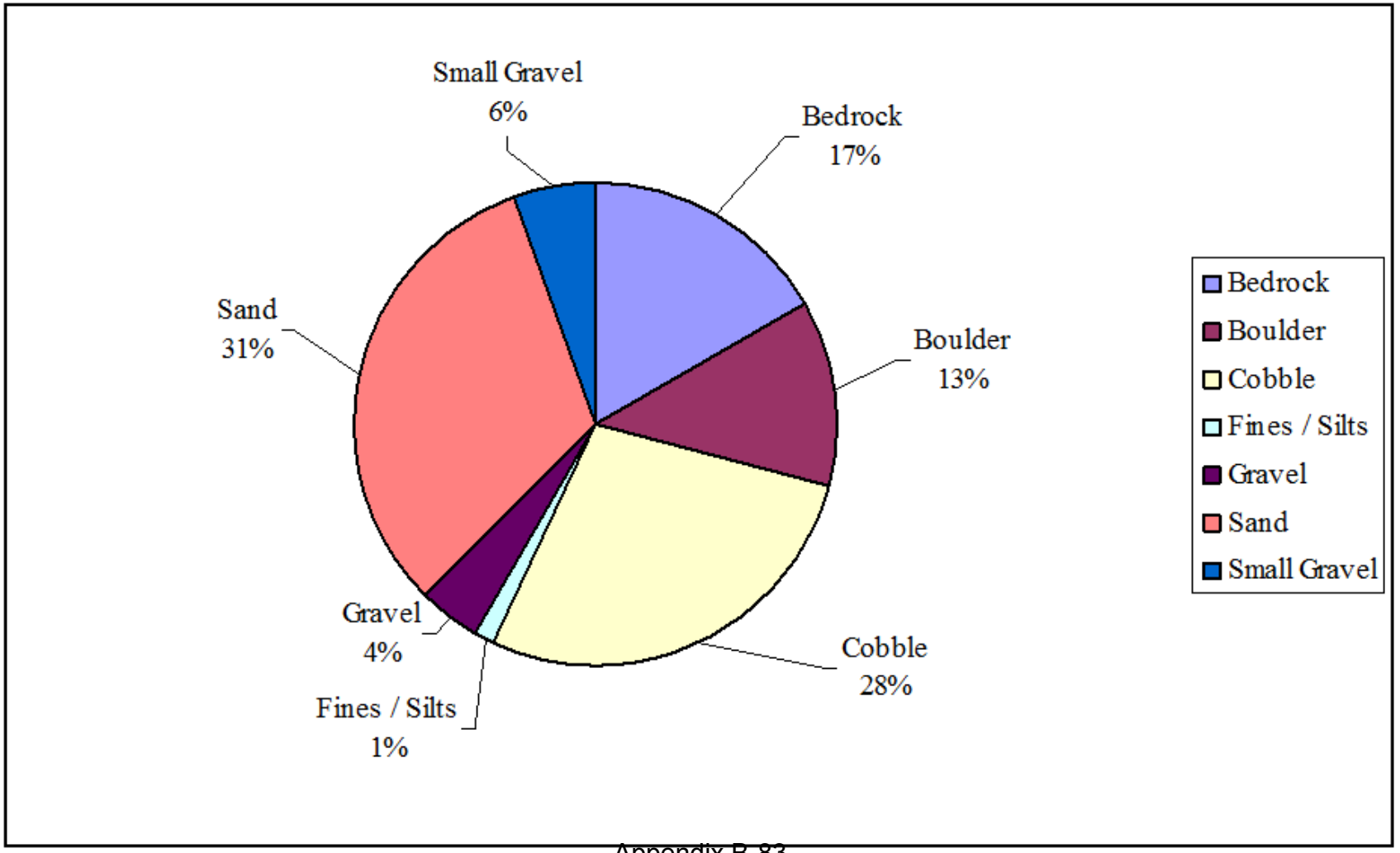
Lyons Falls Mill

Environmental Report – Impoundment Characterization

- In support of the upgrades proposed in 2006, NBLF conducted an evaluation to characterize accumulated sediment within the Lyons Falls Mill impoundment.
- The results indicate that there is relatively little accumulated fine-grained sediment in the impoundment, and that which does exist is dominated by sand.
  - The bulk of this material is located along the right shoreline of the impoundment, opposite of the existing intake structure and the proposed location for construction of the new integrated intake/trashrack.
- Average sediment depth in the impoundment is less than 0.5 foot.
- A small sediment wedge consisting primarily of gravels and sand exists along a portion of the upstream face of the dam.

Lyons Falls Mill

Environmental Report – Impoundment Characterization



Lyons Falls Mill

Geology and Soils Resources PM&E Measures

- PM&E Measures proposed by NBLF for the continued protection of geology and soils include:
  - Construction limited to the footprint of the former Georgia-Pacific paper mill along river left.
  - Continued operation in run-of-river mode.
  - No changes or modifications to the existing pond elevation.
  - Develop and implement a Construction Soil Erosion and Sedimentation and a Temporary Emergency Action Plan including standard BMPs to address sediment and erosion control during construction and final stabilization in accordance with NYSDEC technical guidance.

Lyons Falls Mill

Environmental Report – Water Use and Quality

- There are no other existing or proposed uses of Black River or Moose River water at Lyons Falls Mill other than hydroelectric generation (i.e., for irrigation, domestic water supply, or steam-electric plants). Instream flow uses include hydroelectric flows and recreation.
- The Black River is considered Class C waters from Carthage to upstream to the Moose River confluence (i.e., Lyons Falls Mill impoundment). Class C waters are designated as best suited for fishing and human consumption of fish.
- Above the Moose River confluence, the Black River is classified as Class C(T) water, indicating that water quality standards must be maintained for trout. The lowermost 1.8 RM of the Moose River to its confluence with the Black River are also classified as Class C(T) water.
- Dissolved oxygen (DO) levels of 5.0 mg/L are required for Class C waters whereas a level of 6.0 mg/L or higher must be maintained for Class C(T) waters.
- The standard for pH is between 6.5 and 8.5 for Class C and C(T) waters.

Lyons Falls Mill

Environmental Report – Existing Water Quality

- The majority of water quality issues in the Moose and Black Rivers are associated with atmospheric deposition of contaminants.
  - Other potential sources of water pollution can be associated with agriculture, sediments, chemical spills, and inadequate waste treatment facilities.
- Acidic deposition and the predominance of schists and gneisses in the river basin contribute to lower pH levels.
- The uppermost reach of the Black River (above Kayuta Lake) is also reportedly impacted by lower pH and acid rain/run-off, which has affected aquatic biota.
- There are no specific fish consumption advisories for the Black River or Moose River.
  - However, there are general advisories for sportfish in the Adirondack Region, including the Moose and Black Rivers at Lyons Falls.
- The Black River at Lyons Falls was not listed as impaired by NYSDEC in a recent 303(d) report filed pursuant to the state's Clean Water Act reporting requirements (NYSDEC 2014).

Lyons Falls Mill

Environmental Report – Black River Existing Water Quality

- The NYSDEC conducted Black River water quality monitoring near Lyons Falls Mill as part of the Rotating Intensive Basin Studies (RIBS) monitoring program in 2002 and 2003.
  - RIBS sampling monitoring included the 22.5-mile-long reach of the Black River from Lowville upstream to Lyons Falls.
- NYSDEC RIBS data was reported in 2007, and indicates the water quality in the Black River in the vicinity of Lyons Falls Mill is generally in "very good" to "excellent" condition.
  - Biological (macroinvertebrate) sampling indicated "slightly impacted water quality" in the Black River near Lyons Falls because the invertebrate community was dominated by caddisflies, midges, and mayflies, which was indicative of minor water quality impacts.
  - Additionally, NYSDEC evaluated characteristics of the fish community to assess water quality near Lyons Falls. Results indicate that characteristics of the existing fish community in the Black River from Lowville to Lyons Falls are reflective of "good water quality."

Lyons Falls Mill

Environmental Report – Black River Existing Water Quality

- The NYSDEC concluded that elevated mercury and aluminum levels in the Black River from Lowville to Lyons Falls were not unusual for areas of the state affected by atmospheric deposition of mercury and subject to acid rain.
- Zinc concentrations were also determined to be elevated, but the NYSDEC found that “overall sediment quality is not likely to cause toxicity to sediment-dwelling organisms.”
- Based on the RIBS data, the NYSDEC concluded that, in the Black River from Lowville to Lyons Falls, there are “no significant water quality impacts and uses of the stream are considered to be fully supported.”

Lyons Falls Mill

Environmental Report – Black River Existing Water Quality

- Based on macroinvertebrate data collected from 1972 – 2002, NYSDEC categorized water quality in the Black River from Dexter to Port Leyden, which includes Lyons Falls, as slightly impacted.
- Upstream from Lyons Falls to Hawkinsville, NYSDEC classified water quality in the Black River as non-impacted.
- In 1996, benthic invertebrate sampling was conducted by NYSDEC upstream and downstream of the former discharge lagoon of Georgia-Pacific's paper mill.
- It was determined that no significant impairments had resulted from the paper mill's discharge.
  - Because the mill has subsequently shut down, it is likely that water quality at Lyons Falls Mill has remained non-impacted or has improved.

Lyons Falls Mill

Environmental Report – Moose River Existing Water Quality

- The NYSDEC conducted RIBS sampling in the lower Moose River in 2003.
  - Results of macroinvertebrate sampling indicated that non-impacted water quality conditions were prevalent in the lower portion of the Moose River from its confluence with the Black River to McKeever.
  - According to NYSDEC, the macroinvertebrate community is “well-balanced, diverse, and dominated by clean-water mayflies.”
- NYSDEC’s sampling in the lower Moose River indicated that mercury and aluminum were parameters of concern.
  - However, according to NYSDEC’s report, the elevated levels of these two variables are not unusual for areas of the state typically affected by atmospheric deposition of mercury and subject to acid rain.
  - The NYSDEC concluded that “sediment chemistry analysis for these and other contaminants show no metals present above established levels of concern, and no compounds present in concentrations likely to cause adverse biological effects to sediment-dwelling organisms”

Lyons Falls Mill

Environmental Report – Moose River Existing Water Quality

- The NYSDEC also collected macroinvertebrate data from the lower Moose River, above Lyons Falls, in 1976, 1982, and 1991.
- All benthic macroinvertebrate monitoring data indicate that the Moose River is non-impacted and reflective of excellent water quality.

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- NBLF conducted water quality studies in support of the upgrades to Lyons Falls Mill proposed in 2006.
- NBLF recorded DO, pH, conductivity, and water temperature at Lyons Falls Mill during the summer high-temperature, low-flow period of 2006.
  - As per NYSDEC guidelines, measurements were taken at five intervals throughout a 24-hour period at six sample sites.
  - In the Lyons Falls impoundment, DO and water temperature measurements were taken at 1-foot intervals from the surface to the bottom to create vertical profiles.
  - Data in the riverine sample sites were taken at a depth of 1 foot.
  - At all sites, conductivity and pH were also measured at a depth of 1 foot.
  - Data was collected in the morning, late-morning, early afternoon, early evening, and evening from the afternoon of August 23 to the late-morning of August 24, 2006.

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

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Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

WATER QUALITY MONITORING AT LYONS FALL (2006)

Site ID	Location	Date Sampled	Time Sampled
BR1 (Black River)	Upstream of Moose and Black River confluence.	8/23/2006 & 8/24/2006	0730, 1030, 1800, 2045, 2315
BR2 (Black River)	Downstream of the dam across from the existing canoe launch site.	8/23/2006 & 8/24/2006	0745, 1045, 1830, 2110, 2330
MR1 (Moose River)	Upstream of Moose and Black River confluence.	8/23/2006 & 8/24/2006	0715, 1000, 1800, 2030, 2300
IL (Impoundment Lower)	Upstream of dam face.	8/23/2006 & 8/24/2006	0615, 0900, 1630, 1930, 2200
IM (Impoundment Middle)	Mid-impoundment.	8/23/2006 & 8/24/2006	0630, 0915, 1700, 2000, 2215
IU (Impoundment Upper)	Upper end of impoundment below confluence of Moose River.	8/23/2006 & 8/24/2006	0700, 0930, 1730, 2015, 2230

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

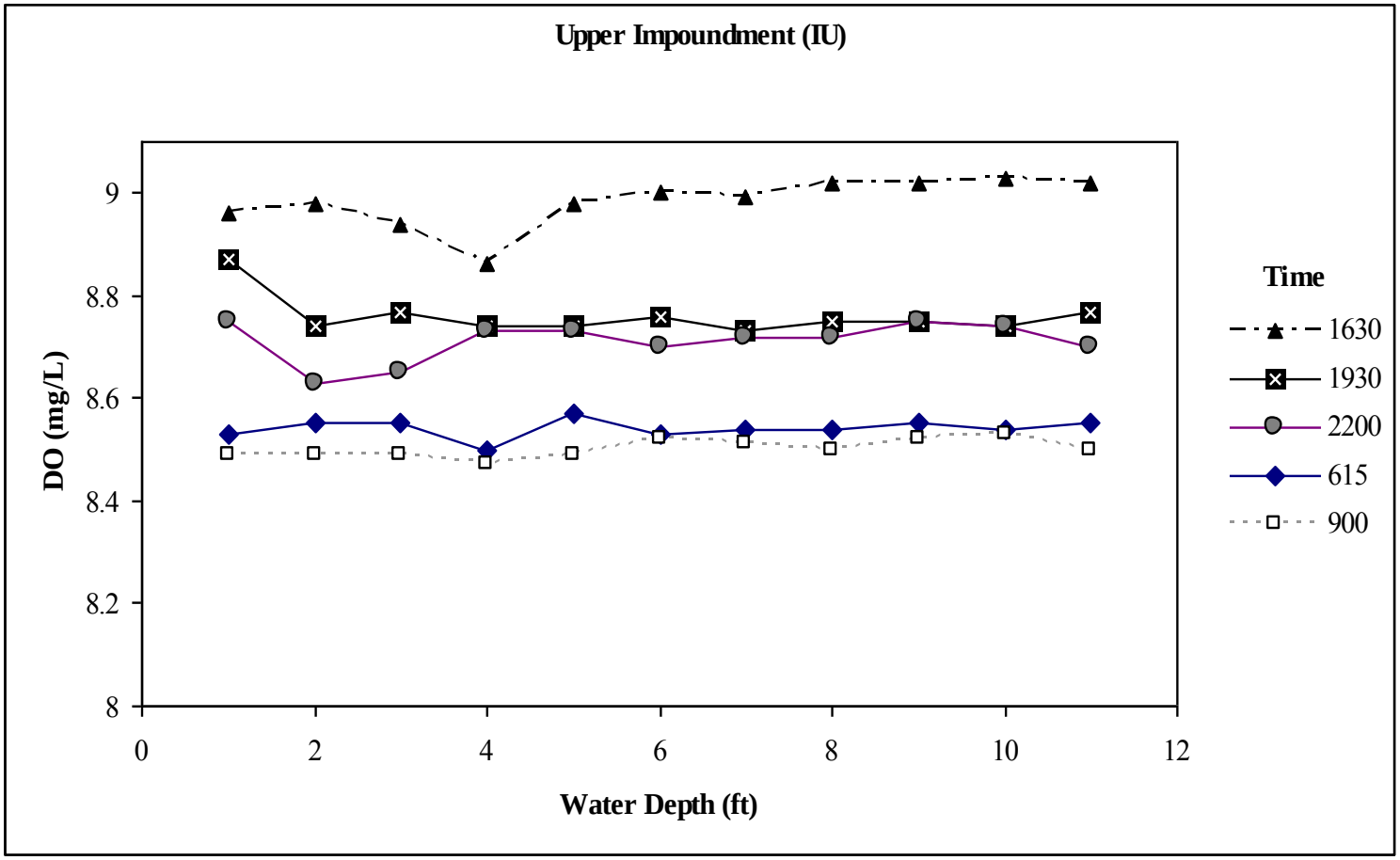
SUMMARY OF MEAN DISSOLVED OXYGEN, PH, CONDUCTIVITY, AND WATER TEMPERATURE

Site ID	DO (%)	DO (mg/L)	Temp. (°C)	Conductivity (uS)	pH
Riverine Sites					
BR1	96.5	8.7	20.5	96.5	7.3
BR2	93.5	8.5	20.0	63.9	7.3
MR1	95.8	8.7	20.0	34.8	7.1
Impoundment Sites					
IU	95.8	8.7	20.0	45.8	7.7
IM	96.1	8.7	20.3	79.9	7.6
IL	95.7	8.7	20.0	35.9	7.5

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE UPPER IMPOUNDMENT



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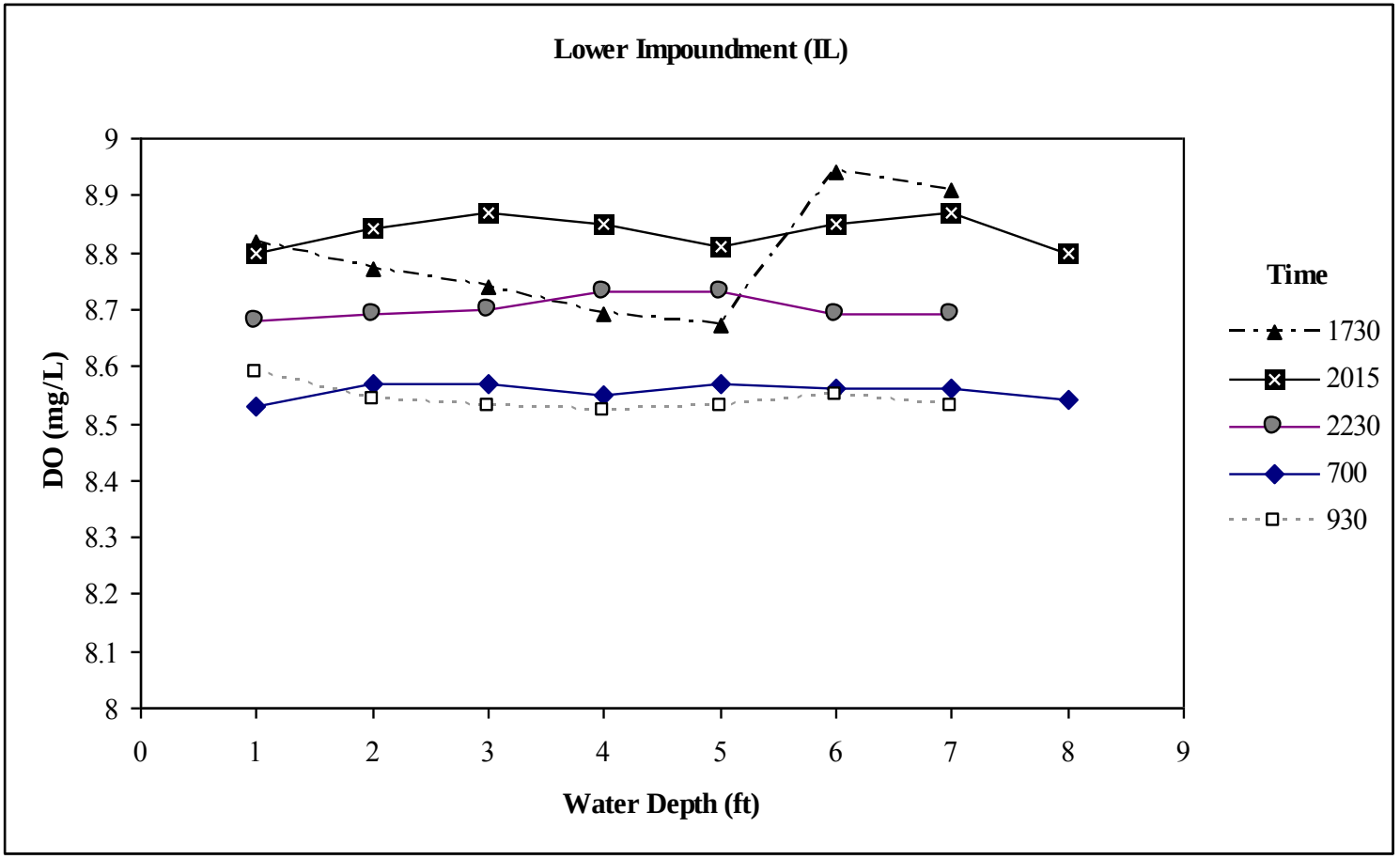
Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE LOWER IMPOUNDMENT

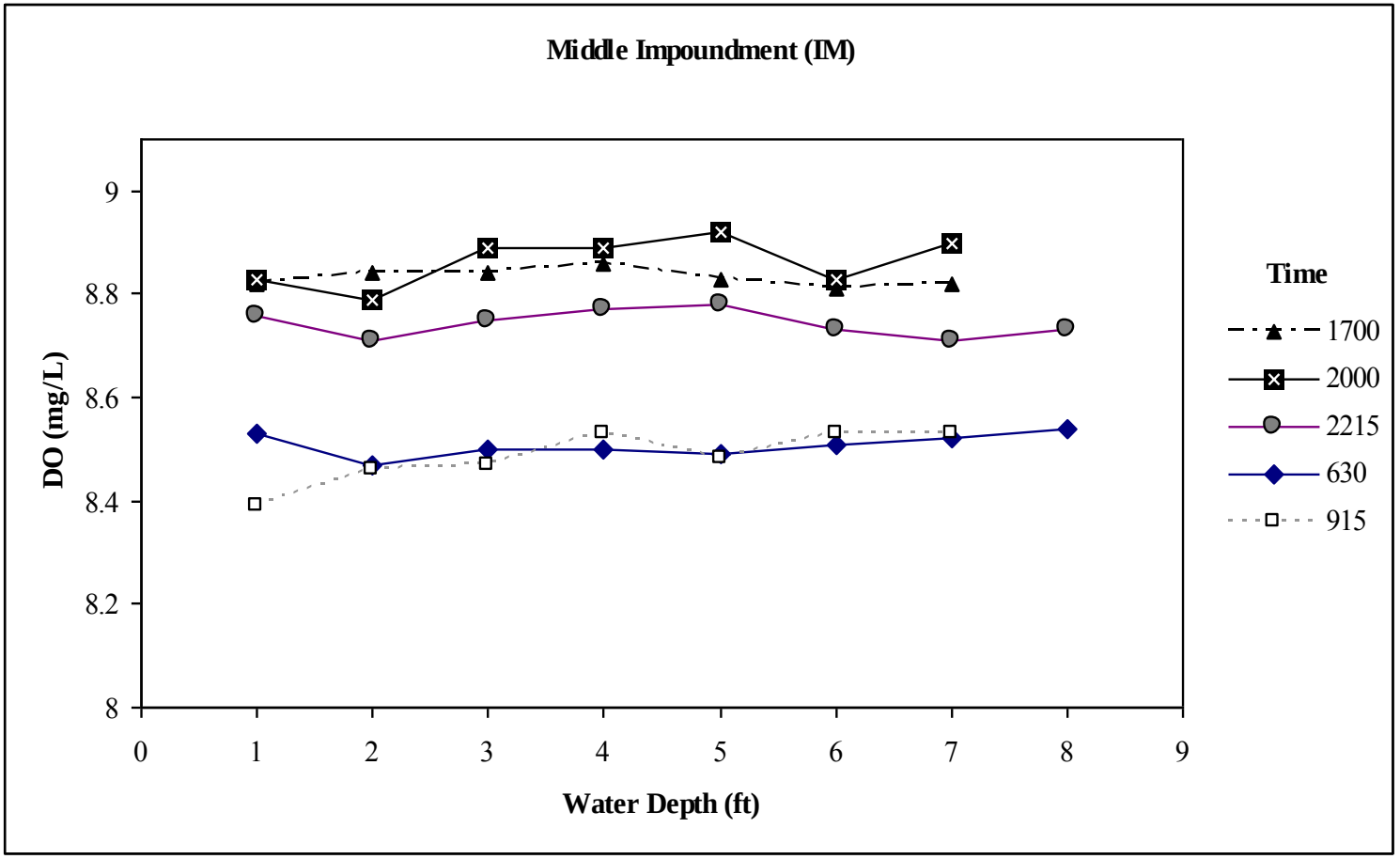


Appendix B-97

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

DISSOLVED OXYGEN BY DEPTH AND SAMPLING TIME IN THE MIDDLE IMPOUNDMENT

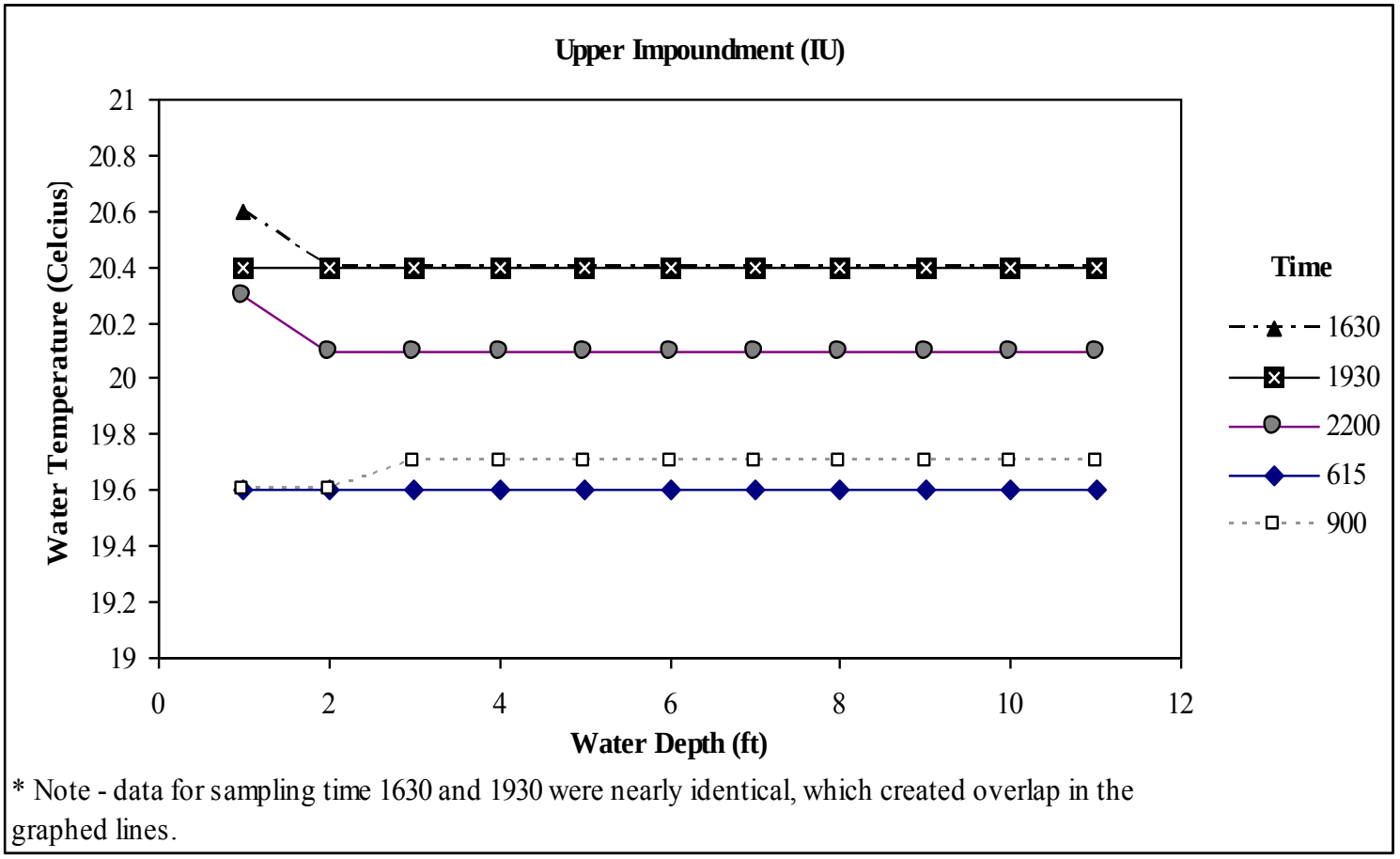


Appendix B-98

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE UPPER IMPOUNDMENT



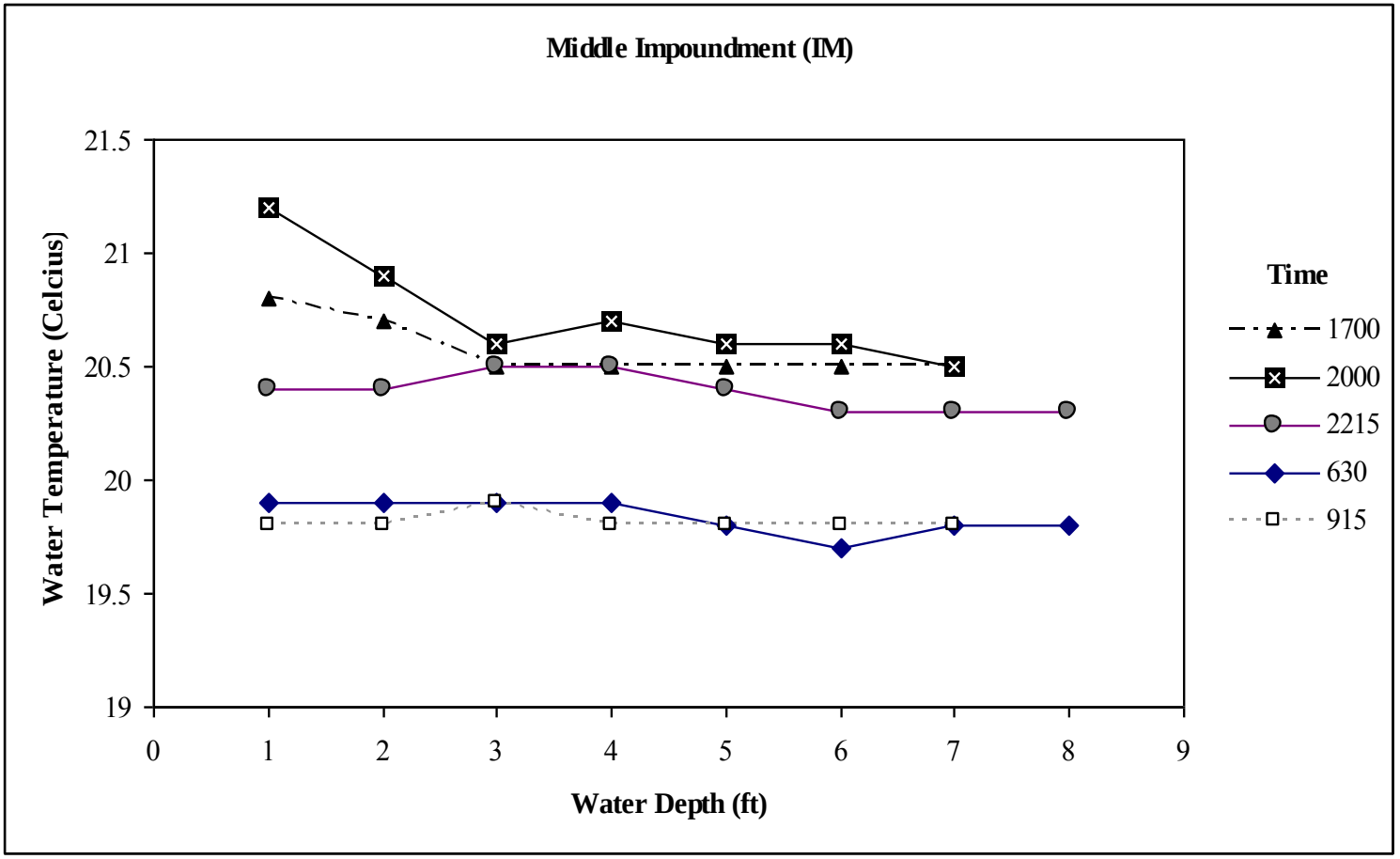
* Note - data for sampling time 1630 and 1930 were nearly identical, which created overlap in the graphed lines.

Appendix B-99

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE MIDDLE IMPOUNDMENT



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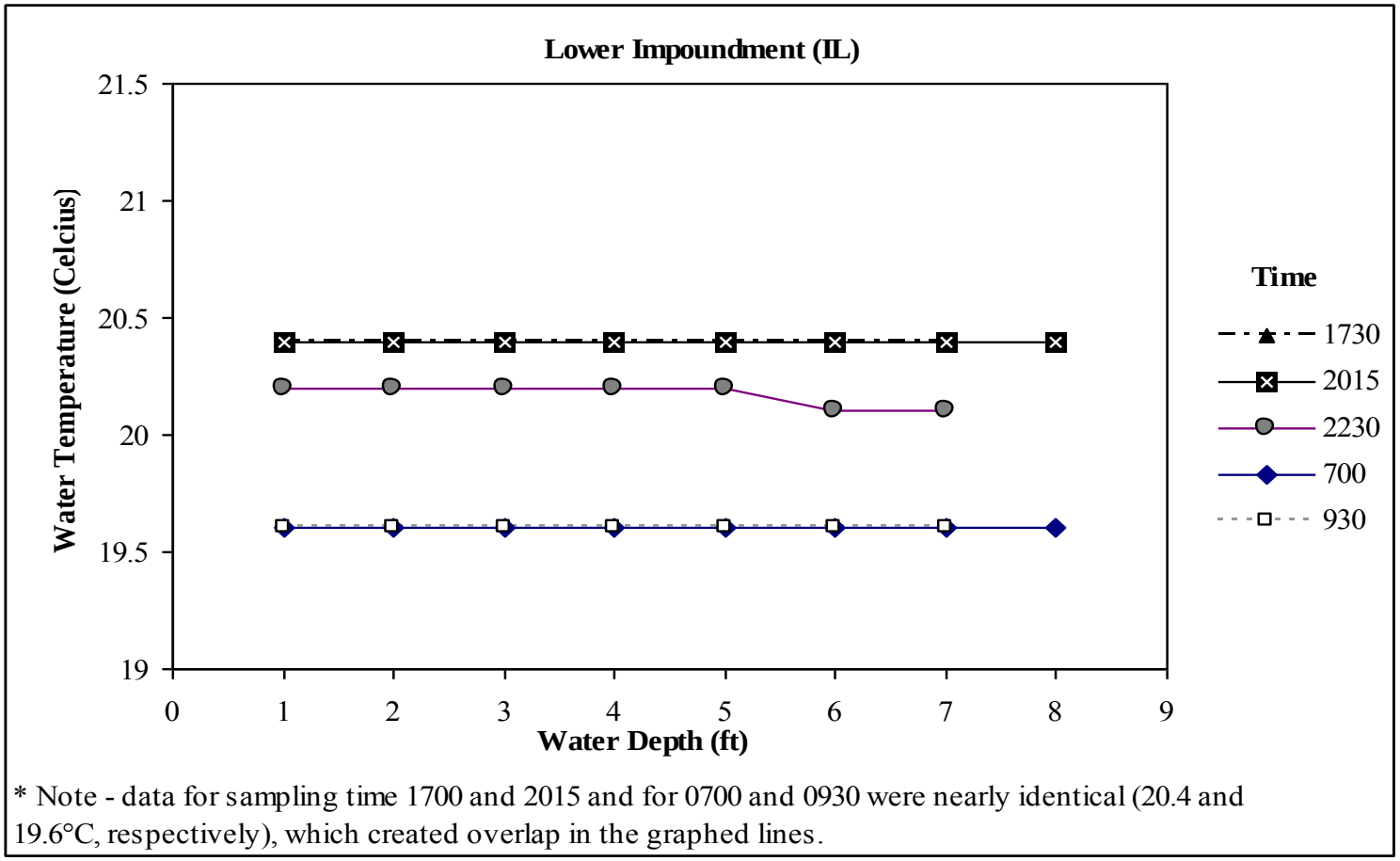
Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

WATER TEMPERATURE BY DEPTH AND SAMPLING TIME IN THE LOWER IMPOUNDMENT



* Note - data for sampling time 1700 and 2015 and for 0700 and 0930 were nearly identical (20.4 and 19.6°C, respectively), which created overlap in the graphed lines.

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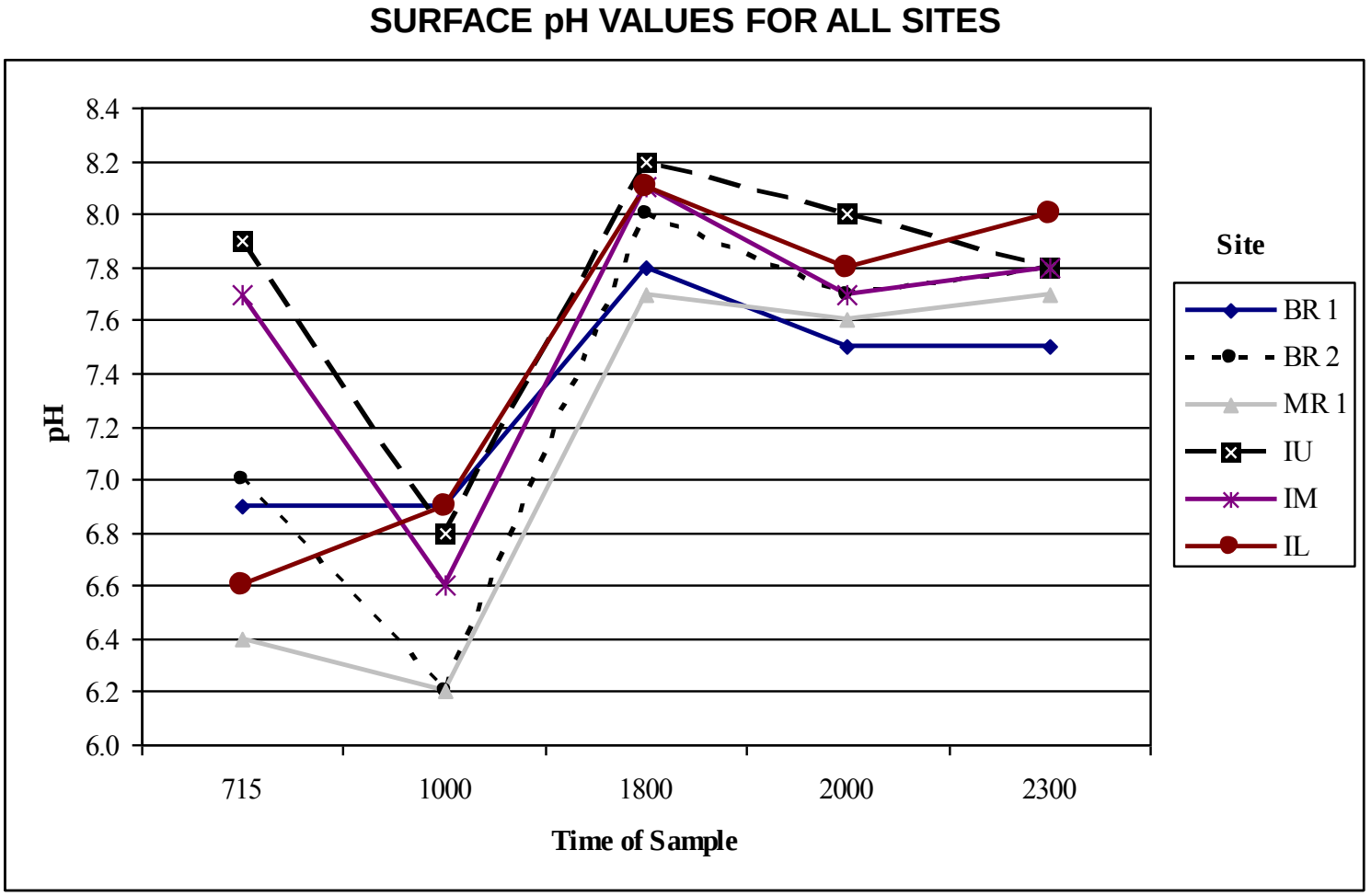
Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF



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Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- With the exception of a few individual pH measurements, all sampling results indicated that DO and pH met or exceeded New York State water quality standards for Class C and Class C(T) waters.
  - Rainfall and associated runoff on the night of August 23 and into the morning of August 24 may have influenced pH levels in Lyons Falls Mill as the upper Moose River watershed is considered as an acidic.
  - Variation in conductivity amongst the sample sites is likely a result of differences in upstream watershed characteristics (e.g., dominant soil types and underlying geologic features).
- The results of monitoring undertaken by NBLF in 2006 indicate that DO, pH, water temperature, and conductivity are not adversely affected by the operation of Lyons Falls Mill.
  - Values observed upstream, downstream, and within the Lyons Falls impoundment showed little variation and were in compliance with New York State standards.
- The DO and temperature profiles in the impoundment indicate that neither thermal nor chemical stratification occurs during the low-flow, high-temperature period of late summer.

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- NBLF conducted a baseline survey of benthic macroinvertebrates (BMI) in 2006 to assess species composition and distribution in Lyons Falls Mill tailrace and impoundment.
- A comparison of the two communities (impoundment and tailrace) based on common metrics was completed after collection, sorting, and identification of specimens.
- This information was used to assess differences in the benthic macroinvertebrate assemblages immediately upstream and downstream of the dam and to draw a general understanding of the water quality at Lyons Falls Mill.

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- Twelve samples were collected with aquatic kick nets in a 1-meter square sample area. Each kick net station was sampled for 1 minute.
- Once collected, samples were field preserved; raw samples were sorted in the lab; and a subsample of 100 macroinvertebrates was removed from each sample. The 100 macroinvertebrates were then identified to the lowest practicable taxonomic distinction (typically to Family).
- Individual organisms were classified and evaluated according to the U.S. Environmental Protection Agency's Standard Operating Procedures for sampling benthic macroinvertebrates

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Lyons Falls Mill

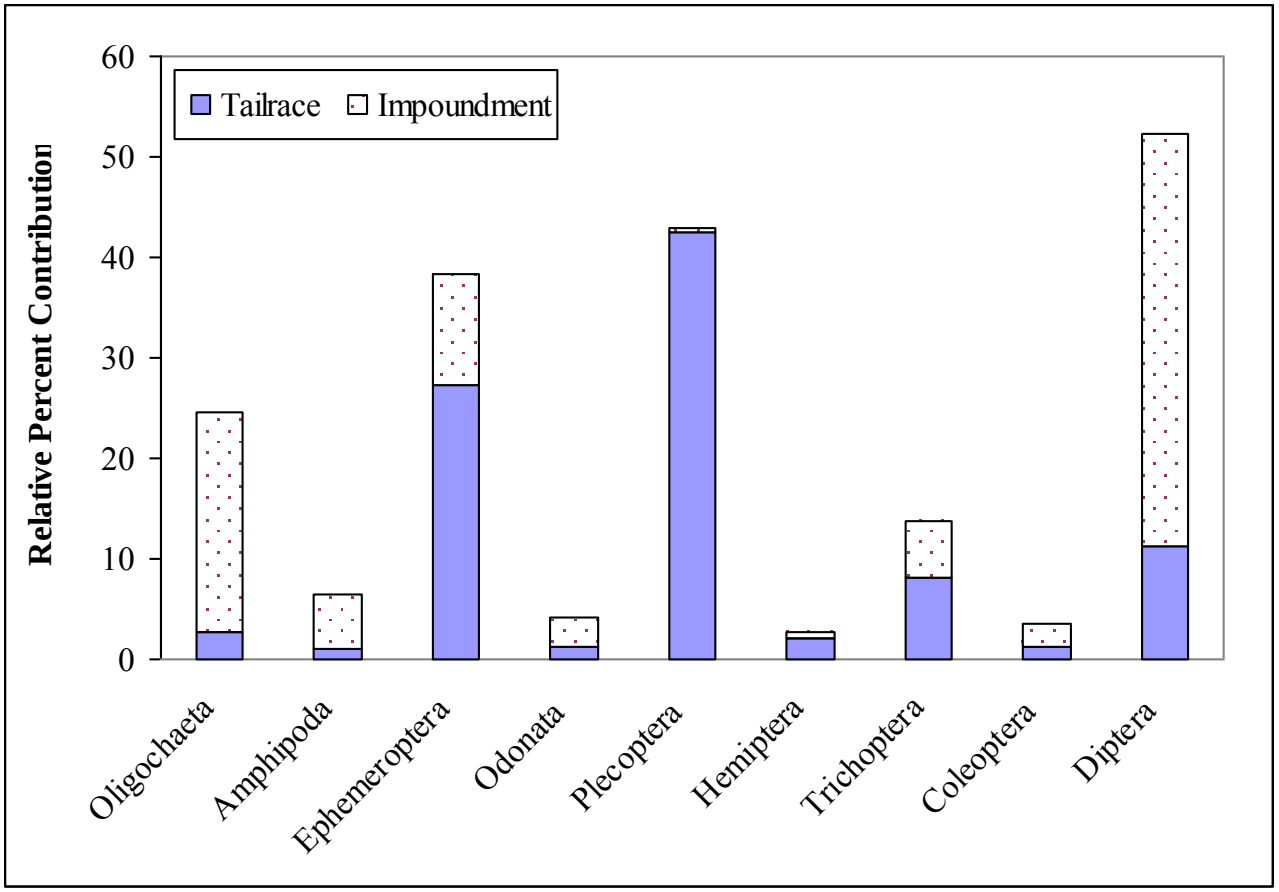
Environmental Report – Water Quality Studies Conducted by NBLF

- Five indices or metrics were applied to the samples:
  - Total taxa richness (R)
  - A Modified Family Biotic Index (FBI)
  - Percent contribution of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) (EPT %)
  - EPT Richness
  - Ratio of EPT to Chironomidae (midge larvae) abundance
- Consistent with other New York rivers and impoundments, community composition appears to mirror flow regime and substrate type.

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

COMPARISON OF THE RELATIVE PERCENT COMPOSITION OF THE DOMINANT BENTHIC MACROINVERTEBRATE TAXA



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Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- Using the benthic invertebrate assemblages, the tailrace family biotic index (FBI = 3.02) indicates that water quality is excellent.
- The % EPT percentage is much higher in the tailrace than in the impoundment, whereas the % Chironomidae is much higher in the impoundment.
- Taxa richness and EPT richness are approximately equal.

SUMMARY OF MEAN BMI COMMUNITY METRICS

Metric	Tailrace	Impoundment
% EPT	77	17
% Chironomidae	9	37
Ratio EPT:Chironomidae	17	0.7
Taxa Richness	14	14
EPT Richness	6	4

Lyons Falls Mill

Environmental Report – Water Quality Studies Conducted by NBLF

- Many species representative of lentic (ponded or impounded waters) flow regimes and relatively warmer waters with soft substrates dominated the impoundment macroinvertebrate community.
- The tailrace macroinvertebrate community exhibited a rich assemblage of species typical of fast moving (lotic) cold waters that are rich in dissolved oxygen.
  - Significant numbers of invertebrates that are typically associated with non-impacted habitats including members of the Orders Ephemeroptera and Plecoptera were observed in the tailrace.
  - The tailrace invertebrate biota and water quality are in excellent condition, supporting an extremely sensitive benthic assemblage only observed in the cleanest, least degraded of lotic habitats.
  - The high-quality nature of the invertebrate community in the tailrace indicates that the waters being released from the impoundment are fairly well–oxygenated, free from excessive nutrient levels, and other pollutants.

Lyons Falls Mill

Water Quality PM&E Measures

- Baseline water quality results reflect good water quality upstream and downstream from Lyons Falls Mill.
- PM&E Measures proposed by NBLF to maintain water quality include:
  - Construction limited to the footprint of the former Georgia-Pacific paper mill along river left.
  - Continued operation in run-of-river mode.
  - No changes or modifications to the existing pond elevation.
  - Develop and implement a Construction Soil Erosion and Sedimentation and a Temporary Emergency Action Plan including standard BMPs to address sediment and erosion control during construction and final stabilization in accordance with NYSDEC technical guidance.

Lyons Falls Mill

Environmental Report – Fisheries Resources

- Historically, 48 fish species were known to occur in the Black River Basin.
- Prior to anthropogenic activity in the watershed, the 60-foot-high waterfall at Lyons Falls divided the Black River fishery into two distinct assemblages, an upland coldwater fishery and a lowland coolwater fishery.
- More recently, the introduction of nonnative fish species though active fisheries management, or otherwise, has resulted in a more homogenous fish community with approximately 70 species distributed throughout the upper and lower watershed.
- The extent of the natural upstream migration for diadromous species in the Black River is limited by High Falls in Watertown, approximately 60 RM downstream of Lyons Falls.

Lyons Falls Mill

Environmental Report – Fisheries Resources

- In 1992 and 1993, NYSDEC conducted a comprehensive fisheries study of the entire Black River from Dexter to North Lake.
  - Lyons Falls was reported as the dividing point between the middle and upper reaches of the Black River.
  - The NYSDEC reported that the fish community below Lyons Falls is composed of approximately 34 species. The fish community is diverse with few dominant fish species. Common species include rock bass, walleye, yellow perch, tessellated darter, smallmouth bass, rock bass, brown bullhead, pumpkinseed, white sucker, and fallfish.
  - Upstream of Lyons Falls, the fish community consists of approximately 28 species and is dominated by white sucker, rock bass, and smallmouth bass.
- Additional fish surveys conducted by the NYSDEC in the Black River in 1995 and 1998 in the Lyonsdale and Port Leyden area indicate that Northern hog sucker, pumpkinseed, fallfish, chain pickerel, rock bass, and walleye are commonly occurring species in this reach.

NUMBER AND RELATIVE PERCENT OF FISH CAPTURED IN THE BLACK RIVER BELOW LYONS FALLS MILL (BETWEEN LYONS FALLS AND CARTHAGE) AND ABOVE LYONS FALLS MILL (NYSDEC 1993)

	Lyons Falls downstream to Carthage				Lyons Falls upstream to North Lake		
Species No.	Species	No. Captured	Relative %		Species	No. Captured	Relative %
1	Rock bass	34	11%		White sucker	61	18%
2	Walleye	29	10%		Rock bass	53	16%
3	White sucker	28	9%		Smallmouth bass	45	13%
4	Fallfish	26	9%		Brown trout	24	7%
5	Pumpkinseed	20	7%		Chain pickerel	24	7%
6	Yellow perch	19	6%		Pumpkinseed	16	5%
7	Brown bullhead	17	6%		Rainbow trout	12	4%
8	Smallmouth bass	17	6%		Northern hog sucker	12	4%
9	Tesselated darter	17	6%		Cutlips minnow	10	3%
10	Chain pickerel	16	5%		Common shiner	10	3%
11	Spottail shiner	12	4%		Brown bullhead	10	3%
12	Golden shiner	11	4%		Golden shiner	8	2%
13	Northern pike	8	3%		Margined madtom	8	2%
14	Satinfin shiner	8	3%		Brook trout	6	2%
15	Burboit	8	3%		Spottail shiner	6	2%
16	Northern hog sucker	7	2%		Tessellated darter	6	2%
17	Central mudminnow	6	2%		Yellow perch	6	2%
18	Grass pickerel	3	1%		Common carp	4	1%
19	Common carp	3	1%		Longnose dace	4	1%
20	Brown trout	1	<1%		Fantail darter	4	1%
21	Brook trout	1	<1%		Lake chub	2	1%
22	Common shiner	1	<1%		Fallfish	2	1%
23	E. silvery minnow	1	<1%		Creek chub	2	1%
24	Creek chub	1	<1%		Bluntnose minnow	2	1%
25	Bluntnose minnow	1	<1%		Blacknose dace	2	1%
26	Longnose dace	1	<1%		Slimy sculpin	NG	-
27	Banded killifish	1	<1%		Redside dace	NG	-
28	Largemouth bass	1	<1%		Largemouth bass	NG	-
29	Fantail darter	1	<1%				
30	Hornyhead chub	NG	-				
31	Fathead minnow	NG	-				
32	Redside dace	NG	-				
33	Margined madtom	NG	-				
34	Logperch	NG	-				

Lyons Falls Mill

Environmental Report – Fisheries Resources

- The Moose River is managed by NYSDEC as a coldwater trout fishery.
  - Species typical of the Moose River can include blacknose dace, longnose dace, common shiner, cutlips minnow, brook trout, and white sucker.
- In the 1970s, NYSDEC conducted a trout tagging survey, the results of which indicated a decline in the quality of the trout fishery in the Moose River.
  - NYSDEC concluded that the presence of smallmouth bass, increased water temperatures, and low pH had adversely affected trout populations in the Moose River.

Lyons Falls Mill

Environmental Report – Fisheries Resources

- The trout fishery in the Black River and the Moose River is supplemented through stocking efforts conducted by NYSDEC.
  - Approximately 5,000 brook, brown, and rainbow trout are stocked annually in the Black River and Moose River near Lyonsdale. Stocked fish generally range in size between 7 and 13 inches.
- Riverine habitat in the Black River below the Lyons Falls Dam consists primarily of uniform low-gradient flatwater and tailrace habitat.
- The 130-acre impoundment consists of shallow mixed lacustrine habitat that is primarily composed of a well-defined littoral zone.
  - The maximum depth of the impoundment is approximately 17 feet near the intake. Substrates in the shallow impoundment are composed primarily of cobbles, boulder, bedrock, and sand.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- NBLF conducted a fisheries survey in 2006.
  - Daytime and nighttime boat electrofishing surveys were conducted within the tailrace and impoundment on November 8.
  - To specifically target walleye, a nighttime boat electrofishing survey was conducted during the evening hours of November 9 in the Lyons Falls Mill tailrace.
  - Boat electrofishing surveys were focused on shoreline habitat along both the left and right bank below and above the Lyons Falls Dam, as well as along habitat associated with in-stream islands.
  - Two experimental mesh gill nets (mesh size: 0.5-inch to 2.5-inches) were deployed overnight in the tailrace area and impoundment for a period of 16 hours.
  - Beach seining was also conducted in shallow margins of the impoundment.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

FISH CAPTURED DURING DAYTIME AND NIGHTTIME BOAT ELECTROFISHING SURVEYS IN THE LYONS FALLS MILL TAILRACE, NOVEMBER 2006

Species	Abundance	Relative Percent
Chain Pickerel	26	27%
Brown Bullhead	13	13%
Rock Bass	13	13%
Yellow Perch	12	12%
Blacknose Dace	11	11%
White Sucker	5	5%
Pumpkinseed	4	4%
Smallmouth Bass	3	3%
Largemouth Bass	2	2%
Northern Hog Sucker	2	2%
Banded Killifish	1	1.%
Black Crappie	1	1%
Brown Trout	1	1%
Burbot	1	1%
Fallfish	1	1%
Golden Shiner	1	1%
Total	97	-

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

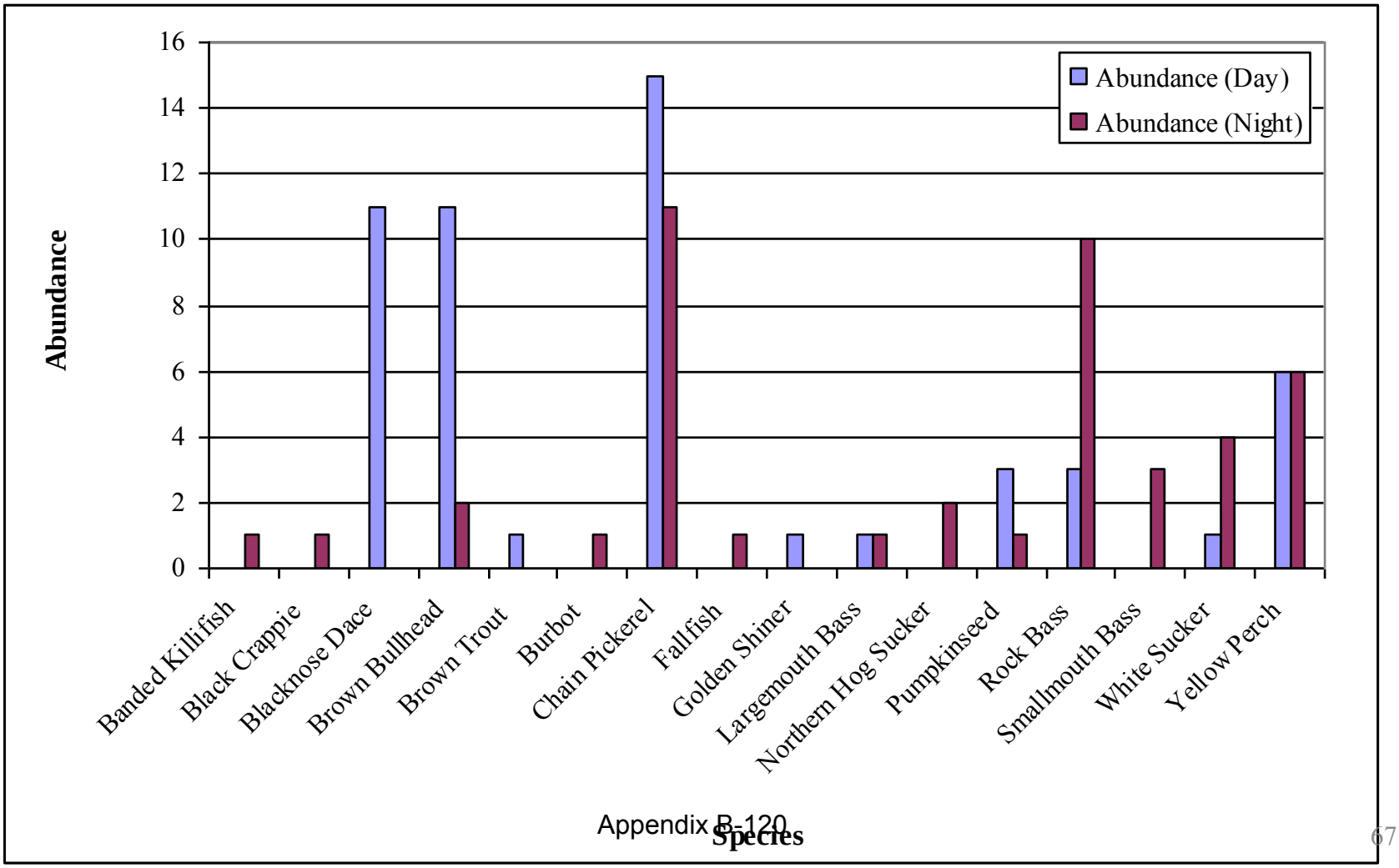
FISH CAPTURED DURING DAYTIME BOAT ELECTROFISHING SURVEYS IN THE LYONS FALLS MILL IMPOUNDMENT, NOVEMBER 2006

Species	Abundance	Relative Percent
Chain Pickerel	21	21%
Golden Shiner	17	17%
Brown Bullhead	15	15%
Pumpkinseed	13	13%
Yellow Perch	10	10%
White Sucker	10	10%
Spottail Shiner	5	5%
Largemouth Bass	3	3%
Log Perch	2	2%
Smallmouth Bass	2	2%
Rock Bass	1	1%
Black Crappie	1	1%
Total	100	-

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

COMPARISON OF NIGHT VS. DAY ELECTROFISHING SURVEY RESULTS IN THE LYONS FALLS MILL TAILRACE AREA



Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- The results of the fisheries survey indicate that fish species composition at Lyons Falls Mill is representative of the typical coolwater and coldwater communities known to occur in the Black River.
  - Species composition is similar to that described in earlier studies conducted by NYSDEC and others in and around Lyons Falls.
  - A total of 18 species represented by 197 fish were captured during the electrofishing surveys.
  - The dominant species at Lyons Falls Mill was chain pickerel (24%). Brown bullhead (14%), yellow perch (11%), golden shiner (9%), and pumpkinseed (9%) were also abundant.
  - A single salmonid was observed during the survey: a brown trout captured from within the tailrace.
  - No walleye of any age class were captured during day or nighttime boat electrofishing surveys, indicating limited use of waters associated with Lyons Falls Mill by this species.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- In support of the upgrades to Lyons Falls Mill proposed in 2006, NBLF performed a habitat-based study to assess existing spawning conditions for walleye and smallmouth bass.
  - The goal of this study was to document existing spawning habitat conditions by evaluating depth, velocity, and substrate characteristics in the tailrace and comparing this information to known habitat preferences.
  - Cross-section locations were selected in consultation with the NYSDEC on August 24, 2006 and in areas representative of typical habitat in the tailrace.
  - At each cross-section, information pertaining to the basic habitat requirements for spawning walleye and smallmouth bass (water depth, velocity, and dominant substrate type) were collected to provide an assessment of existing conditions.
  - Velocity, depth, and substrate data were collected along each transect at intervals of 5 to 10 feet.
  - An underwater camera was used to characterize substrate composition.
  - Flows at Lyons Falls Mill during transect sampling were typical for walleye spawning conditions but higher than would be expected during smallmouth bass spawning.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- The tailrace habitat study found that sand is the dominant substrate in the tailrace.
  - A larger depositional area directly in the center of the channel in the middle of the tailrace, which has resulted in the formation of a small sandy island.
  - A larger, low-velocity back eddy also occurs in the middle of the channel upstream of the island.
  - Along the east bank of the tailrace, cobbles and boulders are prominent.
  - Substrates in the small secondary tailrace channel to the west of the island are dominated by cobble and boulders.
  - Substrates are coarser (mixture of boulders and cobbles) towards the upstream portion of the tailrace, while finer sediment (sand) becomes dominant downstream of the falls. Areas of larger woody debris accumulation are also prominent in the main channel.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

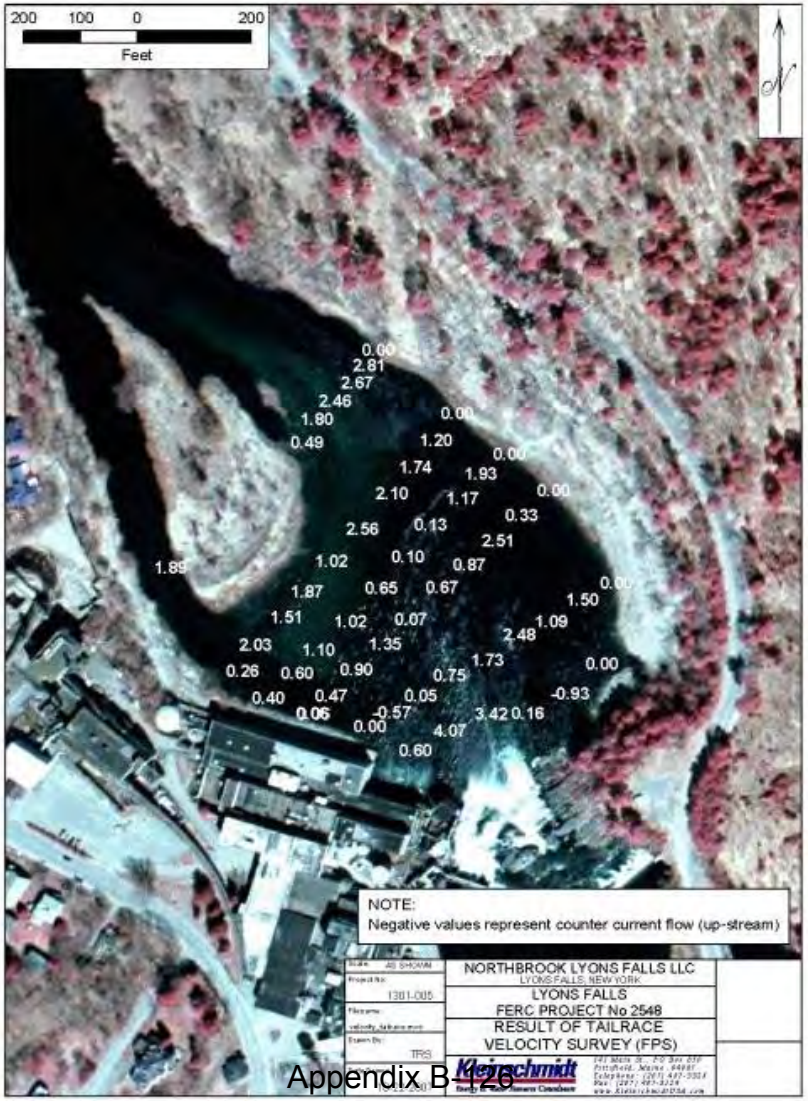
Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- Velocities were found to be higher along river right.
  - The largest volume of water funnels toward the channel along river right, east of the mid-channel island.
  - A large area of low-velocity water occurs at the head of the mid-channel island.
- Depth in the tailrace was found to be greatest in the plunge pool immediately below the falls.
  - The physical nature of the tailrace is that of an oversized pool and associated pool tail out.
  - The tailrace becomes shallower and more riverine further downstream from the falls.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF



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Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

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Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

SUMMARY OF DEPTH AND VELOCITY MEASUREMENTS TAKEN IN THE LYONS FALLS MILL TAILRACE, NOVEMBER 2006

Location	Velocity (fps)		Depth (ft)	
-	Average	Maximum	Average	Maximum
XS 1	1.35	3.02	4.9	14.0
XS 2	1.24	2.72	5.9	14.0
XS 3	0.66	2.03	7.4	16.5
XS 4	0.72	2.72	11.6	20.0
XS 5	0.59	2.78	9.5	21.0
XS 6	0.49	4.07	12.2	27.0
Average (all XS's)	0.84	-	8.6	-
Maximum (all XS's)	4.07	-	27.0	-

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- Walleye and smallmouth bass spawning habitat appears to exist in the tailrace.
  - The primary section of useable habitat for spawning is likely the large cobble-boulder area on the east bank of the river opposite the area proposed for construction.
  - However, survey data indicates that the water depth over the cobble-boulder substrate during higher flows drops off quickly (as distance from the spillway increases) so that the extent of any usable habitat is likely limited.
  - Further, these two species comprised a relatively small percentage of the overall fish community (smallmouth bass – 2.5%, walleye – 0.5%), indicating that their prevalence in the tailrace is limited.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- NBLF implemented an angler use survey in 2007 to assess fishing pressure and recreational fishing at Lyons Falls Mill.
  - Use data were obtained daily at three sites at Lyons Falls Mill: the canoe launch in the tailrace, the boat launch in the impoundment, and the Lyons Falls Picnic Area located upstream of the impoundment at the Lyons Falls Community Park.
  - Throughout the study period (April 2, 2007 through October 16, 2007), a total of 413 anglers were observed in Lyons Falls Mill, either in the tailrace or in the impoundment.
  - Average angler use at the site was 2.6 anglers per day.
  - Based on the results of the survey, both the tailrace and impoundment are fished regularly during the open water fishing season.

Lyons Falls Mill

Environmental Report – Fisheries Studies Conducted by NBLF

- In 2015, NBLF conducted a fish entrainment and impingement study of the proposed Lyons Falls Mill redevelopment.
  - The study is based on species data from 2006 fisheries sampling, historic data from the NYSDEC, and other available sources of information regarding the fish community in the vicinity of Lyons Falls.
  - A blade-strike analysis was conducted using the Advanced Hydro Turbine model developed by the U.S. Department of Energy.
  - Entrainment risk was evaluated using Electric Power Resource Institute database and location-specific fisheries data and design information.

Lyons Falls Mill

Environmental Report – Entrainment and Impingement Study

TARGET SPECIES

Fish Species	Lyons Falls to North Lake - NYSDEC 1992		Lyons Falls Impoundment - KA 2006		Combined	
	N	RC%	N	RC%	N	RC%
Black Crappie	0	0.00	1	1.00	1	0.23
Brown Bullhead	10	2.95	15	15.00	25	5.83
Brown Trout	24	7.08	0	0.00	24	5.59
Chain Pickerel	24	7.08	21	21.00	45	10.49
Golden Shiner	8	2.36	17	17.00	25	5.83
Largemouth Bass	0	0.00	3	3.00	3	0.70
Log Perch	0	0.00	2	2.00	2	0.47
Longnose dace	4	1.18	0	0.00	4	0.91
Margined madtom	8	2.36	0	0.00	8	1.86
Northern hog sucker	12	3.54	0	0.00	12	2.80
Pumpkinseed	16	4.72	13	13.00	29	6.76
Rock Bass	53	15.63	1	1.00	54	12.59
Smallmouth Bass	45	13.27	2	2.00	47	10.96
Spottail Shiner	6	1.77	5	5.00	11	2.56
Tessellated darter	6	1.77	0	0.00	6	1.40
White Sucker	61	17.99	10	10.00	71	16.55
Yellow Perch	6	1.77	10	10.00	16	3.73

Lyons Falls Mill

Environmental Report – Entrainment and Impingement Study

RACK EXCLUSION

Common Name	Scaling Factor for Body Width1	Maximum Reported Size (in)2	Minimum Size Excluded by a Trash Rack Clear Spacing of 3 in*	Minimum Size Excluded by a Trash Rack Clear Spacing of 1 in*
Black Crappie	0.099	12	NE	10
Brown Bullhead	0.166	14	NE	6
Brown Trout	0.118	20	NE	8
Chain Pickerel	0.088	20	NE	11
Golden Shiner	0.105	10.5	NE	10
Largemouth Bass	0.134	25	22	7
Logperch	0.105	7.5	NE	NE
Longnoce Dace	0.139	7	NE	NE
Magined Madtom	0.151	6	NE	7
Northern Hog Sucker	0.146	22.5	21	7
Pumpkinseed	0.124	10	NE	8
Rock Bass	0.156	10	NE	6
Smallmouth Bass	0.128	24	NE	8
Spottail Shiner	0.140	5.8	NE	NE
Tessellated Darter	0.139	3.6	NE	NE
White Sucker	0.146	25	21	7
Yellow Perch	0.114	14	NE	9

[1]scaling factor expresses body width as a proportion of total length (TL) based on proportional measurements for the target/surrogate species in Smith (1985)

[2]maximum size estimted or reported sizes from NYSDEC (2015) and Smith (1985)

*NE = not excluded; all size classes could physically pass through trash racks based on maximum reported sizes

Lyons Falls Mill

Environmental Report – Entrainment and Impingement Study

BLADE STRIKE

Fish Length (in)	Lyons Falls						
	Edge of Hub =	0.44	Mid-Blade =	0.56	Blade Tip =	1	AVG
	0.10	0.20	0.10	0.20	0.10	0.20	
1	99.16%	98.31%	99.21%	98.41%	99.25%	98.50%	98.81%
2	98.31%	96.63%	98.41%	96.82%	98.50%	97.01%	97.61%
3	97.47%	94.94%	97.62%	95.24%	97.75%	95.51%	96.42%
4	96.63%	93.26%	96.82%	93.65%	97.01%	94.01%	95.23%
5	95.79%	91.57%	96.03%	92.06%	96.26%	92.52%	94.04%
6	94.94%	89.89%	95.24%	90.47%	95.51%	91.02%	92.84%
7	94.10%	88.20%	94.44%	88.88%	94.76%	89.52%	91.65%
8	93.26%	86.52%	93.65%	87.29%	94.01%	88.03%	90.46%
9	92.42%	84.83%	92.85%	85.71%	93.26%	86.53%	89.27%
10	91.57%	83.15%	92.06%	84.12%	92.52%	85.03%	88.07%
11	90.73%	81.46%	91.26%	82.53%	91.77%	83.53%	86.88%
12	89.89%	79.78%	90.47%	80.94%	91.02%	82.04%	85.69%
13	89.05%	78.09%	89.68%	79.35%	90.27%	80.54%	84.50%
14	88.20%	76.41%	88.88%	77.76%	89.52%	79.04%	83.30%
15	87.36%	74.72%	88.09%	76.18%	88.77%	77.55%	82.11%
16	86.52%	73.04%	87.29%	74.59%	88.03%	76.05%	80.92%
17	85.68%	71.35%	86.50%	73.00%	87.28%	74.55%	79.73%
18	84.83%	69.67%	85.71%	71.41%	86.53%	73.06%	78.53%
19	83.99%	67.98%	84.91%	69.82%	85.78%	71.56%	77.34%
20	83.15%	66.30%	84.12%	68.23%	85.03%	70.06%	76.15%
21	82.31%	64.61%	83.32%	66.65%	84.28%	68.57%	74.96%
22	81.46%	62.93%	82.53%	65.06%	83.53%	67.07%	73.76%
AVG	90.31%	80.62%	90.87%	81.73%	91.39%	82.79%	**86.29%**

Note: Max size entrained with 3 inch rack is 22 inches, while 11 inches with the 1-inch overlay, which produces an average survival rate of 92.84 for all species 11 inches or less.

Lyons Falls Mill

Environmental Report – Entrainment and Impingement Study

POTENTIAL ENTRAINMENT RISK

Target Species	January	February	March	April	May	June	July	August	September	October	November	December
Black Crappie	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Brown Bullhead	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Brown Trout	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Chain Pickerel	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Golden Shiner	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low	Low
Largemouth Bass	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Logperch	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Longnoce Dace	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Magined Madtom	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Northern Hog Sucker	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Pumpkinseed	Low	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low
Rock Bass	Low	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low-Medium	Low	Low
Smallmouth Bass	Low	Low	Low	Low	Low	Low-Medium	Low-Medium	Low-Medium	Low	Low	Low	Low
Spottail Shiner	Low	Low	Low	Low	Low-Medium	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low
Tessellated Darter	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
White Sucker	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low	Low	Low
Yellow Perch	Low	Low	Low	Low-Medium	Medium	Medium	Medium	Low-Medium	Low	Low	Low	Low

Lyons Falls Mill

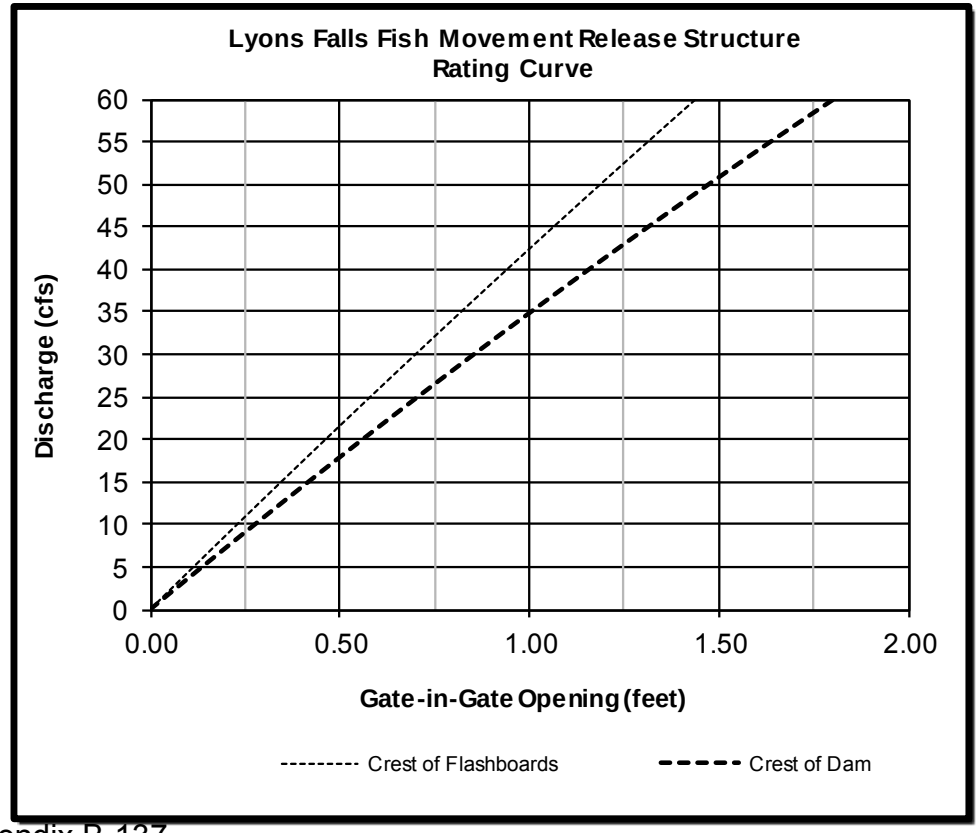
Fisheries Resources PM&E Measures

- Construction will occur within the footprint of the existing paper mill along the river's edge
- NBLF has proposed to provide a seasonal minimum fish movement flow of 45 cfs to be released annually from March 15 through November 30.
  - NBLF conducted an assessment to develop general layout and performance concepts for alternative downstream fish movement.
  - Concept is based on gate-in-gate release utilizing the proposed new trash sluice gate to be located perpendicular to the angled trashracks.
- NBLF has also proposed to install seasonal trashrack overlays with 1-inch clear-bar spacing.
  - Overlays will be installed annually as soon as possible following ice-out and removed in October.
  - NBLF will consult with the NYSDEC, USFWS, and other parties to determine the specific schedule and notification requirements for the installation and removal of seasonal overlays.
- Continued operation in run-of-river mode.
- No changes or modifications to the existing pond elevation.

Lyons Falls Mill

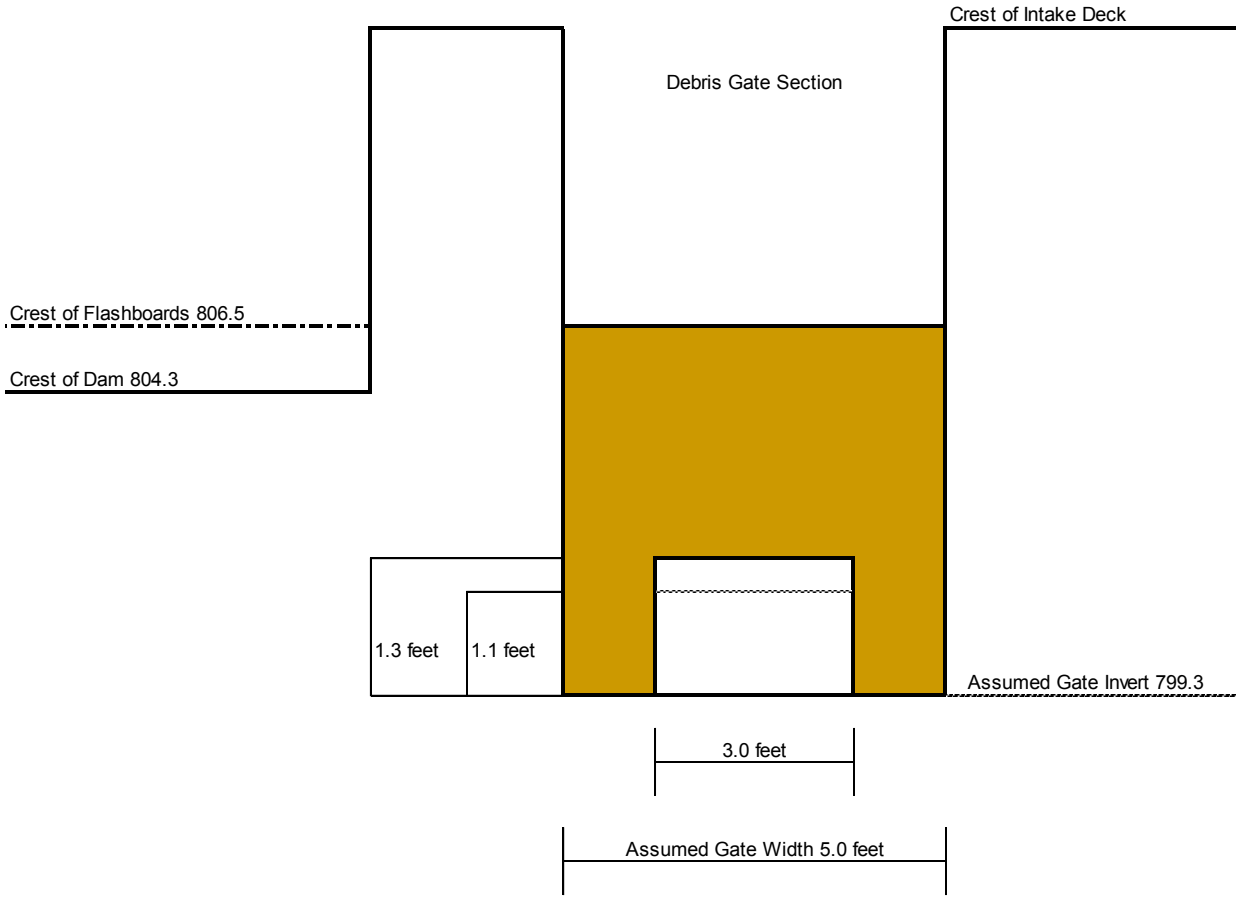
Project:	Lyons Falls Hydroelectric Project (FERC No. 2548)
Development:	**Lyons Falls Development - 45 cfs Release**
Date Created:	2/20/2015
Last Revised:	2/20/2015

Crest of Dam:	804.30 ft USGS
Crest of Boards:	806.50 ft USGS
Height of Boards:	2.17 ft
Range of Interest:	2.17 ft
Elevation Range of Interest Measured From:	806.50 ft USGS
Gate Invert:	799.30 ft USGS
Gate Width:	5.00 ft
Discharge Coefficient:	0.680
Starting Height of Opening:	**0.00 ft**
Width of Modified Opening:	**3.00 ft**
Gate Opening Increment:	0.1 ft



Lyons Falls Mill

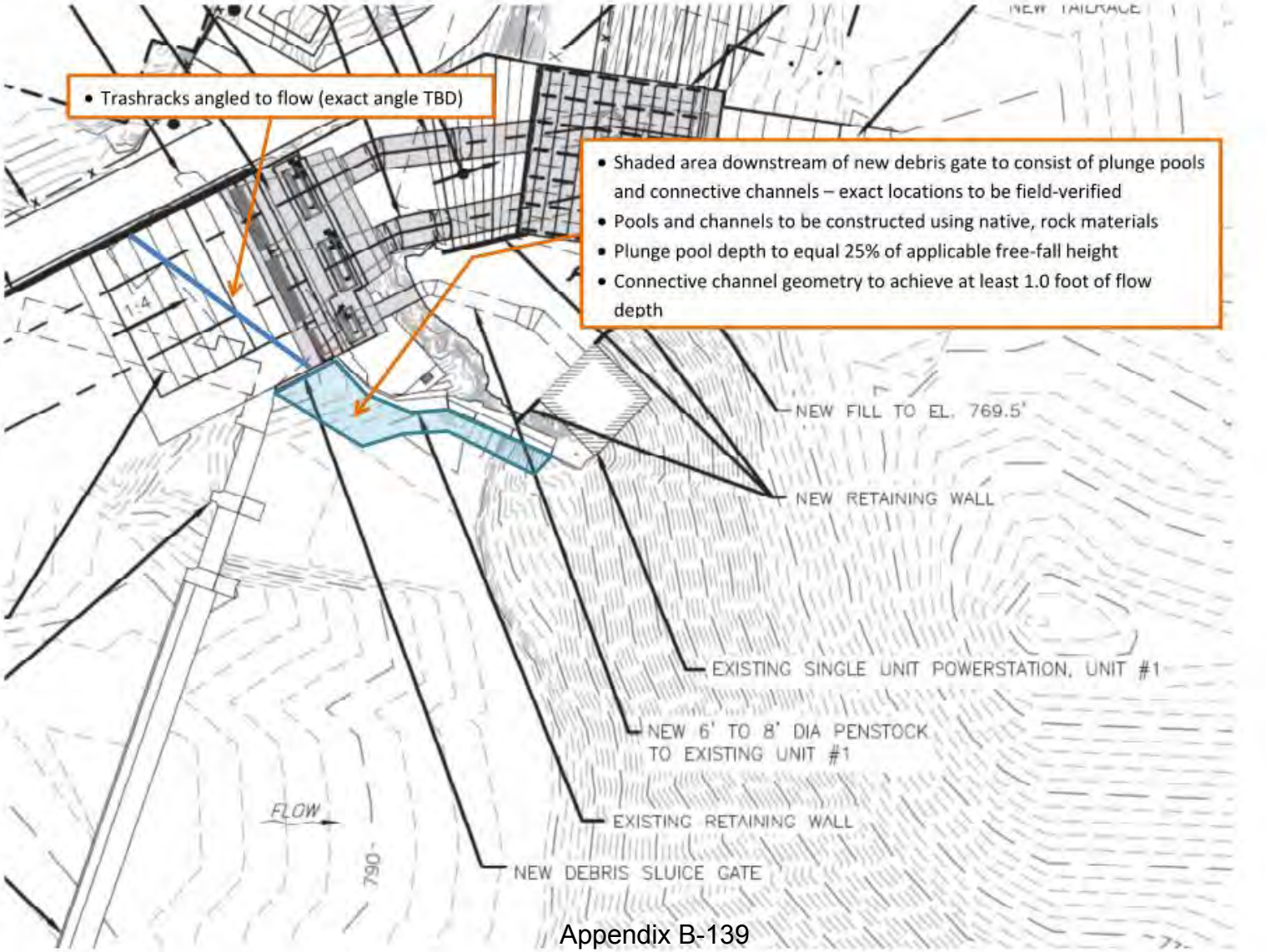
Gate-in-Gate Concept to Pass 45 cfs Fish Movement Flow
(Schematic Drawing - Not to Scale)



(a) A 3.0 foot wide gate-in-gate would pass 45 cfs when open 1.1 feet and WSEL at crest of flashboards (806.5)

(b) A 3.0 foot wide gate-in-gate would pass 45 cfs when open 1.3 feet and WSEL at crest of dam (804.3)

Lyons Falls Mill



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Lyons Falls Mill

Environmental Report – Terrestrial Wildlife

- The proposed redevelopment of Lyons Falls Mill would take place entirely within the footprint of the former Georgia-Pacific paper mill located along river left.
  - The grounds of the paper mill are characterized by industrial buildings and structures in various states of disrepair.
  - The remnant facilities associated with the mill do not offer substantive or quality upland terrestrial habitat, and the area is considered an industrial site.
  - Lands surrounding Lyons Falls Mill provide a variety of upland habitats that are utilized by numerous species of mammals, birds, and amphibians typical of the northeastern United States.
  - Wildlife and associated habitat are reported as stable.
  - Wetland and riparian habitat is limited in extent due in part to the geographic nature of area, which consists of exposed bedrock and steep slopes.

Lyons Falls Mill

Terrestrial Wildlife PM&E Measures

- PM&E Measures proposed by NBLF for the continued protection of terrestrial wildlife include:
  - Construction limited to the footprint of the former Georgia-Pacific paper mill along river left.
  - Continued operation in run-of-river mode.
  - No changes or modifications to the existing pond elevation.
  - Develop and implement a Construction Soil Erosion and Sedimentation and a Temporary Emergency Action Plan including standard BMPs to address sediment and erosion control during construction and final stabilization in accordance with NYSDEC technical guidance.

Lyons Falls Mill

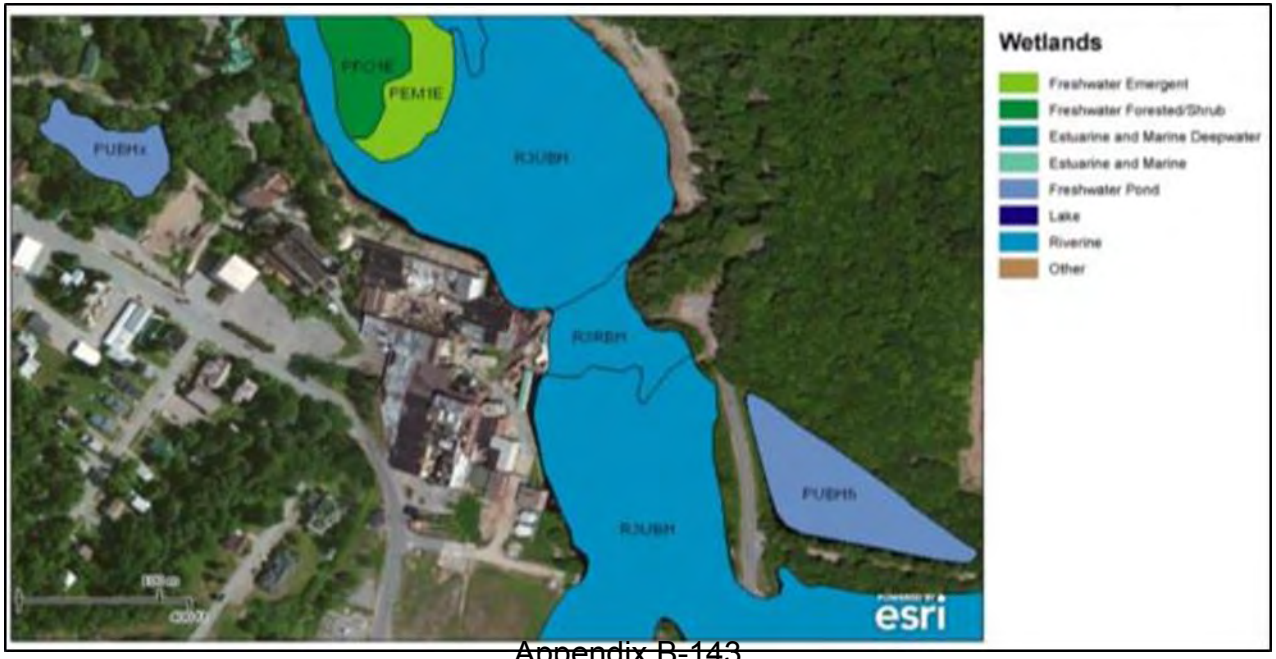
Environmental Report – Botanical Resources

- The former mill site does not support substantive or quality botanical resources.
  - Outside of the industrial mill compound on the west bank of the Black River, the dominant tree species are oak, maple, sumac, and ash.
  - The development of shoreline vegetation is limited near Lyons Falls by shallow bedrock soils, exposed bedrock, boulder, and sandy areas.

Lyons Falls Mill

Environmental Report – Botanical Studies Conducted by NBLF

- In January 2015, NBLF conducted a review of the USFWS's National Wetland Inventory (NWI) and the NYSDEC's GIS wetland maps database.
  - The NYSDEC's GIS database did not identify any wetlands within the vicinity of Lyons Falls Mill.
  - Based on a review of the NWI data, six classes of wetlands have been mapped near Lyons Falls.



Lyons Falls Mill

Environmental Report – Botanical Studies Conducted by NBLF

NWI-MAPPED WETLANDS IN THE VICINITY OF LYONS FALLS MILL

Wetlands Code	System	Class	Wetland Type	Cowardin	General Description
PEM1E	Palustrine	Emergent	Freshwater Emergent wetland	Palustrine emergent	Herbaceous march, fen, swale and wet meadow. Seasonally Flooded / Saturated
PFO1E	Palustrine	Forested	Freshwater-Forested and Shrub wetland	Palustrine forested and/or Palustrine shrub	Forested swamp or wetland shrub bog or wetland. Seasonally Flooded
PUBHh	Palustrine	Unconsolidated Bottom	Freshwater Pond	Palustrine unconsolidated bottom, Palustrine aquatic bed	Pond / Diked or Impounded
PUBHx	Palustrine	Unconsolidated Bottom	Freshwater Pond	Palustrine unconsolidated bottom, Palustrine aquatic bed	Pond / Excavated
R3RBH	Riverine	Rock Bottom	Riverine	Riverine wetland and deep water	River or stream channel / Permanently Flooded
R3UBH	Riverine	Unconsolidated Bottom	Riverine	Riverine wetland and deep water	River or stream channel / Permanently Flooded

Lyons Falls Mill

Botanical Resources PM&E Measures

- PM&E Measures proposed by NBLF for the continued protection of botanical resources include:
  - Construction limited to the footprint of the former Georgia-Pacific paper mill along river left.
  - Continued operation in run-of-river mode.
  - No changes or modifications to the existing pond elevation.
  - Develop and implement a Construction Soil Erosion and Sedimentation and a Temporary Emergency Action Plan including standard BMPs to address sediment and erosion control during construction and final stabilization in accordance with NYSDEC technical guidance.

Lyons Falls Mill

Environmental Report – Threatened and Endangered Species

- In January 2015, NBLF consulted with the USFWS to identify threatened and endangered species or critical habitat that may occur within the vicinity of Lyons Falls Mill.
  - By letter dated January 17, 2015, the USFWS identified one endangered species and one proposed endangered species that may be present.
  - There is no critical habitat within the vicinity of Lyons Falls Mill.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES THAT MAY OCCUR WITHIN THE VICINITY OF LYONS FALLS MILL

Species	Status
Indiana bat	Endangered
Northern long-eared bat	Proposed endangered

Lyons Falls Mill

Environmental Report – Threatened and Endangered Species

- By letter dated January 23, 2015, NBLF reinitiated consultation with the NYNHP.
  - The NYNHP indicated in a February 20, 2015 response that “we have no records of rare or state-listed animals or plants, or significant natural communities, at your site or in its immediate vicinity.”

Lyons Falls Mill

Threatened and Endangered Species PM&E Measures

- PM&E Measures proposed by NBLF for the continued protection of threatened and endangered species include:
  - Develop and implement an Indiana Bat and Northern Long-eared Bat Management Plan that includes appropriate conservation measures for the northern long-eared bat as described in Appendix D of the USFWS's January 2014 Northern Long-Eared Bat Interim Conference and Planning Guidance.

Lyons Falls Mill

Environmental Report – Recreation Resources

- The Moose and Black Rivers provide a variety of opportunities for outdoor recreation including canoeing, kayaking, angling, sightseeing, whitewater boating, and picnicking
  - The Black River is primarily flat in the vicinity of Lyons Falls Mill and, therefore, appropriate for both motorized and non-motorized boating.
  - Public boat access is provided at five launch sites along the surrounding reach of the Black River.
  - Due to the hydrologic nature of the Moose River in the vicinity of Lyons Falls Mill, only non-motorized boating, canoeing, and kayaking occur.
  - The “Bottom Moose River” from Fowlersville to Lyons Falls has an average gradient of 72 feet-per-mile with 12 major identified rapids over the course of a 3.6 mile segment.

Lyons Falls Mill

Environmental Report – Recreation Resources

- Angling is also a popular recreational activity along the Black and Moose Rivers.
- Approximately 15 miles of the Moose River and 8 miles of the Black River are designated under the New York State Wild, Scenic, and Recreational Rivers Act.
  - None of these sections are within or adjacent to the Lyons Falls Project boundary.

- The Black River was designated as a Blueway Trail in June 2005.
- Lewis County provides many opportunities for land-based outdoor recreation. Opportunities for hiking, picnicking, sightseeing, biking, and other activities are provided by several state, county, and municipal parks, historic sites, and trails.

Lyons Falls Mill

Environmental Report – Recreation Resources

- Existing recreational facilities at Lyons Falls Mill include boat access and portage opportunities, fishing, picnicking, walking, and sightseeing along the Moose and Black Rivers.
  - An improved canoe/kayak access site downstream of the dam provides parking, a hand-carry boat launch, and angling access to the eastern shoreline of the Black River.
  - NBLF provides access to the impoundment at a gravel vehicle-access boat launch located just upstream of the confluence of the Black and Moose Rivers.
  - A carry-in boat access area provided by NBLF is located on the Black River approximately 1.5 miles upstream of the dam.
  - An informal recreation access point and vehicle pull-out is located on the east side of Black River, just downstream of the Lyons Falls dam.

Lyons Falls Mill

Environmental Report – Recreation Resources

- Upstream of Lyons Falls Dam on the Moose River is a canoe/kayak access site that provides portage opportunities around the Lyons Falls Dam. The upstream canoe access is connected to a downstream canoe/kayak access site via Lyons Falls Road.
- In addition to these recreation sites, public access to Project lands is permitted. As such, informal recreation activities such as hunting, angling, hiking and cross-country skiing occur at Lyons Falls Mill.
- The Lyons Falls Community Park, which was donated by the former licensee, Georgia-Pacific, to the Village of Lyons Falls, is located adjacent to Lyons Falls Mill on the Black River, upstream of the confluence with the Moose River. The Park provides sports fields, a skating rink, and picnic facilities. This site is not within the Project boundary and is managed by the Village of Lyons Falls.

Lyons Falls Mill

Environmental Report – Recreation Resources

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Lyons Falls Mill

Environmental Report – Recreation Studies Conducted by NBLF

- In support of the upgrades proposed in 2006, NBLF conducted a recreational use survey throughout the 2007 recreation season to assess overall recreational use, including angler use.
  - Recreational facilities at Lyons Falls Mill were monitored by NBLF staff between May 6, 2007 and October 16, 2007.
  - Monitoring was conducted on 147 of 164 days within the study period (90 percent) and included four peak holidays: Memorial Day, Independence Day, Labor Day, and Columbus Day.
  - For this study, data was collected from the Lyons Falls Boat Access (impoundment), Lyons Falls Canoe Access (downstream), and the Lyons Falls Picnic Area.

ESTIMATED 2007 RECREATION USE BY DAY TYPE AT LYONS FALLS MILL

Day Type	Activity	Days
Weekdays	boating	51
	fishing	227
	swimming	105
	sightseeing	176
	picnicking	18
	Other	51
	Undetermined	24
	Subtotal	652
Weekends	boating	16
	fishing	188
	swimming	41
	sightseeing	145
	picnicking	12
	Other	8
	Undetermined	0
	Subtotal	410
Holidays	boating	12
	fishing	32
	swimming	8
	sightseeing	38
	picnicking	5
	Other	0
	Undetermined	0
	Subtotal	95
Total		1,157

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Lyons Falls Mill

Recreation Resources PM&E Measures

- A number of PM&E measures proposed by NBLF will support or enhance recreation at Lyons Falls Mill, including recreational fishing, boating, and sightseeing.
  - Seasonal installation of trashrack overlays with 1-inch clear-bar spacings, installed as soon as possible following ice-out and removed in October.
  - A seasonal (March 15 – November 30, annually) minimum fish movement flow of 45 cfs to enhance and protect fish and aquatic resources, including game fish.
  - Continued operation and maintenance of existing recreational facilities at Lyons Falls Mill.
  - A seasonal (May 1 – October 31, annually) 25 cfs minimum aesthetic flow released over Lyons Falls to enhance the aesthetics of the falls during the recreation season.
  - Preparation and implementation of a Construction Soil Erosion and Sedimentation Control Plan and a Temporary Emergency Action Plan to avoid temporary impacts on instream recreation.
  - Continued run-of-river operations.
  - Preparation and implementation of an Aesthetic Resources Plan.

Lyons Falls Mill

Environmental Report – Cultural and Historic Resources

- In support of the previous relicensing, a cultural resources study was conducted in 1983 of the three developments. The study concluded that the hydroelectric facilities were not likely to be eligible for the National Register of Historic Places (NRHP).
- In 2007, the Public Archaeology Facility of the State University of New York at Binghamton (PAF) conducted a Phase IA Cultural Resources Assessment of the upgrades to Lyons Falls proposed in 2006, including construction of a new powerhouse on river right.
  - The study consisted of a pedestrian walkover combined with auger probes.
  - PAF identified one area along river right with the potential to contain archaeological deposits and recommended additional testing at this location if NBLF chose to pursue the upgrades proposed in 2006.
  - NBLF decided not to pursue the proposed upgrades; therefore, additional testing was not conducted along the east shoreline of the Black River.
  - The current redevelopment will not have any impact on the location identified by PAF in 2007.

Lyons Falls Mill

Environmental Report – Cultural and Historic Resources

- In support of the demolition of the former paper mill, the New York State Office of Parks, Recreation and Historic Preservation's (OPRHP) was consulted with regarding the proposed demolition activities.
  - As a result of this consultation, the ORPHP indicated in a June 14, 2013 letter that demolition of the former paper mill "will have No Impact" upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places."
- By letter dated January 29, 2015, NBLF initiated informal consultation with the New York State Historic Preservation Officer (SHPO) to determine if historic properties listed in or eligible for inclusion in the NRHP will be effected by the proposed redevelopment of Lyons Falls Mill.
- If necessary, NBLF will develop an avoidance, protection, and/or mitigation plan for FERC and SHPO approval following FERC's order amending the license and prior to the start of construction activities.

Lyons Falls Mill

Environmental Report – Report on Land Management and Aesthetics

- The Black River Basin, includes both the Black and Moose Rivers and supports a diverse set of land use practices.
- The eastern portions of the basin consist of densely forested woodlands associated with the Adirondack Mountains. Land use and management in this portion of the basin consists mainly of silviculture, recreation, and tourism.
- Lyons Falls Mill lies entirely within Lewis County, New York, which is approximately 1,272 square miles in area. The area surrounding Lyons Falls Mill is mostly rural, heavily forested, and relatively undeveloped.

LEWIS COUNTY LAND USE

Type of Use	Square Miles	Acres	Percent of County Land
Agricultural	244.07	156,205.9	19.2
Residential	177.97	113,900.1	14.0
Vacant (Open Space)	92.79	59,390.8	7.3
Commercial	2.54	1,627.5	0.2
Recreation/Entertainment	3.81	2,440.7	0.3
Community Services	36.86	23,593.0	2.9
Industrial	2.54	1,627.5	0.2
Public	15.25	9,762.8	1.2
Wild/Forested	695.35	445,024.1	54.7
Total	1,271.18	813,572.4	100.0

Lyons Falls Mill

Environmental Report – Report on Land Management and Aesthetics

- Based on 2006 consultation, stakeholders indicated an interest in the aesthetic nature of the falls.
  - The falls can be viewed from numerous locations downstream, including from the canoe access located downstream of the falls.

Lyons Falls Mill

Aesthetic Resources PM&E Measures

- NBLF is proposing to provide a seasonal minimum aesthetic flow of 25 cfs over Lyons Falls to be released annually during the recreation season (May 1 through October 31).
  - NBLF conducted an assessment to develop a conceptual layout for providing the 25 cfs seasonal minimum aesthetic flow.
  - Conceptual approach would modify the 26-inch-high wooden flashboards to provide flow over the falls.
  - NBLF will continue consultation with resource agencies, local officials, and other interested parties to define the location of the 25 cfs seasonal aesthetic flow release.
  - The 25 cfs aesthetic flow will be in addition to the proposed 45 cfs downstream fish movement flow.

- In addition, NBLF proposes to develop an Aesthetic Resources Plan.

Lyons Falls Mill

Aesthetic Resources PM&E Measures

Flashboard Notch Concept to Pass 25 cfs

(Schematic Drawing - Not to Scale)

$Q = C \times L \times H^{(1.5)}$

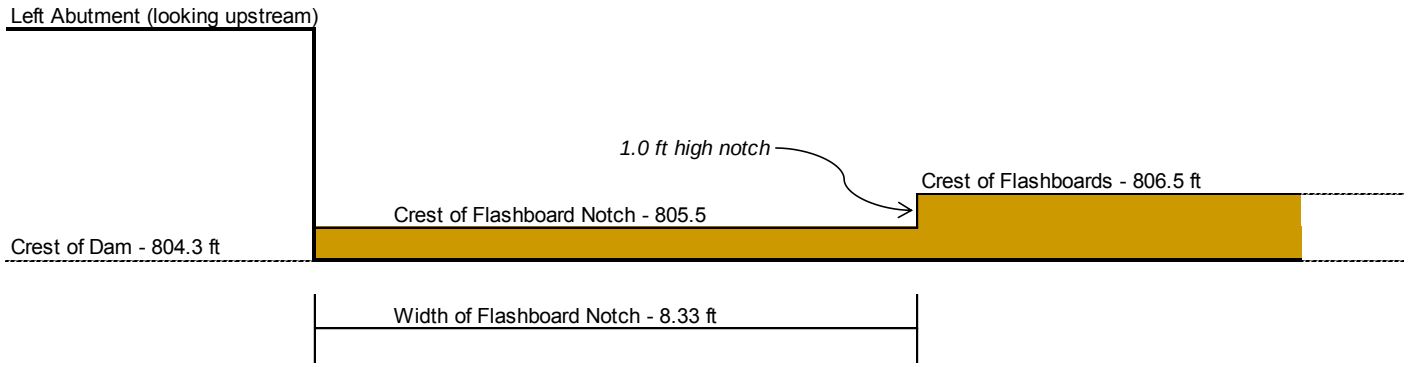
Q = 25 cfs (target flow)

C = 3.0

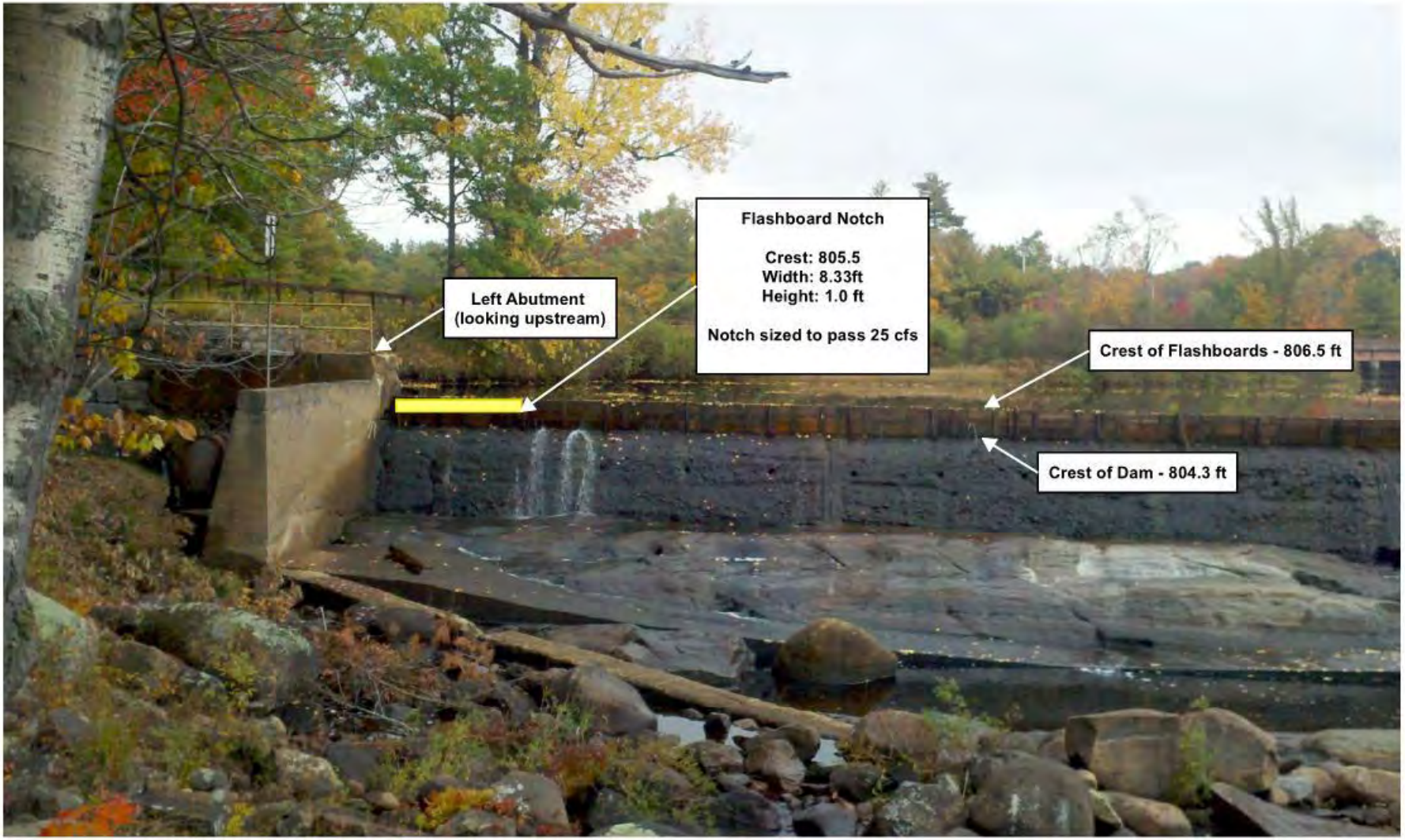
L = 8.33 ft

h = 1.0 ft

Solved Flow = 25 cfs



Elevation View of Flashboard Notch (Looking Upstream)



Lyons Falls Development 25 cfs Aesthetic Release Via Flashboard Notch

NOT TO SCALE

Lyons Falls Mill

Comprehensive Plans

- Interstate Fishery Management Plan for American Eel (Anguilla rostrata) (Atlantic State Marine Fisheries Commission Service [ASMFC] 2000).
- The Nationwide Rivers Inventory.
- North American Waterfowl Management Plan (North American Waterfowl Management Plan, Plan Committee 2004).
- Fisheries USA: The Recreational Fisheries Policy of the U.S. Fisheries and Wildlife Service (USFWS) (1989).
- New York State Statewide Comprehensive Outdoor Recreation Plan (SCORP) (NYSOPRHP 2010).

Lyons Falls Mill

Schedule

Activity	Date
Distribute ICAP	January 30, 2015
Public notice of Joint Agency Public Meeting	February 18, 2015
Joint Agency Public Meeting	March 4, 2015
Stakeholders provide comments on ICAP	March 16, 2015
File final Amendment Application with FERC	April 3, 2015

Lyons Falls Mill

Further Information

Mr. Dan Parker
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Potsdam, NY 13676

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Mr. Jim Gibson
HDR
1304 Buckley Road
Suite 202
Syracuse, NY 13212

jim.gibson@hdrinc.com

Tel: (315) 414-2202

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

March 13, 2015

Mr. Jim Gibson, Vice President
HDR, Inc.
1304 Buckley Rd. -- Suite 202
Syracuse, NY 13212-4311

RE: Lyons Falls Hydroelectric Project (FERC #2548)
Mill Redevelopment

Dear Mr. Gibson:

The U.S. Fish and Wildlife Service (Service) has reviewed the January 30, 2015, Initial Consultation Document/Amendment Package (Document) for the Lyons Falls Hydroelectric Project (Project), located at the confluence of the Black and Moose Rivers in Lewis County, New York. We also reviewed the information that was presented at the March 4, 2015, meeting that we were unable to attend.

Northbrook Lyons Falls, LLC (Northbrook) has developed a proposal that addresses most of the concerns identified by the Service and other stakeholders during the 2006 amendment proceeding that was later abandoned. The new powerhouse will have a 1"-clear-spaced trashrack overlay angled to the flow, with a downstream passage sluice emptying into a plunge pool. Approach velocities will be less than 2 feet per second (fps). Northbrook should ensure that approach velocities less than 2 fps are maintained with the 1" overlays in place, as well as when only the 3"-clear-spaced trashracks are in place. A downstream fish passage attraction flow of 45 cubic feet per second will be provided. Since the tailwater will back up to the base of the falls, there will be no bypassed reach. The Project will be operated in a run-of-river fashion.

The Service is not in agreement with the proposal for the seasonality of the 1" overlay trashrack. Normally, with new developments, the Service would recommend a year-round 1"-clear-spaced trashrack. However, since Northbrook has identified specific frazil ice issues that occur at this site, we are willing to accept seasonal overlays. Northbrook proposed an operational period for the overlay from ice-out through some time in October. The overlay should remain in place from March 15 through November 30, the same period that the proposed fish passage attraction flow will be provided. This will be consistent with all of the other seasonal overlays in New York (e.g., Sissonville and Emeryville). Licensees using overlays have never identified issues with maintaining the trashracks through the month of November, nor have they experienced difficulties removing them at the end of November.

Some licensees have had issues with installing the racks on time in March due to ice, high flows, or other safety-related factors. Northbrook should develop a plan, in consultation with the Service and the New York State Department of Environmental Conservation, that outlines procedures to be followed when a time extension for trashrack overlay installation is needed. The plan used at Sissonville (FERC #9260) on the Raquette River may be applicable to this site.

Northbrook proposes to develop management plans for the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*M. septentrionalis*) using guidance from the Service. The Service concurs with this approach.

We appreciate the opportunity to review the Document. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

cc: TU, Plattsburgh, NY (W. Wellman)
NYSDEC, Watertown, NY (E. Latremore, J. Hart)

MEETING SUMMARY

TO: Larry Eckhaus (NYSDEC)

FROM: Daniel Parker (Northbrook Lyons Falls, LLC)

DATE: March 16, 2015

SUBJECT: **Lyons Falls Hydroelectric Project (FERC No. 2548)**
Summary of March 3, 2015 Conference Call

1.0 List of Participants

Representatives from the New York State Department of Environmental Conservation (NYSDEC), Northbrook Lyons Falls, LLC (NBLF), and HDR Engineering, Inc. (HDR) (collectively, "the Participants") held a conference call on March 3, 2015, to discuss the Lyons Falls Hydroelectric Project (FERC No. 2548) ("Lyons Falls Project" or "Project") Redevelopment plans. Specifically, the Participants included the following individuals:

- Larry Eckhaus (NYSDEC)
- Jessica Hart (NYSDEC)
- Erik Latremore (NYSDEC)
- Russell McCullough (NYSDEC)
- Dan Parker (NBLF)
- Jim Gibson (HDR)
- Jessica Eckerlin (HDR)

2.0 Summary of Discussion

Northbrook Lyons Falls, LLC (NBLF), an affiliate of Kruger Energy, Inc. (Kruger), is the Licensee for the Lyons Falls Project (FERC No. 2548) (Project). NBLF is proposing to redevelop the Lyons Falls Mill development to increase its efficiency and the overall energy output of the development. The proposed redevelopment of Lyons Falls Mill requires an amendment to the Project's existing FERC license. NBLF has been engaged in on-going consultation with resource agencies and scheduled the conference call on March 3, 2015, to respond to questions that the NYSDEC had regarding the Project. The NYSDEC submitted a list of questions prior to the call; these are listed below. NBFL's response to these questions is shown in italics.

1. **It appears the existing primary powerhouse will be demolished but the single-unit powerhouse will be mothballed. (pp. A-2; A-4)**

   a) Why won't the single-unit powerhouse be demolished?

   Based on an evaluation of the powerhouse, NBLF has determined that it is appropriate to mothball the single-unit powerhouse, as compared to demolishing the structure. NBLF studied keeping this generating unit in service to capture additional energy from the flows that are less than the minimum flows for the proposed generating units, but decided not to pursue this option. In order to preserve the potential use of this powerhouse in the future, NBLF will disconnect the structure from the existing intake and secure the facility in place. All measures will be taken to prevent any environmental risks from stored liquids in the powerhouse or in the unit.

b) To what use or future use will it be put?

At this time, NBLF does not anticipate generating electricity with the current single-unit powerhouse (e.g., under the proposed design, a penstock will not connect the powerhouse with the intake). Under the current proposal, any potential future use of the existing single-unit powerhouse would be the subject of a future FERC process.

c) Will it be secured?

Yes – the existing single-unit powerhouse will be secured and will continue to be subject to FERC's dam safety program.

2. It is stated that the water in the impoundment is not stored for generation (p. E-13). For what purpose is it stored?

The reference to "water is not stored in the impoundment for generation" is a reference to the facility operating as a run-of-river facility, as compared to the impoundment fluctuating for energy generation purposes and that the facility does not influence potential flooding associated with the area. NBLF will clarify this statement in the final license amendment application.

3. NBLF proposes to prepare certain plans *after* FERC's Order amending the license and prior to the start of construction, subject to FERC and DEC approval. It is preferable to have these prepared in advance of FERC's Order – where possible; in the alternative, FERC's Order should be contingent on preparation of the following Plans and their approval by DEC and/or other relevant state/federal agency:

- **a. Construction Soil Erosion and Sedimentation Control Plan (pp. E-32; E-55; E-68; E-77, 78)**
- **b. Temporary Emergency Action Plan (pp. E-32; E-55; E-68; E-77, 78)**
- **c. Water Quality Certification Modification (see #4 below) (pp. E-32; E-55; E-68; E-77, 78)**
- **d. Schedule and Notification Requirements for the Installation and Removal of Seasonal Trashracks (pp. A-4; E-54, 55)**
- **e. Management Plans for Indiana Bat and Northern Long-eared Bat (p. E-67)**
- **f. Standard BMPs (these are mentioned throughout but not provided) (pp. E-32; E-33; E-55; E-60; E-64; E-65; E-68; E-69; E-77; E-91)**
- **g. Avoidance, Protection and/or Mitigation Plan re: historic resources (p. E-84)**
- **h. Aesthetic Resources Plan (p. E-91)**

NBLF understands that it is desirable that the aforementioned plans be prepared prior to the filing of the license application. Some of the plans require information that will be produced by contractors that will not be known at the time that the application is filed. Therefore, NBLF agrees that aforementioned plans should all be prepared and approved prior to construction activities. As discussed during our call, NBLF will clarify in the final amendment application as to which plans will be prepared prior to filing the final amendment application and which plans will be required to be completed prior to start of construction.

4. **Construction activities and operation of the proposed facility should require a modified or new WQC incorporating the provisions of the 2-12-85 WQC and such new provisions as appropriate, using current format.**

   NBLF defers to the NYSDEC regarding a potential new or revised Section 401 Water Quality Certificate in support of the redevelopment process. NBLF will coordinate compliance under Section 401 with the NYSDEC.

5. **The change in the size of trashracks (i.e. via overlays) – seasonally – should be reviewed (p. E-55).**

   NBLF has performed an entrainment and impingement study incorporating the proposed seasonal overlays. The results of this study were presented during the March 4, 2015, Joint Agency Public Meeting and will be included in the final license amendment application.

6. **Does Wild, Scenic, and Recreational Rivers designation require any provisions or actions that may not have been present in 1986 when the license was first issued? (p. E-70)**

   Although portions of both the Black and Moose Rivers are designated as "Scenic" under the New York State Wild, Scenic, and Recreational Rivers Act, none of these reaches are located within or adjacent to the Lyons Falls Project boundary.

7. **NBLF is proposing minimum flows as follows (pp. E-78; E-91)**

   a. **March 15-November 30: 45 cfs downstream (fish flow)**
   b. **May 1- October 31: 25 cfs over falls (aesthetic)**

   This didn't make sense to me since the periods overlap. On p. B-4 (and E-32) it is stated that seasonal minimum flows would be 70 cfs (45 + 25) during May 1- October 31; and 45 cfs March 15-April 30 & November 1, November 30. The references on pp. E-78 & E-91 should be so clarified. There would be no minimum flow December 1-March 14. Q: Is all this acceptable? Also, how will minimum flows be accomplished during periods of insufficient runoff?

   NBLF proposes the following flows in support of downstream fish movement and aesthetic flows.

   - *Downstream fish movement – 45 cfs from March 15 through November 30*
   - *Aesthetic flow – 25 cfs from May 1 through October 31*

   Therefore, from May 1 through October 31, a total of 70 cfs will be provided. These flows will have priority over energy generation. Given the proposed run-of-river operations of the facility and the requirement to limit impoundment fluctuation, if inflow to the impoundment is less than 70 cfs (from May 1 through October 31) then the first 25 cfs will be diverted for aesthetic flow and the remaining flow will be diverted for downstream fish movement flow. Based on historical flows associated with the project area, it is very unlikely that the river will experience flows

below 70 cfs. In addition, from the time that the ice cover breaks up to March 15, it is very likely that flows will exceed the maximum capacity of the units in most years, providing more than the agreed upon minimum flows.

8. **It appears that the Statement of Costs and Financing (Exh. D); General Design Drawings (Exh. F); and a Project Boundary Map (Exh. G) will *not* be provided prior to the filing of the final application. (pp. F-1; G-1) These should be made available ASAP *before* the final application.**

   NBLF is in the process of developing Exhibits D, F, and G, and will provide the exhibits for review as soon as available.

9. **NBLF forecasts a 19-month construction schedule assuming the following key dates (selected):**

a.	**Filing Application for License**	**April 15, 2015**
b.	**Pre-Construction Activities***	**May 1, 2015 – November 1, 2016**
c.	**Commission Order Amending the License**	**October 2, 2015**
d.	**Submittal of Final Plans and Specs**	**April 4, 2016**
e.	**Secure all final FERC/DEC/Other Approvals**	**June 20, 2016**
f.	**Site Work Commences**	**July 1, 2016**
g.	**Commissioning**	**April 6, 2018**

   *** It appears some pre-construction activities are proposed to occur *before* FERC and other Agency approvals. Please explain.**

   Pre-construction activities are limited to the purchasing of materials and equipment, as well as establishing contracts with applicable parties. NBLF will not perform any ground-disturbing activities or any activities requiring the amendment or associated permit(s) prior to receipt and acceptance of such.

10. **The existing license expires May 31, 2026, about 11 years from now. Anything we may agree to now should not prejudice any position we may take at that time.**

    NBLF agrees that the amendment process associated with the redevelopment of the Lyons Falls Mill development should not prejudice any position that any party should take relative to the relicensing of the larger Lyons Falls Project in the future.

Please provide any comments or revisions to this meeting summary by March 27th. After March 27th, this meeting summary will be considered final and incorporated into the final license amendment application.

Eckerlin, Jessica

From: dkcorr@roadrunner.com
Sent: Wednesday, March 25, 2015 11:29 AM
To: Gibson, James
Cc: Parker, Daniel (DanielFrancis.Parker@kruger.com)
Subject: Re: Lyons Falls Redevelopment

Jim

The project sounds good and I wish you the best!

Dave Corr
Region 6 VP Trout Unlimited

---- "Gibson wrote:
Dave,

Thank you again for the letter (see attached).

As we are starting to prepare the final amendment application, we noted the reference to the 77 cfs in the letter. In order to avoid potential confusion with the Federal Energy Regulatory Commission, we note the following.

* The current license does not require a minimum flow.

* Based on the redevelopment proposal, Northbrook Lyons Falls is proposing the following flows:
* Downstream fish movement - 45 cfs from March 15 through November 30
* Aesthetic flow - 25 cfs from May 1 through October 31

Therefore, there will be a period of time (from May 1 through October 31) that 70 cfs will be provided, as compared to the 77 cfs reference in the attached letter. These minimum flows will be in addition to the flows that exceed the hydraulic capacity of the facility's turbines and thus spill over the facility's spillway.

In support of preparing the final amendment application and incorporating all correspondence received to date, we request a response to this email indicating concurrence with these proposed flows.

If there are any questions or comments regarding this email, or the proposed redevelopment plan, please do not hesitate to contact Dan Parker or myself.

Thanks

Jim Gibson
Vice President
HDR
1304 Buckley Road, Suite 202
Syracuse, NY 13212
D 315.414.2202 M 315.415.2729
jim.gibson@hdrinc.com
hdrinc.com/follow-us<http://hdrinc.com/follow-us>

Dave

ONEIDA INDIAN NATION

JESSE J. BERGEVIN
HISTORIC RESOURCES SPECIALIST

DIRECT DIAL: (315) 829-8463
FACSIMILE: (315) 829-8473
E-MAIL: jbergevin@oneida-nation.org

ONEIDA NATION HOMELANDS

April 29, 2015

Daniel F. Parker
Project Manager
Kruger Energy Inc.
330 May Road
Potsdam, New York 13676
(*Transmitted via email*)

Re: Lyons Falls Project (FERC No. 2548)
Lyons Falls Mill Redevelopment

Dear Mr. Parker,

The Oneida Indian Nation (the "Nation") received a letter dated February 3, 2015, from Jim Gibson, Project Manager at Henningson, Durham and Richardson Architecture and Engineering, P.C., regarding the Lyons Falls Project, FERC No. 2548 (the "Project"). As detailed in the letter, the proposed redevelopment of the Lyons Falls Mill requires an amendment to the Project's existing Federal Energy Regulatory Commission license.

On March 30, 2015, Jesse Bergevin, Historic Resources Specialist for the Nation, met at the Lyons Falls Mill with representatives from Kruger Energy, Inc. to discuss the Project. It was observed that the Project's area of potential effect had been extensively disturbed through past land use. In addition, it appeared that the planned improvement would replace existing facilities or would be built within these disturbed areas. Based on this, it does not appear that the Project would have the potential to adversely affect historic properties of significance to the Nation.

If you have any questions, please call me at (315) 829-8463.

Very truly yours,

ONEIDA INDIAN NATION

Jesse J. Bergevin

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

May 08, 2015

Mr. Robert Quiggle
RPA
HDR
1304 Buckley Rd
Syracuse, NY 13212

Re: FERC
Licensing amendment for Lyons Falls Mill hydroelectric redevelopment (FERC No. 2548)
Former Lyons Falls Paper Mill site, Lyons Falls, Lewis County, NY
15PR01765

Dear Mr. Quiggle:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO has determined that no historic properties will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont

Deputy Commissioner for Historic Preservation

Eric V copy

Michael A. Tabolt
CHAIRMAN

Elizabeth Swearingin
COUNTY MANAGER

Teresa K. Clark
CLERK

Board of Legislators

Court House
Lowville, New York 13367-1396
Telephone: (315) 376-5355
Fax: (315) 376-5445

May 12, 2015

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: **Lyons Falls Project (FERC No. 2548)**
Application for License Amendment

Dear Secretary Bose:

Lewis County is very aware of the project proposed by Northbrook Lyons Falls for expansion of their generality facility. We are proud of our natural resources and the opportunity for private companies to generate renewable energy in Lewis County. Northbrook's project can have a significant impact in our area and specifically provides a great opportunity for new business development at the adjacent Lyons Falls mill property.

In 2006, Northbrook investigated the opportunity to site their expansion project on the east side of the Black River. We understand that given environmental and recreational concerns, this was not favorable. Their recent effort to site on their existing footprint is logical and meets local community interest Based on the consultation that started in 2006, recent conversations with Northbrook Lyons Falls and the March 4, 2015 public meeting, we believe that Northbrook Lyons Falls has provided the appropriate level of opportunities to review the proposal, comment on the project, and review the documents that have been prepared in support of the amendment process. We also are in support of efforts Northbrook has made to address aesthetic flows and fish protection measures for their project.

We support Northbrook Lyons Falls expansion project and look forward to continuing to work with them to improve the economy and community in our area and to utilize the natural resources that make Lewis County strong.

Very truly yours,

Michael A Tabolt

Michael A.Tabolt
Chairman

Lewis County Development Corporation
PO Box 704, Lyons Falls, NY 13368

May 12, 2015

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: **Lyons Falls Project (FERC No. 2548)**
Application for License Amendment

Dear Secretary Bose:

The Lewis County Development Corporation (LCDC) has been a strong partner with Northbrook Lyons Falls for the redevelopment of the Lyons Falls mill property. This is a nine acre site owned by the LCDC that surrounds Northbrook's generating facility on the Black River. We have been working closely with Northbrook as they plan their expansion project at this generating facility.

The potential for new hydro electric energy generation at the Northbrook Lyons Falls site is very important to the LCDC. Our future effort to attract business to our property and bring new development and economic impact will be significantly enhanced by Northbrook's energy production at the site. The LCDC and Northbrook have worked together for four to five years as we work to redevelop our property and they plan their expansion. We fully support their efforts and their application for FERC relicensing.

We would also note that the LCDC has been aware of and involved in Northbrook's efforts related to this project. Their change from a east side of the river project to the existing location's footprint is logical and thus our desire to assist with use of some of our LCDC land. We have also participated in their community outreach efforts recently and believe they are achieving the goal of informing and educating the local community and local leaders.

We strongly support Northbrook Lyons Falls expansion project and look forward to continuing to work with them to improve the economy and community in our area.

Sincerely,

Larry Dolhof
President

Village of Lyons Falls
4059 Cherry Street, Box 368
Lyons Falls, NY 13368-0368
Phone: 315-348-5081 Fax 315-507-8109 www.villageoflyonsfalls.com Email: lfvillage@live.com

May 12, 2015

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Honorable Kimberly D. Bose:

On behalf of the Lyons Falls Village Board and the residents of the Village of Lyons Falls we are totally in support of Kruger/Northbrook's application to FERC to amend their license to authorize the redevelopment of the mill hydro project. We view the redevelopment of the hydro project as having a huge impact on the future economic development of our Village.

In 2006 Northbrook Lyons Falls proposed to relocate the powerhouse on the opposite side of the river. Our residents were not in favor of the 2006 proposal due to recreation and environmental concerns related to the powerhouse on the east side of Black River. However, based on information presented by Northbrook Lyons Falls, they propose to redevelop the powerhouse within the foot print of the existing powerhouse and former paper mill.

Based on the consultation that started in 2006, recent conversations with Northbrook Lyons Falls and the March 4, 2015 public meeting, we believe that Northbrook Lyons Falls has provided the appropriate level of opportunities to review the proposal, comment on the project, and review the documents that have been prepared in support of the amendment process.

In conclusion based on the proposal provided by Northbrook Lyons Falls, we believe that the proposed aesthetic flows, as well as fish protection measures are appropriate for the proposed redevelopment.

We totally support the redevelopment of the mill hydro project.

Sincerely,

Catherine Liendecker

Catherine Liendecker
Mayor

From: Maraglio, Matthew (DOS) [mailto:Matthew.Maraglio@dos.state.ny.us]
Sent: Wednesday, May 13, 2015 10:43 AM
To: Gibson, James
Subject: RE: Lyons Falls Hydroelectric Project

Jim

Based on the information that you have provided, it appears that the project would be located outside of the New York State Coastal Area. Generally, for federal permitting actions involving actions outside of the coastal area, it is the applicant's responsibility to determine if there will be any effects on coastal uses or resources within the coastal area. Should you determine that there will be effects, please complete a Federal Consistency Assessment Form and submit it along with all necessary data and information to the Department of State concurrently with your submittal to the applicable federal agencies. If you determine that there will be no effects on coastal uses or resources, then no submittal is required unless the Department of State advises you that coastal effects are likely and requests that you submit a certification. At this time, the Department of State does not anticipate that your proposed project will have any effects on coastal uses or resources within the NYS Coastal Area. Please continue to keep the Department of State copied on your submittals.

-Matt

Matthew P. Maraglio
Coastal Resources Specialist, NYS Coastal Management Program
Consistency Review Unit, Office of Planning & Development

New York Department of State
99 Washington Avenue, One Commerce Plaza, Suite 1010, Albany, NY 12231
O: 518.473.3371 | Matthew.Maraglio@dos.ny.gov
www.dos.ny.gov

From: Hart, Jessica J (DEC) <jessica.hart@dec.ny.gov>
Sent: Thu 5/14/2015 2:25 PM
To: Gibson, James; Eckhaus, Larry S (DEC); Patch, Stephen; Latremore, Erik J (DEC)
Cc: Parker, Daniel (DanielFrancis.Parker@kruger.com); Eckerlin, Jessica; Quiggle, Robert
Subject: RE: Lyons Falls Amendment Application

Jim,

NYSDEC feels that at this point we have had sufficient opportunity to consult with NBLF regarding the proposed amendment, though we have not reviewed the amendment application yet.

Thank you.

Jessica Hart
Environmental Analyst, Division of Environmental Permits

New York State Department of Environmental Conservation
317 Washington St, Watertown, NY 13601
P: (315) 785-2246 | F: (315) 785-2242 | jessica.hart@dec.ny.gov

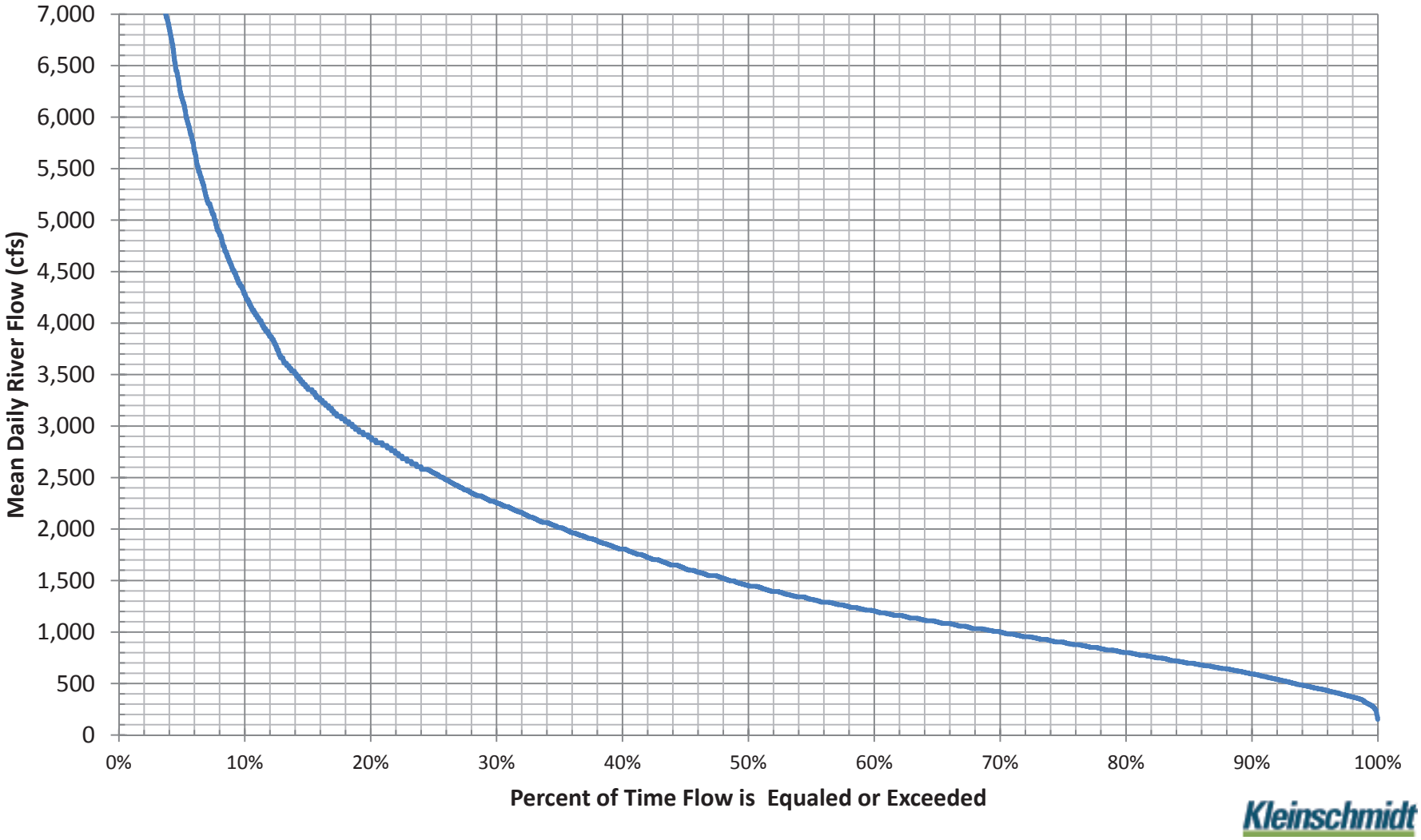
www.dec.ny.gov |

APPENDIX C

LYONS FALLS MILL FLOW DURATION CURVES

Lyons Falls Dam
Annual Flow Duration Curve

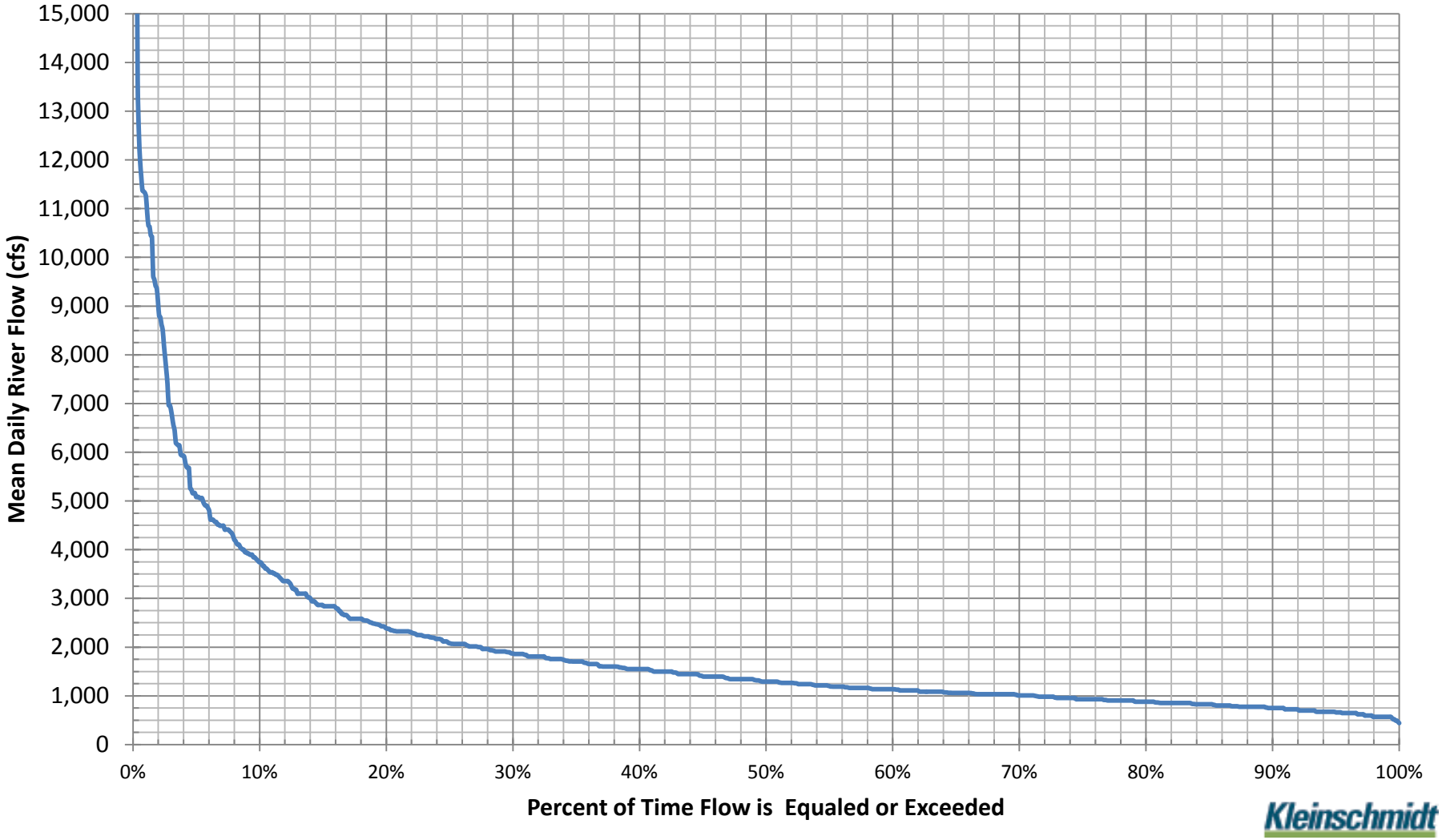
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY, Period of Record Used 1-1-1980 to 12-31-2013)



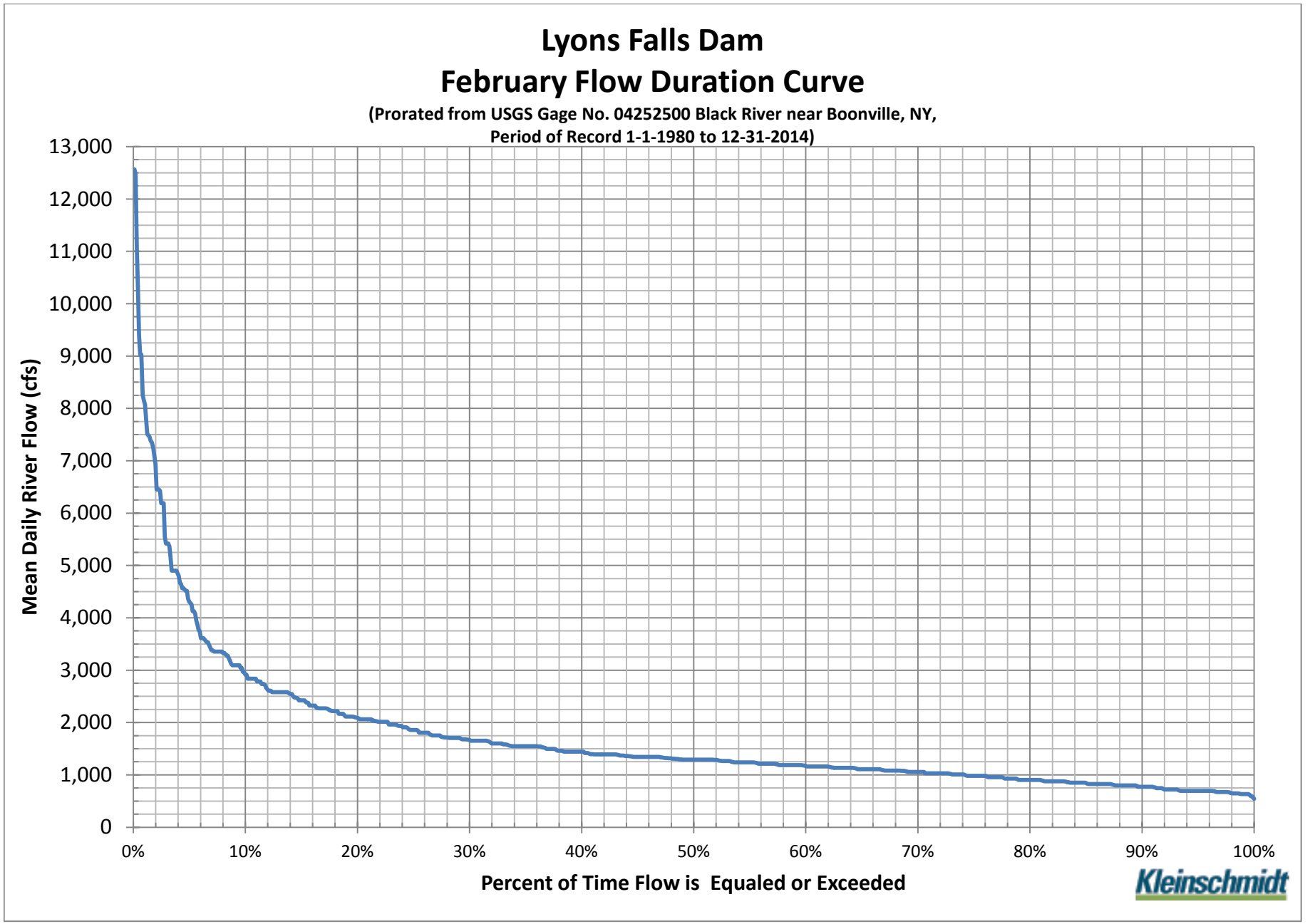
Kleinschmidt

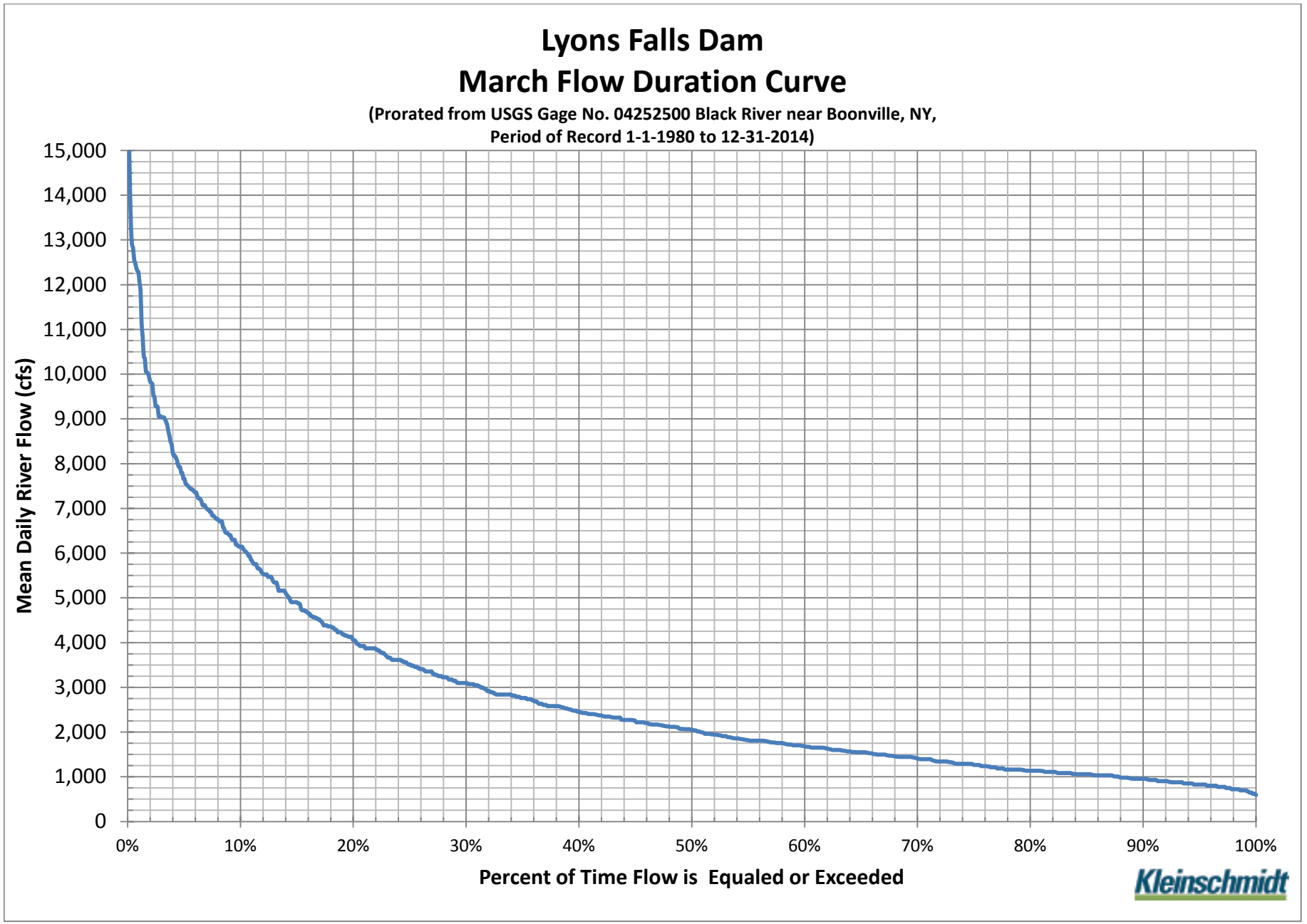
Lyons Falls Dam
January Flow Duration Curve

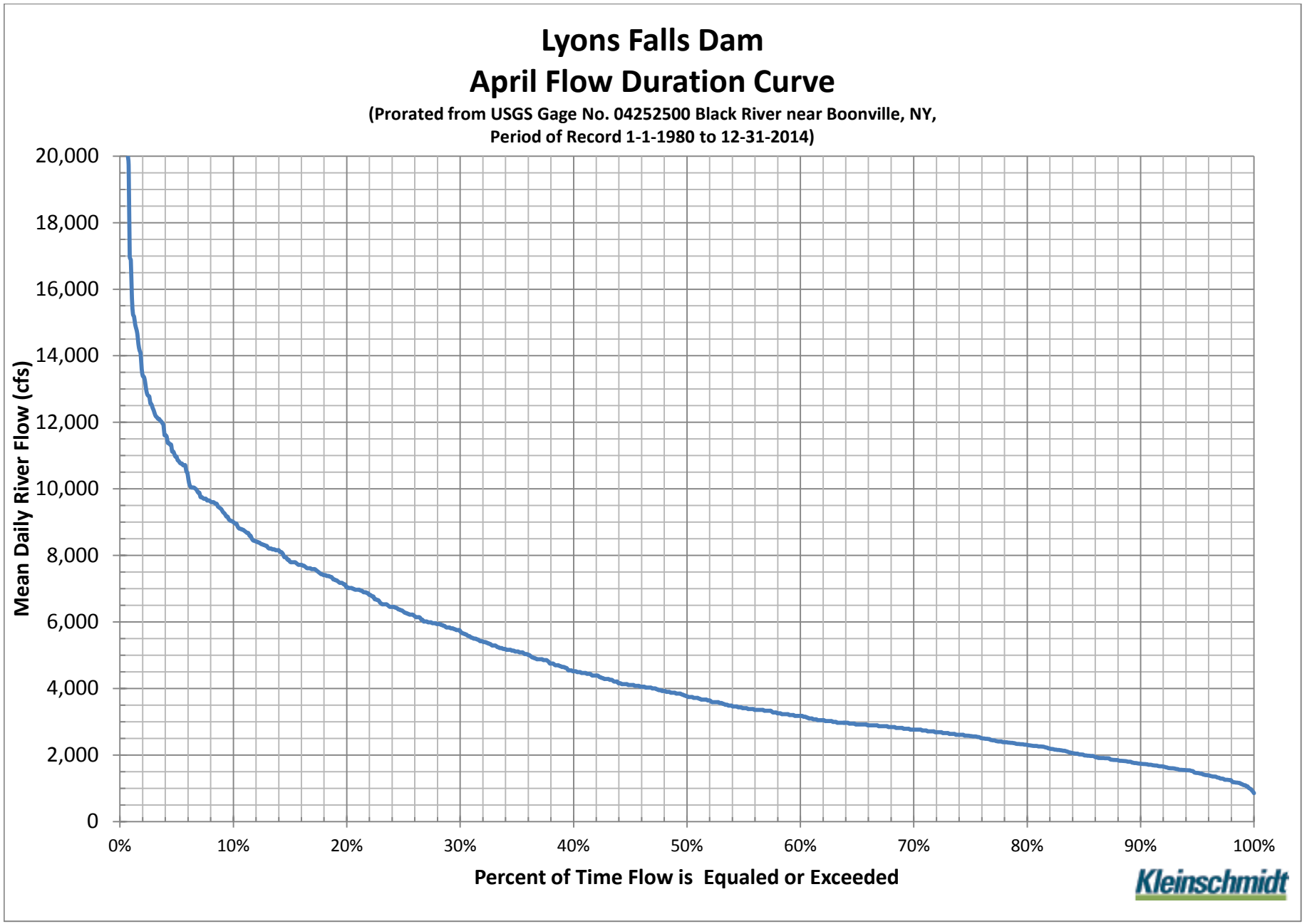
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY, Period of Record 1-1-1980 to 12-31-2014)

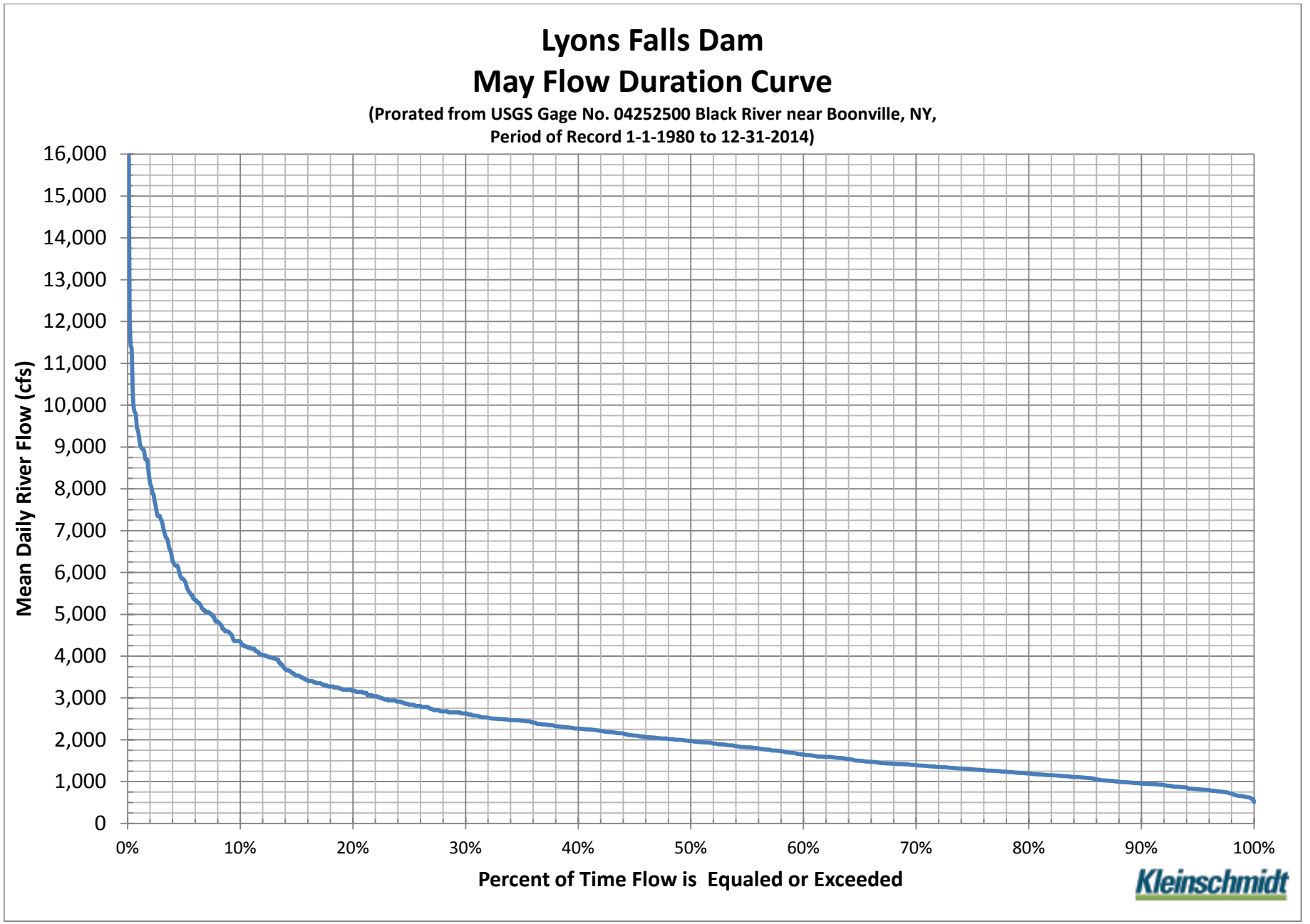


Kleinschmidt


Lyons Falls Dam
February Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

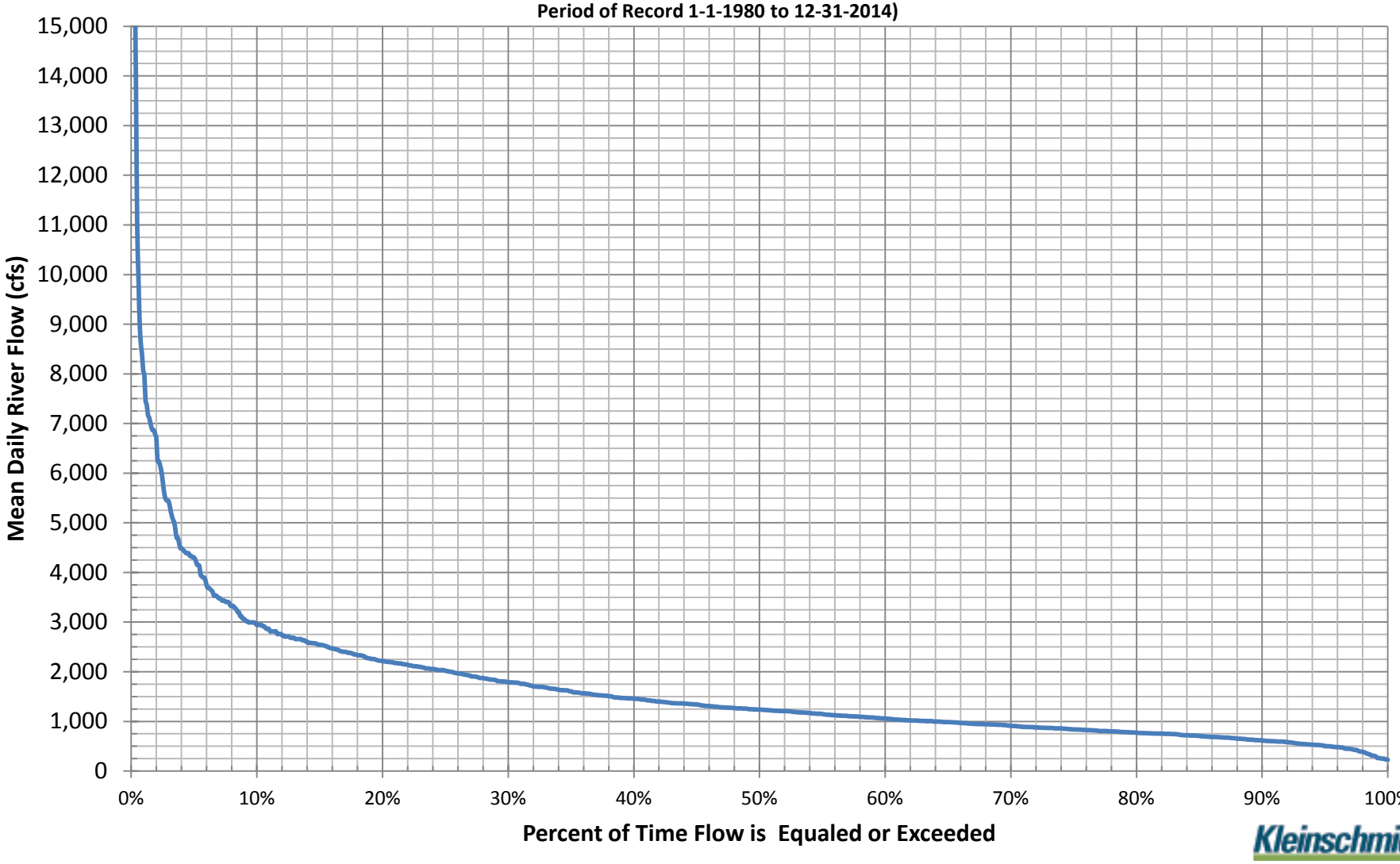

Lyons Falls Dam
March Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt


Lyons Falls Dam
April Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

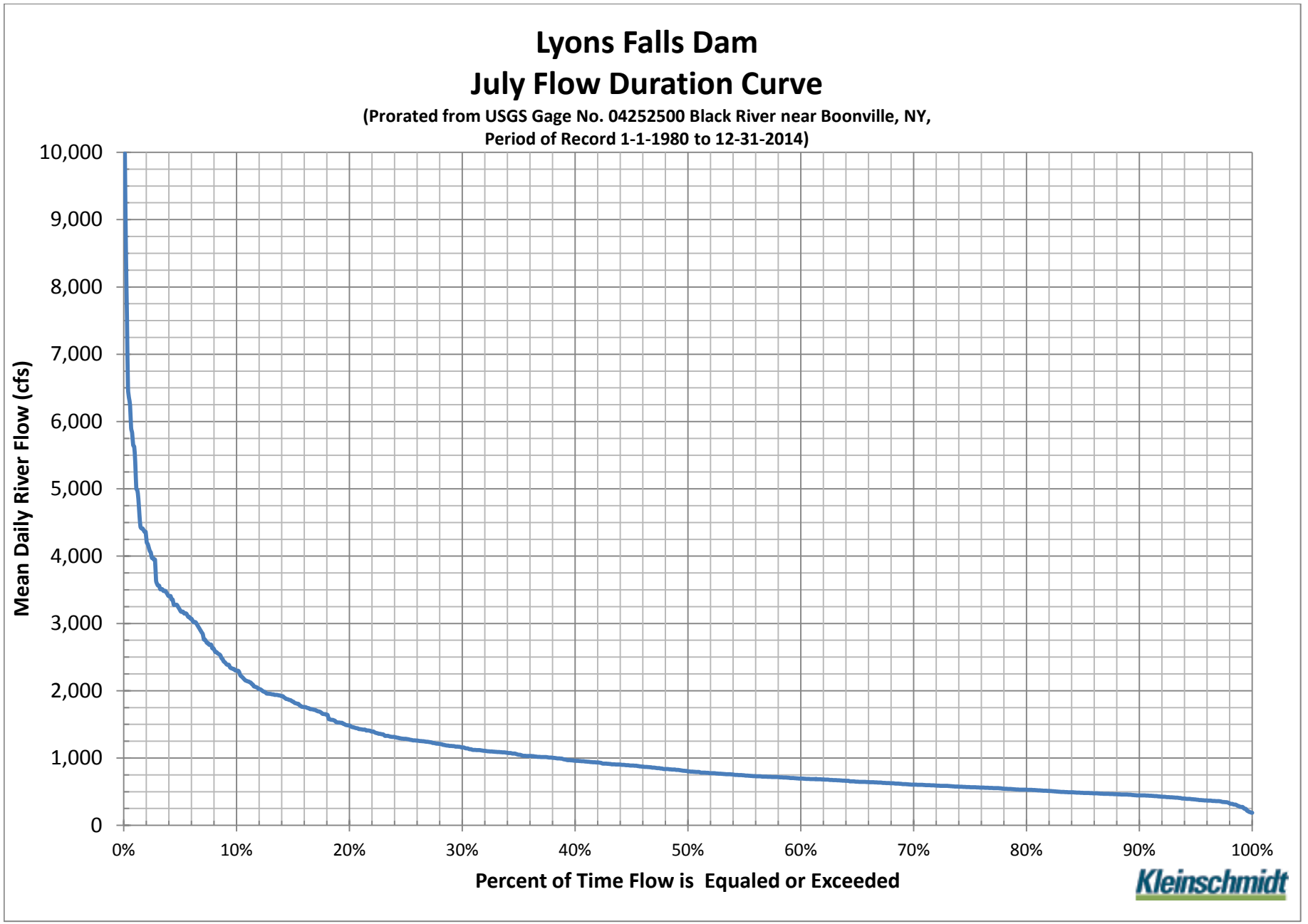

Lyons Falls Dam
May Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

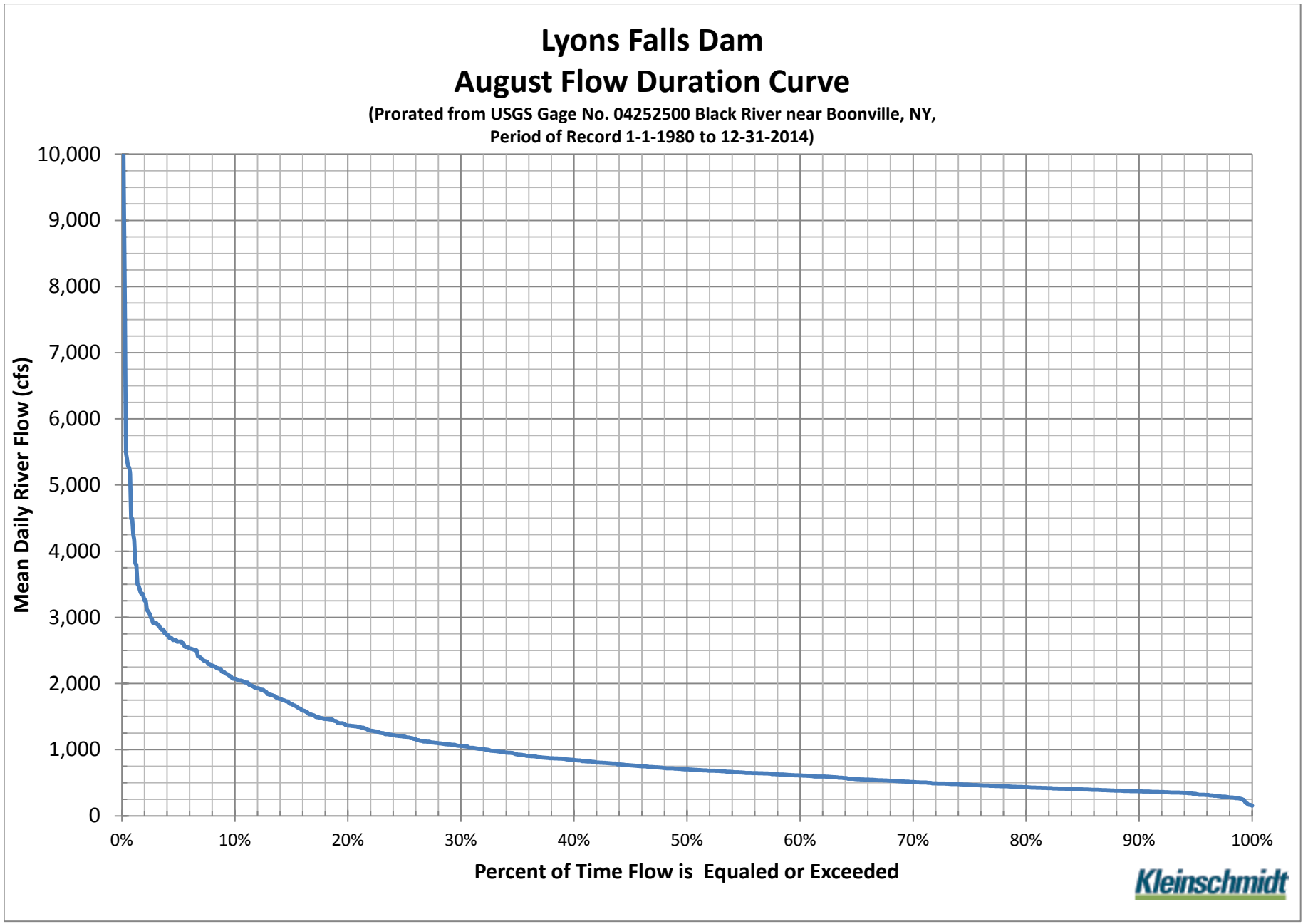
Lyons Falls Dam
June Flow Duration Curve

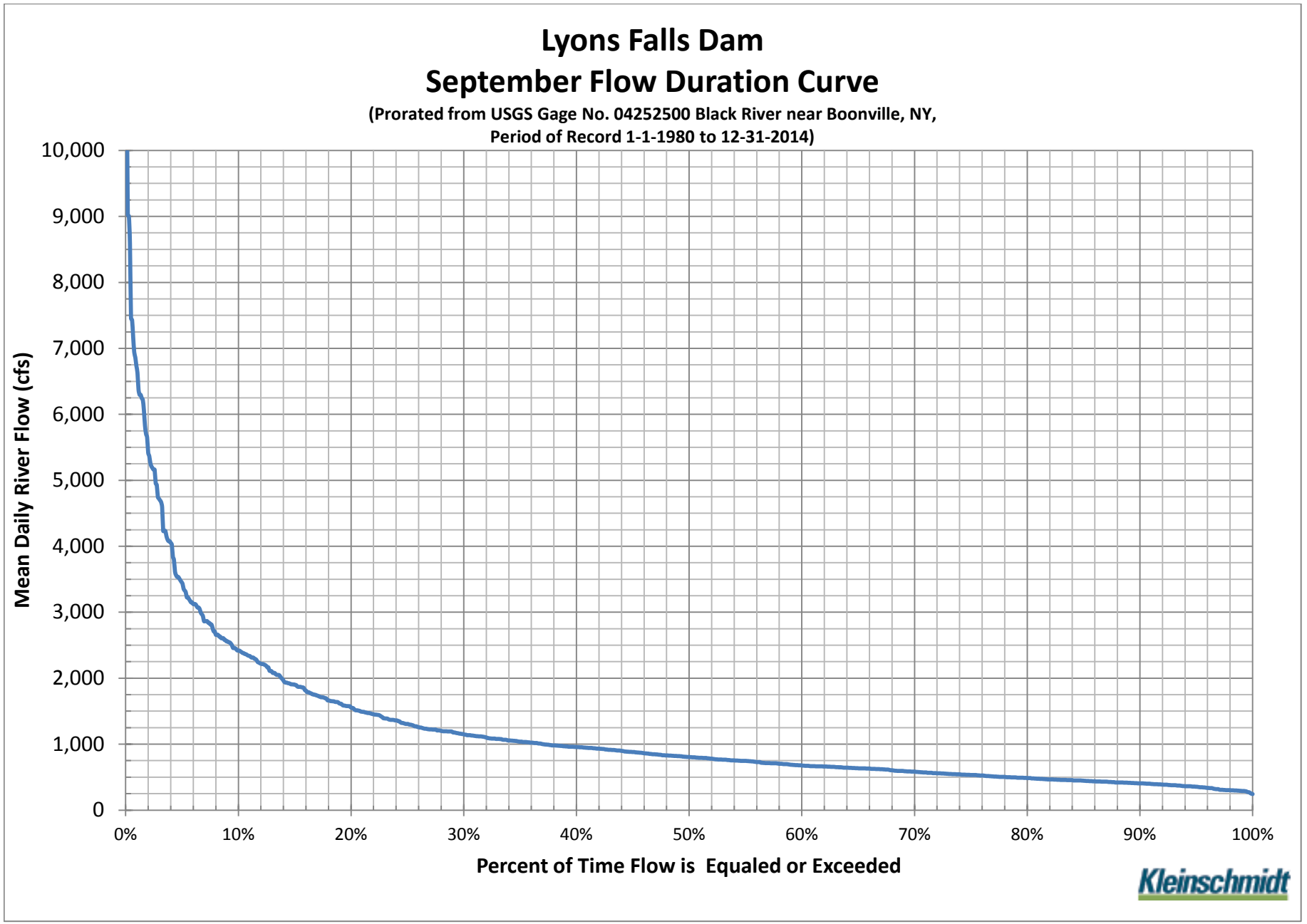
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY, Period of Record 1-1-1980 to 12-31-2014)



Kleinschmidt

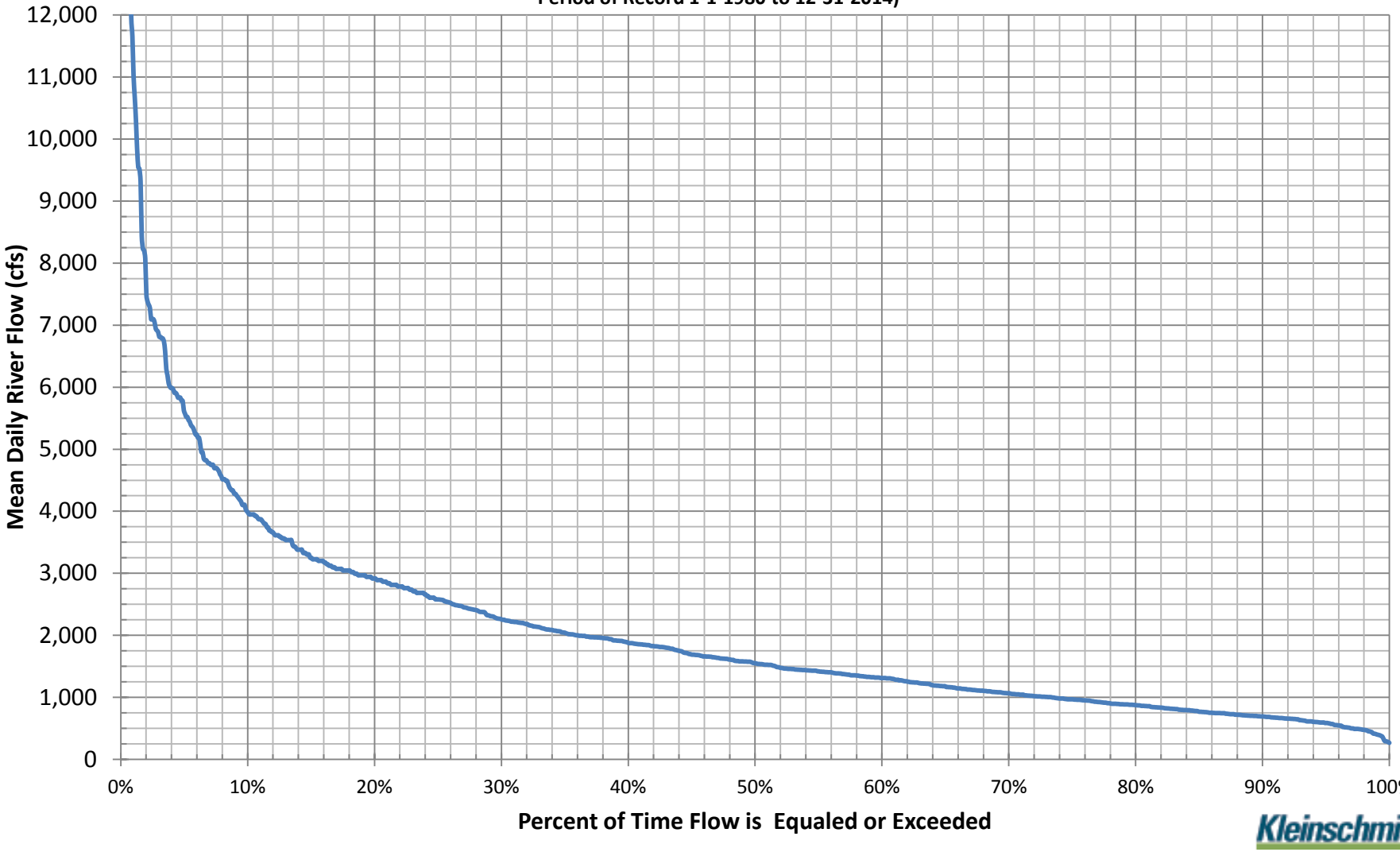

Lyons Falls Dam
July Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt


Lyons Falls Dam
August Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

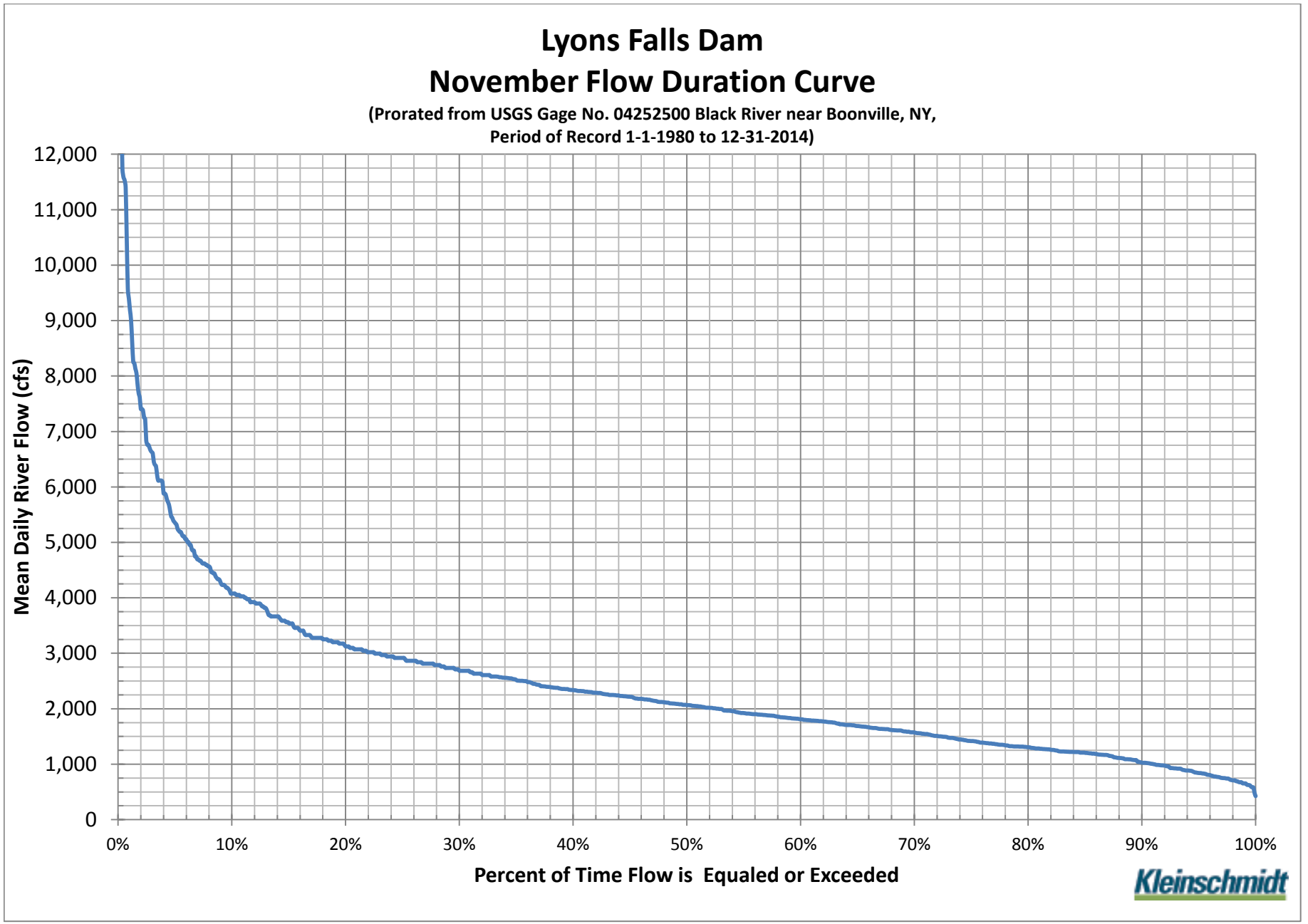

Lyons Falls Dam
September Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

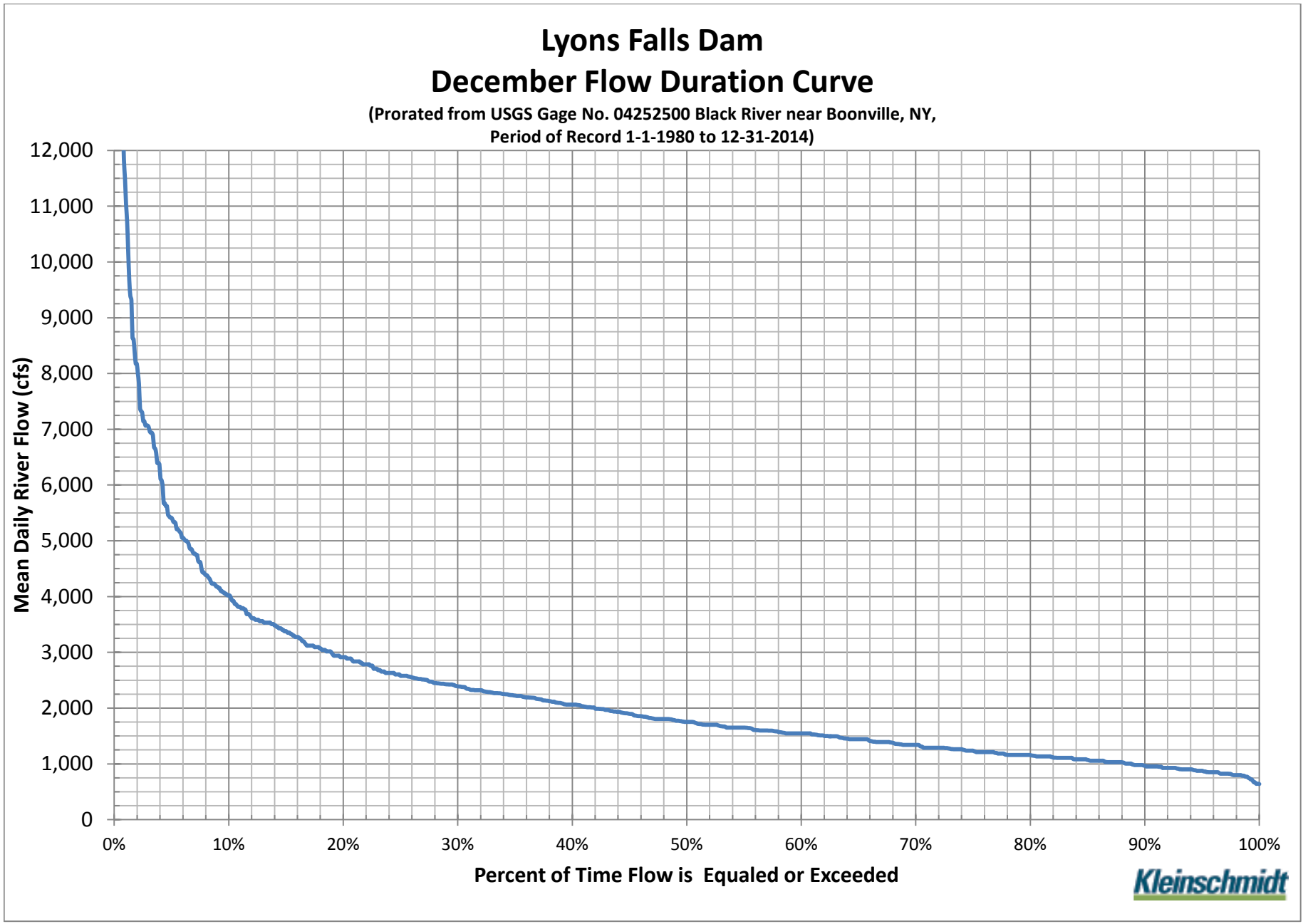
Lyons Falls Dam
October Flow Duration Curve

(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY, Period of Record 1-1-1980 to 12-31-2014)



Kleinschmidt


Lyons Falls Dam
November Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt


Lyons Falls Dam
December Flow Duration Curve
(Prorated from USGS Gage No. 04252500 Black River near Boonville, NY,
Period of Record 1-1-1980 to 12-31-2014)
Mean Daily River Flow (cfs)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Time Flow is Equaled or Exceeded
Kleinschmidt

APPENDIX D

IMPOUNDMENT SEDIMENT CHARACTERIZATION AND DEPTH

APPENDIX B
IMPOUNDMENT SEDIMENT CHARACTERIZATION AND DEPTH

In support of the upgrades proposed in 2006, NBLF conducted an evaluation to characterize accumulated sediment within the Lyons Falls Mill impoundment. NBLF evaluated the depth and composition of sediment with the use of a sediment probe and an underwater camera. NBLF established three longitudinal transects in the impoundment with a total of 18 sampling points, spaced at approximately 50 foot intervals (Figure B-1). Four sediment depth probes were made at each site for a total of 72 measurements. At each station, a sediment probe was firmly sunk though the loose sediment layers until solid contact with bedrock or hardpan was made. During each probe, an underwater camera was lowered to the impoundment bottom to visually assess dominant substrate type. Mean water depth in the impoundment during the survey was approximately 8 feet. In addition, an assessment of the physical dimensions of a small sediment wedge (directly behind dam) was conducted.

The results of the survey indicate that there is relatively little accumulated fine-grained sediment in the impoundment (Figure B-2). That which does exist is dominated by sand. The bulk of this material is located on river right, opposite of the existing powerhouses and the proposed location for redevelopment. In general, the impoundment is dominated by larger sized substrates (gravels and cobbles) that are not heavily embedded with fines. Average sediment depth in the impoundment is less than 0.5 foot (Table B-1). A small sediment wedge consisting primarily of gravels and sand exists along a portion of the upstream face of the dam. The approximate dimensions of the sediment wedge are 6 feet (width) by 3 feet (depth) by 100 feet (length along dam face). The proposed redevelopment of the site currently under consideration is not expected to cause mobilization of this sediment wedge, as no modifications to the dam are proposed.

The depth and composition of the existing substrates indicate that fine-grained sediment (silts) likely move through the turbines, surface sluice gates, or over the dam when water spills during high flows.

FIGURE B-1
LOCATION OF SUBSTRATE/SEDIMENT SAMPLE STATIONS IN THE LYONS FALLS IMPOUNDMENT

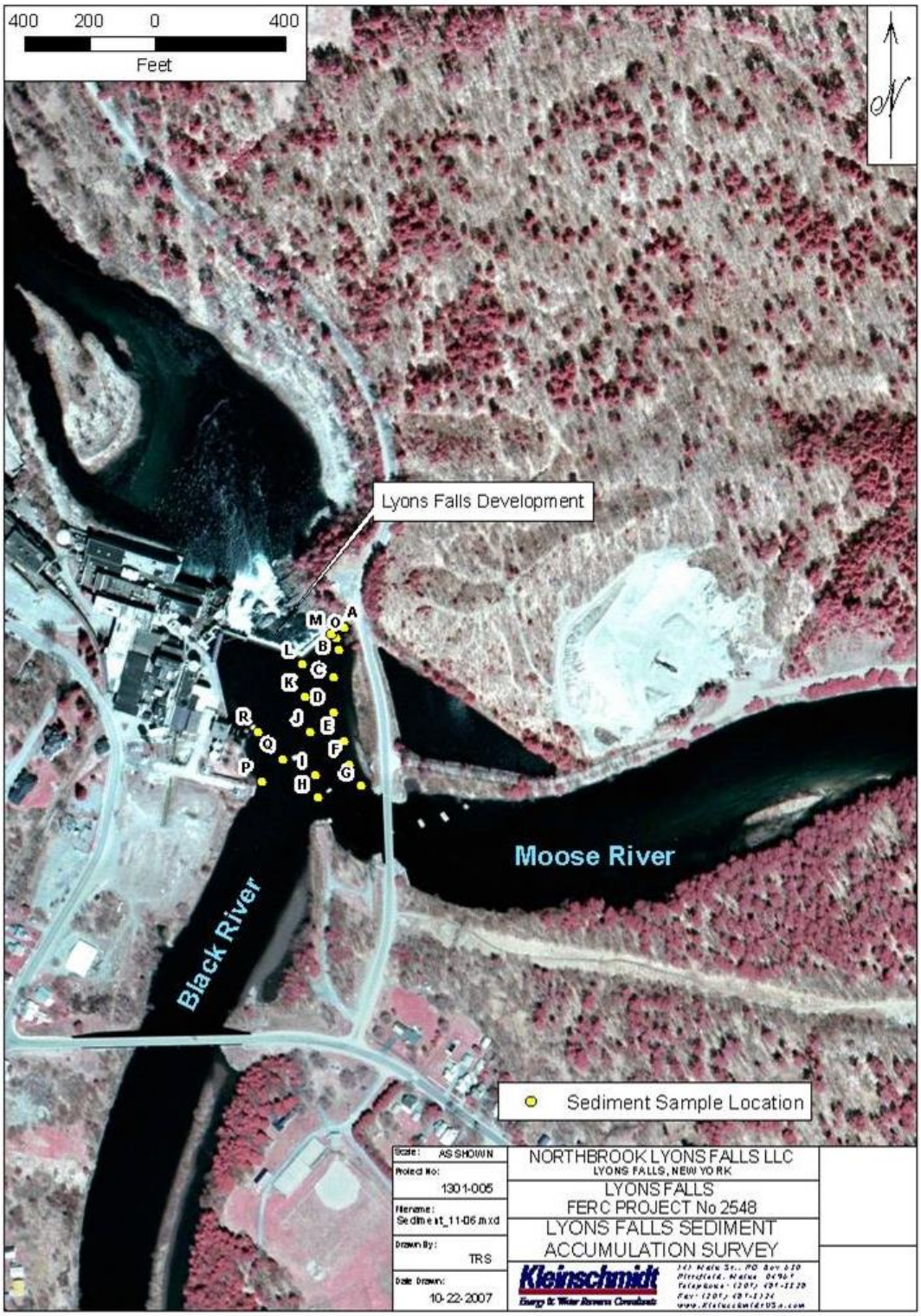


FIGURE B-2
PERCENT DOMINANT SUBSTRATE IN THE LYONS FALLS IMPOUNDMENT, LYONS FALLS, NEW YORK, NOVEMBER 2006

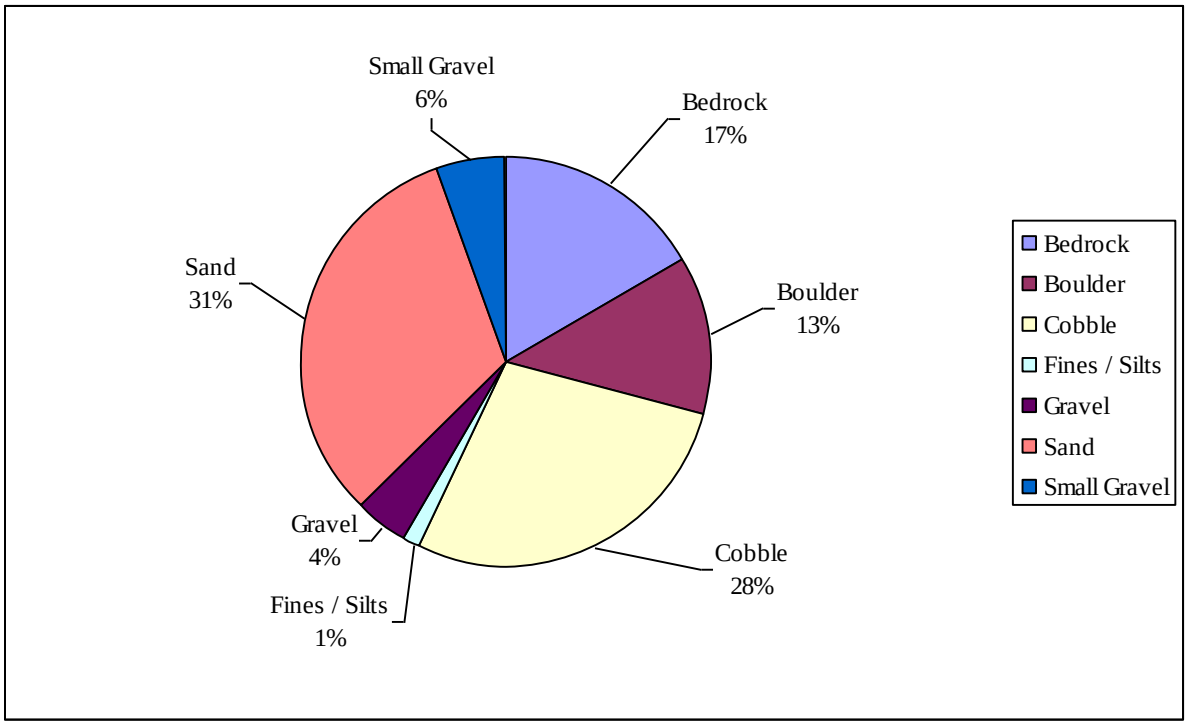


TABLE B-1
DOMINANT SUBSTRATE TYPE AND AVERAGE SEDIMENT DEPTH AT 18 IMPOUNDMENT SAMPLING STATIONS, LYONS FALLS MILL, LYONS FALLS, NEW YORK, NOVEMBER 2006

Sample Location	Mean Sediment Depth (feet)	Dominant Substrate
A	0.00	Cobble/Sand
B	1.15	Sand
C	0.88	Sand
D	1.15	Sand
E	0.76	Sand/Small Gravel
F	0.00	Gravel
G	0.00	Cobble
H	0.00	Cobble
I	0.00	Cobble
J	0.00	Boulder
K	0.00	Bedrock
L	0.00	Bedrock
M	0.00	Boulder
N	2.09	Sand
O	0.63	Mixed
P	0.21	Sand
Q	0.00	Bedrock
R	0.00	Boulder
Average Depth of Sediment:	**0.38 feet**	**Sand**

APPENDIX E

MACROINVERTEBRATE DATA

MACROINVERTEBRATE TAXA

Class	Order	Family	BMI TR1	BMI TR2	BMI TR3	BMI TR4	BMI TR5	BMI TR6	BMI BR1	BMI BR2	BMI MR1	BMI MR2	BMI IMP1	BMI IMP2
Hirudinea						3				4	6		3	2
Nematomorpha												1		
Oligochaeta			1			9	6		2	16	31	35	38	12
Arachnida	Hydracarina		1				1		3					
Copepoda						1					4			2
	Amphipoda	Gammaridae	1											
		Hyalellidae	1			2	2		29		1		3	
	Isopoda	Asellidae	1	1		2			7					
Gastropoda		Hydrobiidae								1	1			
		Lymnaecidae	1											
		Planorbidae	1			1					1			
		Physidae											1	
		Viviparidae												1
Bivalvia		Sphaeriidae	1			2				4	2			7
	Unionacea									1				
Insecta														
	Ephemeroptera	Baetiscidae			2		1		4					1
		Caenidae												1
		Ephemerellidae		2				2						
		Heptagenidae						18			1			
		Isonychiidae						8						
		Leptophlebiidae		8	26	7	9	8	4		4			1
		Polymitarcyidae											1	
		Siphlonuridae			5		15						13	5
		Tricorythidae	1	41	5		6		1	1	22	6	2	1
	Odonata	Aeshinidae						2						
		Coenagrionidare	1				3		10	2				
		Cordulegastridae								2				
		Gomphidae	1	1							1	1	1	
	Plecoptera	Capniidae	68	38	22	62	6	54					3	
		Chloroperlidae	2			2								
		Perlidae						2						
	Hemiptera	Belostomatidae								1				
		Corixidae			10		1		1	1				
		Gyrinidae			1									

Class	Order	Family	BMI TR1	BMI TR2	BMI TR3	BMI TR4	BMI TR5	BMI TR6	BMI BR1	BMI BR2	BMI MR1	BMI MR2	BMI IMP1	BMI IMP2
		Notonectidae			1									
	Megaloptera	Sialidae									1			
	Trichoptera	Hydropsychidae	1				1		2					
		Lepedostomatidae	1				4							
		Leptoceridae	1											
		Limnephilidae		6	22	2								10
		Philopotamidae								1				
		Phryganeidae					1	2	1		4		7	
		Polycentropodidae							4			4		
		Psychomyiidae	6											
		Rhyacophilidae						2					1	
	Coleoptera	Elmidae	3				1	2	3	10				1
		Haliplidae	1											
	Diptera	Ceratopogonidae				2	6			4	4	3	5	6
		Chironomidae	4	3	6	4	37		29	52	20	54	21	50
		Psychodidae	1											
		Sciomyzidae	1											
		Simuliidae	1											
		Tipulidae		1	1	1				1	1			
	Lepidoptera												1	
			101	101	101	100	100	100	100	101	104	104	100	100

APPENDIX F

FERC FORM 80 REPORT

Federal Energy Regulatory Commission (FERC)
FERC Form 80

Licensed Hydropower Development Recreation Report

Form Approved
OMB No. 1902-0106
Expires: 09/30/2016
Burden 3.0 hours

General Information:
This form collects data on recreation amenities at projects licensed by FERC under the Federal Power Act (16 USC 791a-825r). This form must be submitted by licensees of all projects except those specifically exempted under 18 CFR 8.11 (c). For regular, periodic filings, submit this form on or before April 1, 2015. Submit subsequent filings of this form on or before April 1, every 6th year thereafter (for example, 2021, 2027, etc.). For initial Form No. 80 filings (18CFR 8.11(b)), each licensee of an unconstructed project shall file an initial Form No. 80 after such project has been in operation for a full calendar year prior to the filing deadline. Each licensee of an existing (constructed) project shall file an initial Form No. 80 after such project has been licensed for a full calendar year prior to the filing deadline. Filing electronically is preferred. (See http://www.ferc.gov for more information.) If you cannot file electronically, submit an original and two copies of the form to the: Federal Energy Regulatory Commission, Office of the Secretary, 888 First St., NE, Washington, DC 20426.

The public burden estimated for this form is three hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the collection of information. Send comments regarding the burden estimate or any aspect of this collection of information, including suggestions for reducing burden, to: FERC via e-mail DataClearance@ferc.gov; or mail to 888 First Street NE, Washington, DC 20426 (Attention: Information Clearance Officer) and Office of Management and Budget (OMB), via e-mail to oira_submission@omb.eop.gov; or mail to OMB, Office of Information and Regulatory Affairs, Attention: Desk Officer for FERC, Washington, DC 20503. Include OMB Control Number 1902-0106 as a point of reference. No person shall be subject to any penalty for failing to comply with a collection of information if the collection of information does not display a valid control number (44 U.S.C. § 3512 (a)).

Instructions:
a. All data reported on this form must represent publicly available recreation amenities and services located within the project boundary.
b. To ensure a common understanding of terms, please refer to the Glossary on page 3.
c. Report actual data for each item. If actual data are unavailable, then please estimate.
d. Submit a completed form for each development at your project.

Schedule 1. General Data

1. Licensee Name: NORTHBROOK LYONS FALLS, LLC.
2. Project Name: LYONS FALLS
3. Project Number: 2548
4. Development Name: LYONS FALLS

Complete the following for each development if more than one.

8. Reservoir Surface Area at Normal Pool (acres): 130.00
9. Shoreline Miles at Normal Pool: 3.65
10. Percent of Shoreline Available for Public Use: 30.00

States Development/Project Traverses (List state with largest area within the development/project boundary first):

5. State #1: NY
6. State #2:

7. Type of Project License: (check one) Major _____ Minor _____

11. Data Collection Methods (enter percent for each method used; total must equal 100%):

_____ traffic count/trail count
_____ attendance records
80.00 staff observation
_____ visitor counts or surveys
20.00 estimate (explain) See Methodology

For 2014, enter only the licensee's annual recreational construction, operation, and maintenance costs for the development (project). Also, enter the annual recreational revenues for that year.

Item	Licensee's Annual Recreation Costs and Revenues (In Whole Dollars)	
	Construction, Operation and Maintenance Costs	Recreation Revenues for Calendar Year
12. Dollar Values	$667.00	$0.00

13. Length of Recreation Season: Summer: From (MM/DD) 5/30 To 9/30 Winter: From (MM/DD) 12/1 To 3/1

Period	Number of visits to all recreational areas at development/project (in Recreation Days)	
	Annual Total	Peak Weekend Average (see Glossary)
14. Daytime	1,500	20
15. Nighttime	45	8

Respondent Certification: The undersigned certifies that he/she examined this report; and to the best of his/her knowledge, all data provided herein are true, complete, and accurate.

Lewis Loon	Manager of Operation Maintenance	(207) 786-8834
Legal Name	Title	Area Code/Phone No.
		2014
Signature	Date Signed	Reporting Year Ending

Title 18 U.S.C.1001 makes it a crime for any person knowingly and willingly to make to any Agency or department of the United States any false, fictitious or fraudulent statement or misrepresentation as to any matter within its jurisdiction.

Schedule 2. Inventory of Publicly Available Recreation Amenities Within the Project Boundary

16. Enter data for each Recreation Amenity Type (a). For User Free (b) and User Fee (c) enter the number of publicly available recreation amenities, located within the project boundary, regardless of provider. For FERC Approved (d) enter the number of amenities identified under User Free (b) and User Fee (c) for which the licensee has an ongoing responsibility for funding or maintenance (see Glossary for further detail). For Capacity Utilization(f), of the total publicly available amenities (b) + (c), compare the average non-peak weekend use (see Glossary) for each recreation amenity type (during the recreation season, with the highest use, reported on Schedule 1, Item 13) with the total combined capacity of each amenity type and enter a percentage that indicates their overall level of use. For example, if all public boat launches are used to half capacity during the non-peak weekend days, enter 50% (should use exceed capacity for an amenity type, enter the appropriate percentage above 100).

Recreation Amenity Type (a)	Number of Recreation Amenities			Total Units (e)	Capacity Utilization (%) (f)
	User Free (b)	User Fee (c)	FERC Approved (d)		
Boat Launch Areas. Improved areas having one or more boat launch lanes (enter number in column e) and are usually marked with signs, have hardened surfaces, and typically have adjacent parking.	1			1 Lanes	10
Marinas. Facilities with more than 10 slips on project waters, which include one or more of the following: docking, fueling, repair and storage of boats; boat/equipment rental; or sell bait/food (see Glossary FERC approved).				N/A	
Whitewater Boating. Put-ins/Take-outs specifically designated for whitewater access.				N/A	
Portages. Sites designed for launching and taking out canoes/kayaks and the improved, designated, and maintained trails connecting such sites (enter length of trail in column e).	1		1	2,640 Feet	20
Tailwater Fishing. Platforms, walkways, or similar structures to facilitate below dam fishing.				N/A	
Reservoir Fishing. Platforms, walkways, or similar structures to facilitate fishing in the reservoir pool or feeder streams.				N/A	
Swim Areas. Sites providing swimming facilities (bath houses, designated swim areas, parking and sanitation facilities).				Acres	
Trails. Narrow tracks used for non-automobile recreation travel which are mapped and designated for specific use(s) such as hiking, biking, horseback riding, snowmobiling, or XC skiing (excludes portages, paths or accessible routes; See Glossary).				Miles	
Active Recreation Areas. Playground equipment, game courts/fields, golf/disc golf courses, jogging tracks, etc.				Acres	
Picnic Areas. Locations containing one or more picnic sites (each of which may include tables, grills, trash cans, and parking).	1		1	2 Sites	10
Overlooks/Vistas. Sites established to view scenery, wildlife, cultural resources, project features, or landscapes.	1			0 Acres	25
Visitor Centers. Buildings where the public can gather information about the development/project, its operation, nearby historic, natural, cultural, recreational resources, and other items of interest.				N/A	
Interpretive Displays. Signage/Kiosks/Billboards which provide information about the development/project, its operation, nearby historic, natural, cultural, recreational resources, and other items of interest.				N/A	N/A
Hunting Areas. Lands open to the general public for hunting.				Acres	
Winter Areas. Locations providing opportunities for skiing, sledding, curling, ice skating, or other winter activities.				Acres	
Campgrounds. Hardened areas developed to cluster campers (may include sites for tents, trailers, recreational vehicles [RV], yurts, cabins, or a combination, but excludes group camps).				Acres	N/A
Campsites. Sites for tents, trailers, recreational vehicles [RV], yurts, cabins, or a combination of temporary uses.				N/A	
Cottage Sites. Permanent, all-weather, buildings rented for short-term use, by the public, for recreational purposes.				N/A	
Group Camps. Areas equipped to accommodate large groups of campers that are open to the general public (may be operated by public, private, or non-profit organizations).				Sites	
Dispersed Camping Areas. Places visitors are allowed to camp outside of a developed campground (enter number of sites in clmn. e).				Sites	
Informal Use Areas. Well used locations which typically do not include amenities, but require operation and maintenance and/or public safety responsibilities					
Access Points. Well-used sites (not accounted for elsewhere on this form) for visitors entering project lands or waters, without trespassing, for recreational purposes (may have limited development such as parking, restrooms, signage).	2			N/A	25
Other. Amenities that do not fit in the categories identified above. Please specify (if more than one, separate by commas):					

Glossary of FERC Form 80 Terms

Data Collection Methods. (Schedule 1, Item 11) – If a percentage is entered for the estimate alternative, please provide an explanation of the methods used (if submitted on a separate piece of paper, please include licensee name, project number, and development name)

Development. The portion of a project which includes:
(a) a reservoir; or
(b) a generating station and its specifically-related waterways.

Exemption from Filing. Exemption from the filing of this form granted upon Commission approval of an application by a licensee pursuant to the provisions of 18 CFR 8.11(c).

General Public. Those persons who do not have special privileges to use the shoreline for recreational purposes, such as waterfront property ownership, water-privileged community rights, or renters with such privileges.

Licensee. Any person, state, or municipality licensed under the provisions of Section 4 of the Federal Power Act, and any assignee or successor in interest. For the purposes of this form, the terms licensee, owner, and respondent are interchangeable *except where:*
(a) the *owner* or licensee is a subsidiary of a parent company which has been or is required to file this form; or
(b) there is more than one owner or licensee, of whom only one is responsible for filing this form. Enter the name of the entity that is responsible for filing this report in Schedule 1, Item 2.1.

Major License. A license for a project of more than 1,500 kilowatts installed capacity.

Minor License. A license for a project of 1,500 kilowatts or less installed capacity.

Non-Peak Weekend. Any weekend that is not a holiday and thus reflects more typical use during the recreation season.

Number of Recreation Amenities. Quantifies the availability of natural or man-made property or facilities for a given recreation amenity type. This includes all recreation resources available to the public within the development/project boundary. The resources are broken into the following categories:

User Free (Schedule 2, column b) - Those amenities within the development/project that are free to the public;

User Fee (Schedule 2, column c) - Those amenities within the development/project where the licensee/facility operator charges a fee;

FERC Approved (Schedule 2, column d) – Those amenities within the development/project required by the Commission in a license or license amendment document, including an approved recreation plan or report. Recreation amenities that are within the project boundary, but were approved by the licensee through the standard land use article or by the Commission through an application for non-project use of project lands and waters, are typically not counted as FERC approved, unless they are available to the public, but may be counted as either user free or user fee resources. The total FERC approved amenities column does not necessarily have to equal the sum of user free and user fee amenities.

Peak Use Weekend. Weekends when recreational use is at its peak for the season (typically Memorial Day, July 4th & Labor Day). On these weekends, recreational use may exceed the capacity of the area to handle such use. Include use for all three days in the holiday weekends when calculating Peak Weekend Average for items 14 & 15 on Schedule 1.

Recreation Day. Each visit by a person to a development (as defined above) for recreational purposes during any portion of a 24-hour period.

Revenues. Income generated from recreation amenities at a given project/development during the previous calendar year. Includes fees for access or use of area.

Total Units (Schedule 2, column e) – Provide the total length, or area, or number that is appropriate for each amenity type using the metric provided.

Trails. Narrow tracks used for non-automobile recreation travel which are mapped and designated for specific use(s) such as hiking, biking, horseback riding, snowmobiling, or XC skiing. Trails are recreation amenities which provide the opportunity to engage in recreational pursuits, unlike paths (means of egress whose primary purpose is linking recreation amenities at a facility) or accessible routes (means of egress which meets the needs of persons with disability and links accessible recreation amenities and infrastructure at a facility).