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February 28, 2017

Ms. Kimberly D. Bose, Secretary
Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: Pre-Application Document
Notice of Intent
Request to Use Traditional Licensing Process
Normanskill Project (FERC No. 2955)
Watervliet, Albany County, New York

Dear Secretary Bose:

The City of Watervliet is preparing to relicense the Normanskill Project with the Federal Energy Regulatory Commission (FERC or Commission). The hydroelectric project is located on Normans Kill in the Town of Guilderland, Albany County, New York. The FERC license will expire on February 28, 2022. In accordance with the Commission's regulations, the City of Watervliet hereby commences the relicensing process by filing its Notice of Intent (NOI) to file an application for new license and Pre-Application Document (PAD) for the Project. Pursuant to Section 5.3 of the Commission's regulations, 18 CFR § 5.3, the City of Watervliet is seeking approval to use the Traditional Licensing Process (TLP) for this Project.

In accordance with Section 5.5 of the Commission's regulations, the City of Watervliet is filing the following documents related to Normanskill Hydroelectric Project (FERC No. 2955) to the FERC.

- Notice of Intent to relicense the Normanskill Hydroelectric Project
- Request to Use Traditional Licensing Process
- Pre-Application Document

Relevant Federal and state resource agencies, Indian tribes, non-governmental organizations, and other potentially interested parties will be notified of the FERC submission and may access the documents through the FERC eLibrary (<http://elibrary.ferc.gov>) or be provided with copies upon request. All materials related to this NOI and PAD are also available for inspection at the City of Watervliet during regular business hours located at:

City Hall
2 Fifteenth Street
Watervliet, NY 12189

As required by 18 CFR § 5.3(d)(1), any comments regarding the request to use the TLP must be filed with the Commission within 30 days of this filing and must reference FERC Project No. 2955.

Some of the information presented in the PAD 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 the PAD. In accordance with the Commission's filing guidelines, all CEII is included in a separate volume (Volume 2) that has been clearly labeled as CEII. The City of Watervliet 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)).

If you have any questions or comments regarding the NOI, PAD, or any information provided by the City of Watervliet, please contact me at 518-407-0050 or via email at mstottler@gomezandsullivan.com.

Regards,



Michele E. Stottler, P.E.
Senior Water Resources Engineer
Gomez and Sullivan Engineers, DPC
399 Albany Shaker Road, Suite 203
Loudonville, NY 12211

cc: Jeremy Smith, City of Watervliet
Stakeholder Mailing List

Certificate of Service

I hereby certify that I caused to be served, by U.S. First Class Mail or by electronic mail, the Notice of Intent to File Application for a New License upon all interested parties designated on the attached distribution list for the Normanskill Project, FERC Project No. 2955, in accordance with Rule 2010 of the Rules of Practice and Procedure, 18 CFR § 385.2010.

Dated this 28th day of February 2017.



Jeremy Smith
Acting General Manager
City of Watervliet

**Normanskill Hydroelectric Licensing
FERC Project No. 2955**

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Onondaga Nation of New York
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Nedrow, NY 13120

Seneca Nation of Indians
12837 Route 438
Cattaraugus Territory
Irving, NY 14081

Tuscarora Nation of New York
2006 Mt. Hope Road
Lewiston, NY 14092

National Marine Fisheries Service
Northeast Regional Office
1 Blackburn Drive
Gloucester, MA 1930

Town Clerk
Town of East Greenbush
225 Columbia Turnpike
Rensselaer, NY 12144

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Normanskill Project

FERC Project No. 2955

**NOTICE OF INTENT TO FILE APPLICATION FOR NEW LICENSE FOR THE
NORMANSKILL PROJECT**

Pursuant to 18 CFR § 5.5, the City of Watervliet hereby notifies the Federal Energy Regulatory Commission of its intention to file an application for a new license for the Normanskill Project (FERC No. 2955) as described below:

1. Licensee's name and address:

City of Watervliet
2 Fifteenth Street
Watervliet, NY 12189

2. Project number:

Normanskill Project: FERC No. 2955

3. License expiration date:

The license expiration date is February 28, 2022.

4. Statement of Intent

The City of Watervliet intends to file an application for a new license for the Normanskill Project utilizing the Commission's Traditional Licensing Process (TLP). (The request and justification to use the TLP is being filed with the Commission concurrently with this Notice of Intent.)

5. Type of Principal Project Works to be Licensed

The Normanskill Project consists of: a reinforced concrete Ambursen-type dam (about 380-ft long and 40-ft high with an overflow section approximately 306-ft long; crest elevation of 295.0 feet NGVD29) surmounted by 3-ft flashboards; intake structure and sluiceway; a 900-ft long, 7-ft diameter concrete-encased steel buried penstock; a reinforced concrete underground powerhouse containing one tube-type 1,250-kW generating unit; an underground control building located on the left (north) bank, which is connected to the powerhouse by a tunnel; a 600-ft long 2.4-kV transmission line; a 2.4/13.2-kV transformer bank; and appurtenant facilities.

6. Location of Project

The location of the project is as follows:

State: New York
County: Albany
Nearby Community: Town of Guilderland
Stream: Normans Kill

7. Installed Plant Capacity

The Normanskill Project has an installed capacity of 1,250 kW.

8. Names and Mailing Address

- (i) Every county in which any part of the project is located; and in which any federal facility that is used by the project is located:

Albany County
Harold L. Joyce Albany County Office Building
112 State Street, Room 900
Albany, NY 12207

- (ii) Every city, town, or similar local political subdivision:

- (a) In which any part of the project is located, and in which any federal facility that is used by the project is located.

Town of Guilderland
Guilderland Town Hall – 2nd Floor
5209 Western Turnpike
PO BOX 339
Guilderland, NY 12084

- (b) That has a population of 5,000 or more people and is located within 15 miles of the existing proposed project dam:

City of Albany
24 Eagle Street, Room 200
Albany, NY 12207

City of Cohoes
97 Mohawk Street
Cohoes, NY 12047

Town of Bethlehem
445 Delaware Avenue, Room
112
Delmar, NY 12054

Town of Colonie
PO BOX 508
Newtonville, NY 12128

Clifton Park
One Town Hall Plaza
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Village of Colonie
2 Thunder Road
Albany, NY 12205

Town of Duanesburg
5853 Western Turnpike
Duanesburg, NY 12056

Town of Rotterdam
1100 Sunrise Boulevard
Rotterdam, NY 12306

Town of East Greenbush
225 Columbia Turnpike
Rensselaer, NY 12144
Town of Halfmoon
2 Halfmoon Town Plaza
Halfmoon, NY 12065

City of Schenectady
105 Jay Street, Room 111
Schenectady, NY 12305

Village of Scotia
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Town of New Scotland
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City of Troy
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Town of Niskayuna
One Niskayuna Circle
Niskayuna, NY 12309

Town of Waterford
65 Broad Street
Waterford, NY 12188

City of Rensselaer
62 Washington Street
Rensselaer, NY 12144

(iii) Every irrigation district, drainage district, or similar special purpose political subdivision:

(a) In which any part of the project is or is proposed to be located and any Federal facility that is or is proposed to be used by the project is located;

None identified.

(b) That owns, operates, maintains, or uses any project facility or any Federal facility that is or is proposed to be used by the project:

None identified.

(iv) Every other political subdivision in the general area of the project or proposed project that there is reason to believe would likely be interested in, or affected by, the notification:

None identified.

(v) Potentially affected Indian tribes:

Cayuga Nation of New York
2540 State Route 89
PO Box 803
Seneca Falls, NY 13148

Delaware Nation
PO Box 825
Anadarko, OK 73005

Delaware Tribe of Indians
5100 Tuxedo Blvd
Bartlesville, OK 74006

Mohawk Nation Council of Chiefs
PO Box 336
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Oneida Nation of New York
5218 Patrick Road
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Seneca Nation of Indians
12837 Route 438
Cattaraugus Territory
Irving, NY 14081

Tuscarora Nation of New York
2006 Mt. Hope Road
Lewiston, NY 14092

REQUEST TO USE THE TRADITIONAL LICENSING PROCESS

The City of Watervliet currently holds a license to operate and maintain the Normanskill Project (FERC No. 2955) located on the Normans Kill in Albany County, NY. The current license for the Normanskill Project, which was issued by the Federal Energy Regulatory Commission (FERC), expires on February 28, 2022. In order to receive a New License from the FERC, the City of Watervliet must submit its License Application for the facility to the FERC no later than February 28, 2020. The City of Watervliet requests to use the FERC Traditional Licensing Process for the Normanskill Project. Justification for this request as required by 18 CFR § 5.3 is provided below. Any comments on the City of Watervliet’s request to use the TLP must be filed with the Commission within 30 days of the filing date of the request. The U.S. Fish and Wildlife Service and New York State Department of Environmental Conservation have indicated support for the use of the TLP for this relicensing effort.

1. Likelihood of a Timely Issuance

By definition, the ILP is an intensive, front-loaded process that involves scoping under the National Environmental Policy Act (NEPA), study plan development, dispute resolution, study plan implementation, and application development. The City of Watervliet believes that early coordination and consultation with the various resource agencies and stakeholders, the more flexible TLP would allow the City of Watervliet to complete pre-filing requirements and ultimately file its subsequent license application in a timely manner.

For a collaborative process to proceed, it must be provided flexibility in terms of timing. The strict timeframes of the ILP do not provide the necessary flexibility to foster such a collaborative effort. In contrast, the flexibility provided by the TLP will provide all parties more time to address these issues, rather than requiring FERC to resolve these issues via potentially protracted and contentious litigation.

2. Complexity of Resource Issues and Level of Anticipated Controversy

The City of Watervliet currently operates the 1,250-kW Normanskill Project as a storage and release facility, built at a water supply reservoir. The facility is on a small river, at a location where no anadromous species are present. Most Project features developed for hydropower generation are underground. Hydropower is only generated from surplus water after water supply needs are satisfied, and water surface elevations of the impoundment do not vary considerably. Given that the primary use of water at the Project is for water supply, flows and impoundment elevations affecting resources are linked most strongly to water supply, rather than hydropower. The resource issues relating to impacts of the hydropower components of the facility are therefore expected to be limited. While the licensing participants will thoroughly study and examine issues, the City of Watervliet expects that its efforts to collaboratively scope and conduct studies will ultimately form the basis of a potential settlement agreement resolution.

Overall, the flexibility provided by the TLP better facilitates the necessary collaborative process that will need to occur between and among the resource agencies, interested parties, and the City of Watervliet to address these issues during the licensing process.

3. Relative Cost of the TLP Compared to the Integrated Process

The City of Watervliet believes that issues are best addressed through a collaborative process involving the resource agencies, the City of Watervliet, and other interested parties, rather than costly and extensive litigation. The City of Watervliet anticipates that utilizing the TLP will be more economical than the ILP. Due to the resource agencies' familiarity with the TLP and City of Watervliet's commitment to enhanced consultation, the City of Watervliet is confident that under the TLP, it will provide FERC with a Final License Application at less cost and in less time than required by the ILP. Factors contributing to this conclusion include: (a) the flexible nature and timeliness of the TLP would allow the City of Watervliet to work with the resource agencies and interested parties to develop information needed to resolve issues; (b) this same flexibility will likely foster consensus-building and settlement or other mutually acceptable resolution of disputed issues; (c) a reduced, or potential lack of, need for Commission Staff involvement in the pre-filing stage; (d) the City of Watervliet, agencies and interested parties could focus their effort on seeking substantive agreements and resolution of the issues and avoid the costs and other resource commitments needed to file comments and undertake other actions needed to comply with the regimented nature of the ILP; (e) by working collaboratively instead of adhering to rigid deadlines, the City of Watervliet, resource agencies and interested parties should be able to focus the issues and scope studies accordingly; and (f) because of their familiarity with the issues and the TLP, as well as the flexibility provided by the TLP, the resource agencies and interested parties would be able to reduce their overall costs of participating in the licensing process.

4. Amount of Available Information

There is significant amount of background data available on the Normans Kill and Project Area, both upstream and downstream of the Project, such that most major issues and data gaps relating to the Project can be identified. The TLP will allow interested parties to understand the breadth, nature, and content of this information, which should lead to agreements to narrow the issues and the scope of studies to be undertaken.

5. Other Pertinent Facts

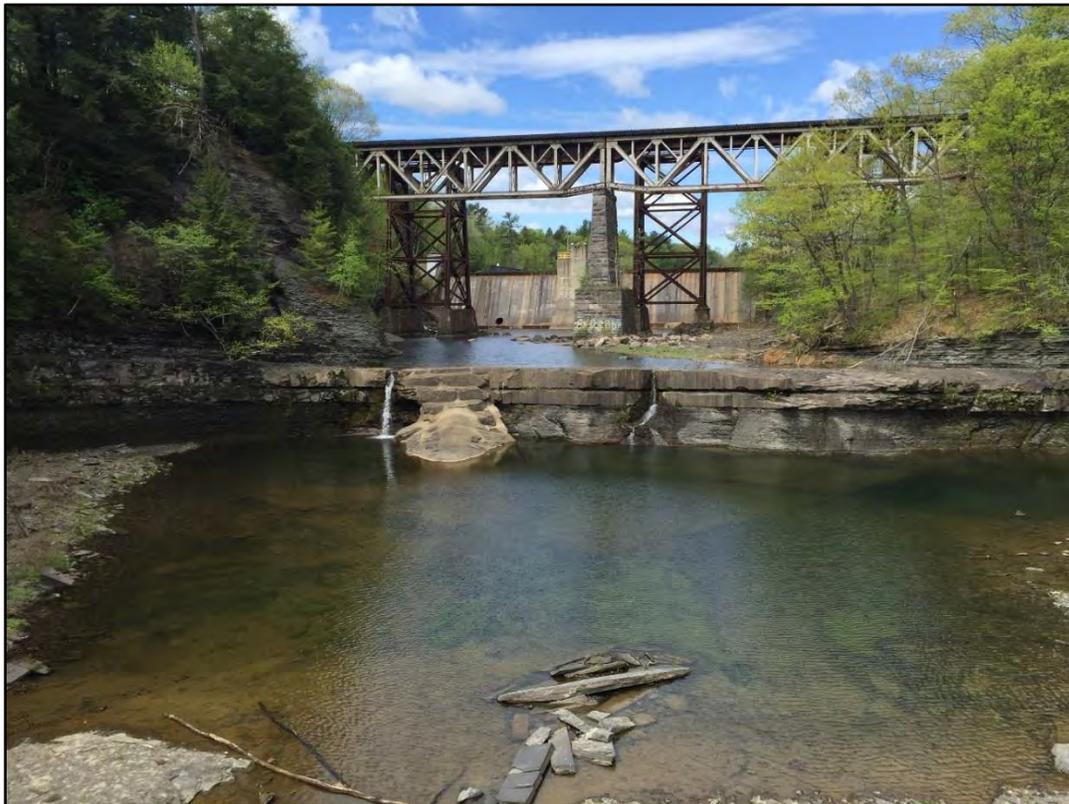
The City is a municipality with limited resources and will need to issue bonds to finance relicensing. Use of the TLP will aid the City in controlling and scheduling relicensing costs. Supporting The City's request to use the TLP will not infringe on the ability for resource agencies, interested parties, or the public to provide comments on the Project, or on their ability to have their comments addressed during the licensing process.

PRE-APPLICATION DOCUMENT

VOLUME 1 OF 2: PUBLIC

NORMANSKILL PROJECT

FERC NO. 2955



prepared by



for



CITY OF WATERVLIET

February 28, 2017

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LIST OF ABBREVIATIONS

°C	Degrees Celsius
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
City	City of Watervliet
DO	Dissolved Oxygen
Licensee	City of Watervliet
EST	Environmental Study Team
EPA	United States Environmental Protection Agency
FERC or Commission	Federal Energy Regulatory Commission
FPA	Federal Power Act
ft	Feet
GIS	Geographic Information System
kV	Kilovolt
kVA	Kilovolt-amp
LCI	Lake Classification and Inventory Survey
m	Meter
mg/L	Milligrams per Liter
mm	Millimeter
MW	Megawatt
MWh	Megawatt-hour
NGVD29	National Geodetic Vertical Datum of 1929
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units

NWI	National Wetlands Inventory
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYS DOT	New York State Department of Transportation
OPRHP	New York State Office of Parks, Recreation, and Historic Preservation
PAD	Pre-Application Document
Project	Normanskill Project
SD1	Scoping Document 1
SHPO	State Historic Preservation Office
Reservoir	Watervliet Reservoir
TLP	Traditional Licensing Process
TOC	Total Organic Carbon
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds
WQC	401 Water Quality Certification

1 INTRODUCTION

The City of Watervliet (The City or the Licensee) owns and operates the Normanskill Project (the Project) located on the Normans Kill in Albany County in Guilderland, New York. On March 5, 1982, the Federal Energy Regulatory Commission (FERC or the Commission) issued a 40-year license for the Project, which expires on February 28, 2022. The City is filing with the Commission a Notice of Intent (NOI) and Pre-Application Document (PAD) to relicense the Normanskill Project.

The 1,250 kW Project consists of: 1) a reinforced concrete Ambursen-type dam, approximately 380-ft long and averaging 33 feet high with an overflow section approximately 306 feet long and a crest elevation of 259.0 feet¹, surmounted by 3-ft flashboards; 2) a 430-acre reservoir; 3) an intake structure and sluiceway; 4) a 900-ft long, 6-ft diameter concrete-encased steel buried penstock; 5) a reinforced concrete underground powerhouse containing one tube-type generating unit; 6) an underground control building located on the left (north) bank, which is connected to the powerhouse by a tunnel; 7) a 600-ft long 2.4-kV transmission line; 8) a 2.4/13.2-kV transformer bank; and 9) appurtenant facilities.

The filing of the NOI and PAD commences the formal relicensing process for the Project. The PAD is a tool for providing engineering, operational, socioeconomic, and environmental information pertaining to the Project that is reasonably available at the time the NOI is filed. The PAD supplies information to help identify and evaluate potential impacts to resources within the Project Area resulting from continued Project operation.

In developing this PAD, The City compiled an initial list of stakeholders with a potential interest in the Project relicensing proceeding ([Appendix A](#)). In compliance with the Commission's regulations governing the content of the PAD, The City contacted appropriate state and federal resource agencies, Indian tribes, and interested public parties who may be concerned with any potential Project impact on the Normans Kill. The City requested that all parties provide any relevant studies, data, and information on topics such as water quality, fisheries, recreation, wildlife, wetlands, aesthetic, and cultural resources. [Appendix B](#) contains a letter and questionnaire sent to potentially interested stakeholders requesting that information on the Project be provided for incorporation in the PAD, as well as the responses received.

Accompanying this NOI and PAD is The City's request to use FERC's Traditional Licensing Process (TLP). As set forth in 18 CFR §5.8, the Commission will issue a public notice and comment on the NOI, PAD, and TLP request within 60 days of the PAD filing date.

¹ All elevations reported herein are relative to the National Geodetic Vertical Datum of 1929 (NGVD29), commonly referred to in older documents as the USGS Datum.

2 PROCESS PLAN AND SCHEDULE (18 CFR §5.6 (D)(1))

2.1 Traditional Licensing Process Schedule

On February 28, 2017, the Licensee filed this PAD and the NOI to seek a new license for the Normanskill Project. Pursuant to 18 CFR §5.3, 5.5 and 5.6, the filing of the NOI and PAD commences the relicensing process and sets the schedule for further licensing activities.

Concurrent with the filing of this PAD, and in accordance with Section 5.3 of the Commission's regulations, 18 CFR § 5.3, The City is seeking approval from the Commission to use the TLP in lieu of the Integrated Licensing Process (ILP) to license the Project. In the event the Commission approves this request, and as set forth in 18 CFR § 4.38(b)(3)(ii)(A), a joint meeting, with an opportunity for a site visit, must be held no earlier than 30 days, but no later than 60 days, following the date the Commission authorizes the use of the TLP (see [Table 2.1-1](#)). The site visit will provide stakeholders an opportunity to see the layout of the hydroelectric facility, understand the existing conditions, and participate in a question-and-answer session with The City and its consultants regarding the Project.

Following the filing of the NOI and PAD, FERC will publicly notice the documents to affected resource agencies, tribes, and interested parties. Comments on the NOI, PAD, and request to use the TLP are due within 30 days of the Public Notice.

A detailed process plan schedule with a timetable for the balance of the licensing process is shown in [Table 2.1-1](#). It should be noted that the process plan may reflect deadlines that fall on weekend days (Saturday or Sunday). Weekend deadlines will default to the following Monday in accordance with FERC regulations. The Process Plan Schedule was developed in accordance with the regulations, and incorporates the timeframes set forth in 18 CFR §4.38 and 5.8. Additional information regarding scheduling of events will be provided in subsequent notification from the Commission and The City in accordance with FERC regulations. Per 18 CFR §5.6(d)(1), the proposed schedule in [Table 2.1-1](#) is based on the FERC granting The City's request to utilize the TLP for this Project.

2.2 Authorized Agent

The exact name, business address, and telephone number of each person authorized to act as agent for the applicant:

Michele E. Stottler, P.E.
Gomez and Sullivan Engineers, DPC
399 Albany Shaker Road
Suite 203
Albany, NY 12211
Telephone: (518)407-0050
Email: mstottler@gomezandsullivan.com

Jeremy Smith
Acting City Manager
The City of Watervliet
2 Fifteenth Street
Watervliet, NY 12189
Telephone: (518) 270-3800
Email: jsmith@watervliet.com

Michael Manning
Mayor
The City of Watervliet
2 Fifteenth Street
Watervliet, NY 12189
Telephone: (518) 270-3800

2.3 Proposed Communications Protocol

The City is proposing a communication protocol to establish guidelines for effective participation and communication in the Project relicensing process. The primary means of communication will be meetings, formal documents, email, and telephone. To establish the consultation record, all formal correspondence requires adequate documentation.

Mailing Lists

There are two categories of participation in a FERC licensing proceeding and each requires different notification or frequency and type of communication. Interested parties are a broad group of individuals, governmental, and non-government organizations that have an interest in the Project and/or licensing proceeding; this group is generally referred to as “stakeholders.” The City will maintain a mailing list of all interested parties, which will include both standard mailing addresses and available email addresses for distributing notices and documents for public review. After The City files its license application, the Commission will establish an official Service List for parties who formally intervene in the proceeding. Intervention is a formal legal process governed by the Commission’s regulations. Additional information may be found on FERC's website at <http://www.ferc.gov>. Once the Commission establishes a Service List, any written documents filed with the Commission must be served to the Service List.

Document Distribution

The City will distribute, whenever possible, all documents electronically in PDF or editable text format but may distribute hard copies of some documents for convenience or by request. The City prefers to receive all documents electronically, in an appropriate format. Email electronic documents or mail hard copy documents to Michele Stottler at the above address. In either case, all documents received become part of the consultation record and will be available for distribution to the public. All formal filings with the Commission will be available on the FERC eLibrary (<http://elibrary.ferc.gov>). Interested parties can register to receive notices of filings made to the FERC specific to the Project (P-2955).

Sensitive Information

Certain Project-related documents are considered to be Critical Energy Infrastructure Information (“CEII”) and restricted from public viewing in accordance with 18 CFR § 388.113. This information relates to the design and safety of the dams and appurtenant facilities. Anyone seeking information protected as CEII from the Commission must file a CEII request. FERC's website at <http://www.ferc.gov/help/filing-guide/ceii-request.asp> contains additional details related to CEII. The City will allow limited access to documents containing sensitive information regarding specific cultural and/or protected environmental resources to authorized entities.

Meetings

The City recognizes there are a number of agencies, groups, and individuals that may want to participate in the licensing process for the Project and will work with all interested parties to develop meeting schedules that include locations and times which accommodate the majority of participants. The City will follow the notification procedures for meetings as mandated by FERC regulations. The City may schedule additional meetings to enhance the consultation process, as necessary. If additional meetings are desired, The City will notify all interested parties at least two weeks in advance and will provide a proposed meeting agenda.

Table 2.1-1: TLP Process Plan and Schedule for the Normanskill Project

Activity	Responsible Party	Time Frame & Regulation	Target Date
<i>First Stage of Consultation</i>			
File NOI and PAD with the FERC and Distribute to the Stakeholders	Licensee	18 CFR § 5.5 and 5.6	2/28/2017
File Request for Approval to Use the Traditional Licensing Process	Licensee	18 CFR § 5.3	2/28/2017
Submit any comments to FERC on the use of the TLP relicensing process	Stakeholders	Within 30 days of filing the Request to use the TLP 18 CFR § 5.3	3/30/2017
Commission notices NOI/PAD and comments on use of TLP	FERC	Within 60 days of filing NOI & PAD 18 CFR § 5.8	4/30/2017
Notification of Joint Meeting	Licensee	15 days prior to the Joint Meeting §18 CFR §4.38	6/15/2017
Joint Meeting and Site Visit at Normanskill Project	Licensee and Stakeholders	Between 30 - 60 days after FERC approval to use TLP §18 CFR §4.38	6/30/2017
Submit comments on PAD and study requests	Stakeholders	Due within 60 days of Joint Meeting	8/31/2017
Develop study plans	Licensee	-	Fall 2017/Winter 2018
<i>Second Stage of Consultation</i>			
Conduct Studies	Licensee	-	2018
Prepare Study Reports	Licensee	-	4Q 2018/1Q 2019
Submit Draft License Application	Licensee	Licensee dictates	4Q 2019
Comments on Draft License Application and additional studies	Stakeholders	Due within 90 days	TBD
Joint Meeting, if necessary	Licensee and Stakeholders	Within 60 days	TBD
Conduct Additional studies, if necessary	Licensee	-	Summer 2020
Submit Final License Application	Licensee	Two years prior to license expiration	2/28/2020
<i>Third Stage of Consultation (Schedule to be determined by FERC)</i>			
Additional Information Requests	Stakeholders	Within 60 days	-

Activity	Responsible Party	Time Frame & Regulation	Target Date
FERC Review, Deficiencies Resolved, Acceptance Letter, Intervention Notice	FERC	-	-
Comments and Interventions Due	Stakeholders	Within 60 days after notice	-
Scoping Document 1 (SD1) Issued	FERC	-	-
National Environmental Policy Act Scoping, Public Meetings	FERC, Stakeholders	Within 30 days after SD1 issued	-
Comments due on Scoping	Stakeholders	Within 30 days of meeting	-
FERC potentially issues Additional Information Requests	FERC	-	-
Additional Information Request Response	Licensee	-	-
Ready for Environmental Assessment	FERC	-	-
Comments, Final Conditions	Licensee and Stakeholders	Within 60 days of Ready for EA notice	-
Apply for 401 Water Quality Certification	Licensee	Within 60 days of Ready for EA notice	-
FERC Issues Draft Environmental Assessment	FERC	-	-
Comments	Stakeholders	-	-
FERC Issues Final Environmental Assessment	FERC	-	-
Licensing Decision	FERC	-	-

3 PROJECT LOCATION, FACILITIES AND OPERATION (18 CFR §5.6 (D)(2))

3.1 Project Location

The Normanskill Hydroelectric Project is located on the Normans Kill in the Town of Guilderland in Albany County, New York ([Figure 3.1-1](#)). The Normans Kill flows over 45 miles through the Capital District of New York State to its confluence with the Hudson River. The Project is located approximately 22.4 river miles upstream of the mouth, with a watershed encompassing approximately 113 square miles. The project dam is located within a moderately deep ravine of the Normanskill. Immediately downstream of the dam, the ravine is traversed by two active railroad trestles and an Albany County highway bridge on French's Mill Road that has been closed to traffic.

3.2 Project Facilities

The FERC Project Boundary for the Normanskill Project encompasses the reservoir, project/dam area, and a short reach downstream on the Normans Kill ([Figure 3.2-1](#)). The licensed Project works consist of a dam and reservoir, intake, sluiceway, penstock, an underground powerhouse connected to an underground control building via a tunnel, a transmission line, a transformer bank, and appurtenant facilities ([Figure 3.2-2](#)).

3.2.1 Dam and Reservoir

The Project was built on an existing dam, which had been built initially as a water supply reservoir. The Ambursen-type dam was constructed in 1915, is approximately 380 feet long and averaging 33 feet high, with a 306-foot overflow section having a crest elevation of 259 feet (NGVD29). The overflow section is surmounted by 3-foot flashboards. The Project Impoundment (Watervliet Reservoir) has a surface area of 430 acres, with a volume of 5,000 acre-feet and a usable storage capacity of 1,290 acre-feet at normal maximum pool elevation of 262 feet; it is managed primarily as a municipal water supply for the City of Watervliet and the Town of Guilderland. The reservoir provides a safe yield of 12 million gallons of water per day, and is the sole source of drinking water for the City of Watervliet.

3.2.2 Intake and Penstock

The Project is equipped with an intake structure that draws water from near the surface of the dam, at an elevation of 256 feet and above. The intake is protected by trashracks consisting of two sections, each covering half of the intake area, to prevent large debris from entering the turbine water passages. Each trashrack section is approximately 6 feet wide and 14 feet high, and the total trashrack area is 168 square feet. The bars have a rack spacing of 2 inches from centerline to centerline, and each bar is ½ inch thick; water velocities at the trashrack are less than 2 ft/s. A sluiceway adjacent to the trashracks allows for removal of debris. Water is conveyed from the intake to the powerhouse via a 900-foot-long, 6-foot-diameter (inner diameter) reinforced concrete penstock buried in the riverbed.

3.2.3 Powerhouse

The underground, reinforced concrete powerhouse contains a tube-type generating unit with a rated capacity of 1,250 kW at a net head of approximately 66 feet, with a hydraulic capacity of 240 cubic feet per second (cfs). The minimum generation capacity is approximately 60 cfs. The facility is operated from an underground control building located on the left (north) bank, which is connected to the powerhouse via a tunnel.

3.2.4 Grid Interconnection

The Project includes a 600-foot-long, 2.4-kV transmission line and a 2.4/13.2-kV transformer bank. A single-line diagram for the Project and its interconnection to the grid is provided in [Figure 3.2.4-1](#) (CEII). Power generated at the facility is used for pumping water to the City of Watervliet's filtration plant, with excess power sold to Niagara Mohawk.

3.2.5 Dependable Capacity

Given the Project's primary use as a municipal water supply, the ability to generate depends on a combination of hydrologic conditions and municipal water needs. Dependable capacity is therefore not easily estimated.

3.3 Normanskill Project Operation

The primary use of water at the Project is municipal drinking water, as drawn by the City of Watervliet and the Town of Guilderland. The average daily demand of the reservoir in 2015 was 2,228,000 gallons ([City of Watervliet, 2015](#)). Generation at the Project is largely based on the water level in the reservoir and inflows. The City manages reservoir operations to maintain water levels between 261 and 261.5 ft. In general, when reservoir levels are greater than or equal to 261 feet, the Project generates. When reservoir levels are lower than 261 feet, generation happens less frequently (only about 8.4% of the time). Occasionally, the City reduces the water level to create storage for an expected runoff event (i.e. significant snowmelt), and is very rare when reservoir levels are below 260 feet. Higher reservoir levels occur during high streamflow events, due to limited storage in the reservoir, and low reservoir levels occur during dry periods. The frequency and duration of generation each year depends on annual hydrologic conditions in the watershed.

[Table 3.3-1](#) shows the median monthly surface elevation of the reservoir for the period of record of January 1995 through July 2016. The annual median water surface elevation is 261.44 feet. The range of median monthly water surface elevations is 0.34 feet, demonstrating that on a monthly basis, the water level is relatively consistent under normal inflow conditions. [Figures 3.3-1](#) through [3.3-5](#) show annual and monthly water surface elevation duration curves for the same period of record. Unusually low reservoir levels occurred during the fall of 2001 and early winter of 2002, during which time the reservoir elevation was approximately 258 feet. These low water levels were the results of drought conditions in the region.

3.4 Other Project Information

3.4.1 Current License Requirements

The existing FERC license for the Normanskill Project was issued on March 5, 1982, and an order amending the license to reflect as-built conditions was granted on October 21, 1985. An application for license amendment was submitted to FERC on August 16, 1985, to request an increase in capacity from 850 kW to 1,250 kW, to reflect as-built conditions. A copy of the license and the order granting the amendment is included in [Appendix C](#). The New York State Department of Environmental Conservation (NYSDEC) issued a Section 401 Water Quality Certification (WQC) on October 15, 1981 ([Appendix D](#)).

3.4.2 Summary of Project Generation

As previously noted, the Project's capacity is 1,250 kW with a hydraulic capacity of 240 cfs. The estimated average annual generation at the Project for the last five years (2011-2015) was 2,999 MWh. The annual and monthly gross generation at the Project is found in [Table 3.4.2-1](#). In some months, there is no generation because of insufficient flows with which to generate. Outflow from the Project is described further in [Section 4.3.1](#).

3.4.3 Current Net Investment

The current estimated net investment (book value) at the Normanskill Project is unknown at this time.

3.4.4 Compliance History

A review of compliance information, as per 18 CFR § 5.6(d)(2), shows that the Normanskill Project has been, and continues to be, in compliance with the terms and conditions of the current license.

3.5 Proposed New Facilities and/or Changes in Project Operation

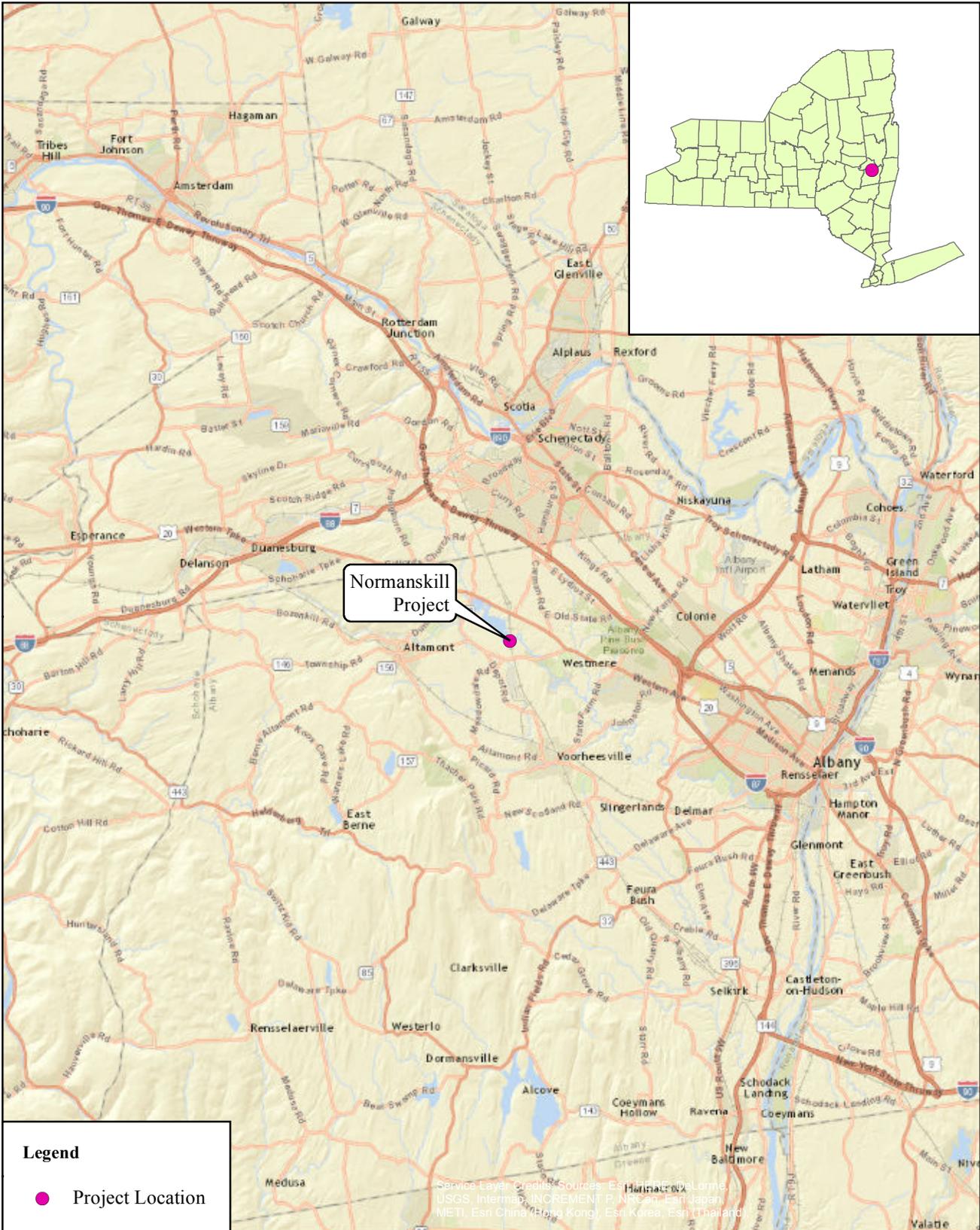
At this time, the City does not propose to construct new facilities or expand existing facilities or to alter project operations.

Table 3.3-1: Median Monthly and Annual Watervliet Reservoir Water Surface Elevations (1995-2016)

Month	Elevation (ft)
January	261.50
February	261.37
March	261.61
April	261.57
May	261.51
June	261.51
July	261.37
August	261.33
September	261.27
October	261.31
November	261.55
December	261.55
Annual	261.44

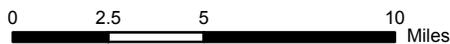
Table 3.4.2-1: Annual and Monthly Gross Generation (MWh) for the Normanskill Project (2011-2015)

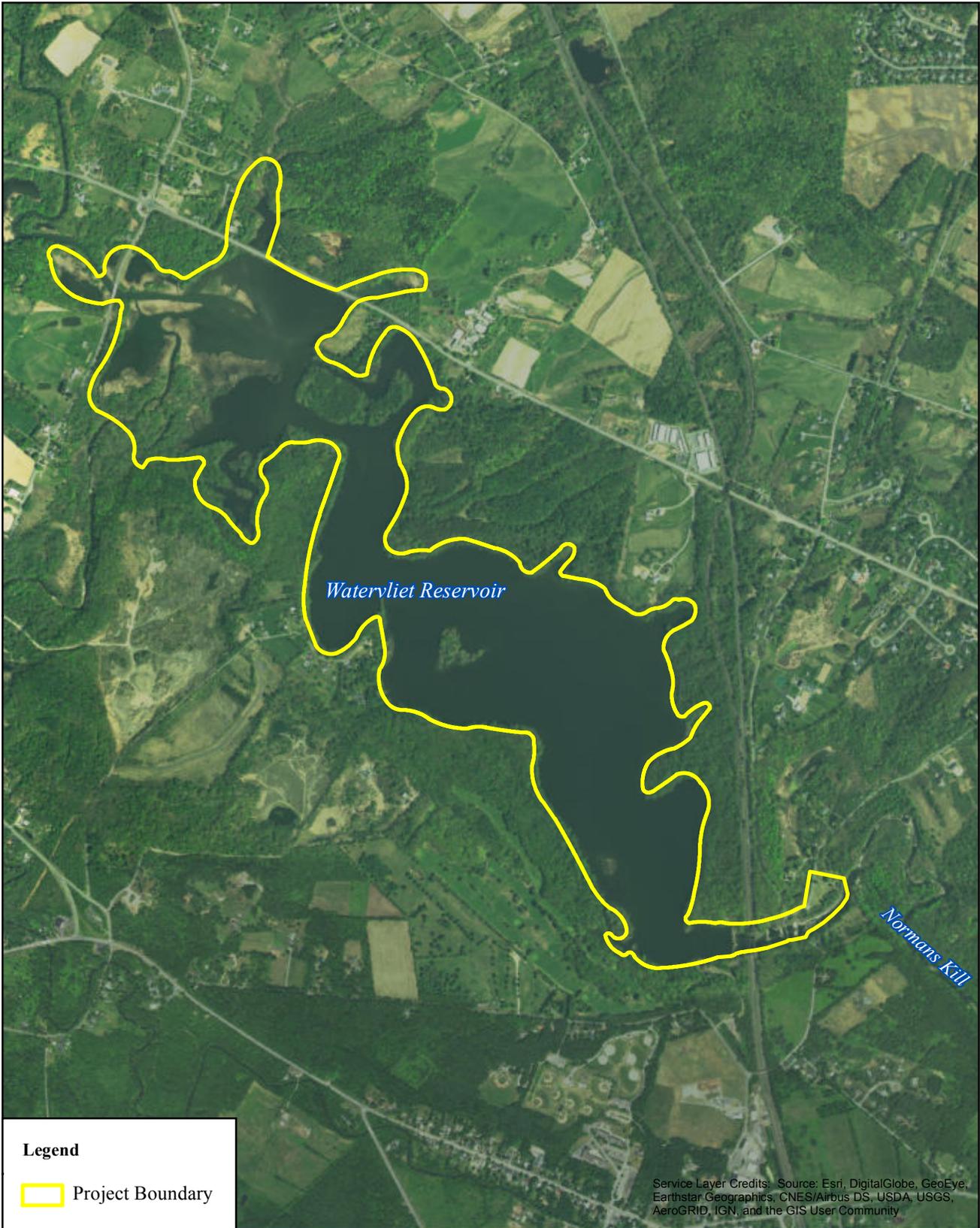
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2011	100	298	754	654	508	260	155	230	431	419	347	560	4716
2012	296	262	432	216	497	65	0	9	25	154	0	322	2279
2013	300	173	508	487	236	441	130	40	20	0	13	152	2500
2014	320	142	515	662	372	341	250	77	9	49	90	709	3536
2015	129	50	440	539	41	241	128	3	28	73	79	213	1964
Average	229	185	530	512	331	270	133	72	103	139	106	391	2999



FERC Relicensing of the
Normanskill Project
(FERC NO. 2955)

Figure 3.1-1:
General Project Location Map





Legend

 Project Boundary

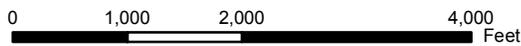
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

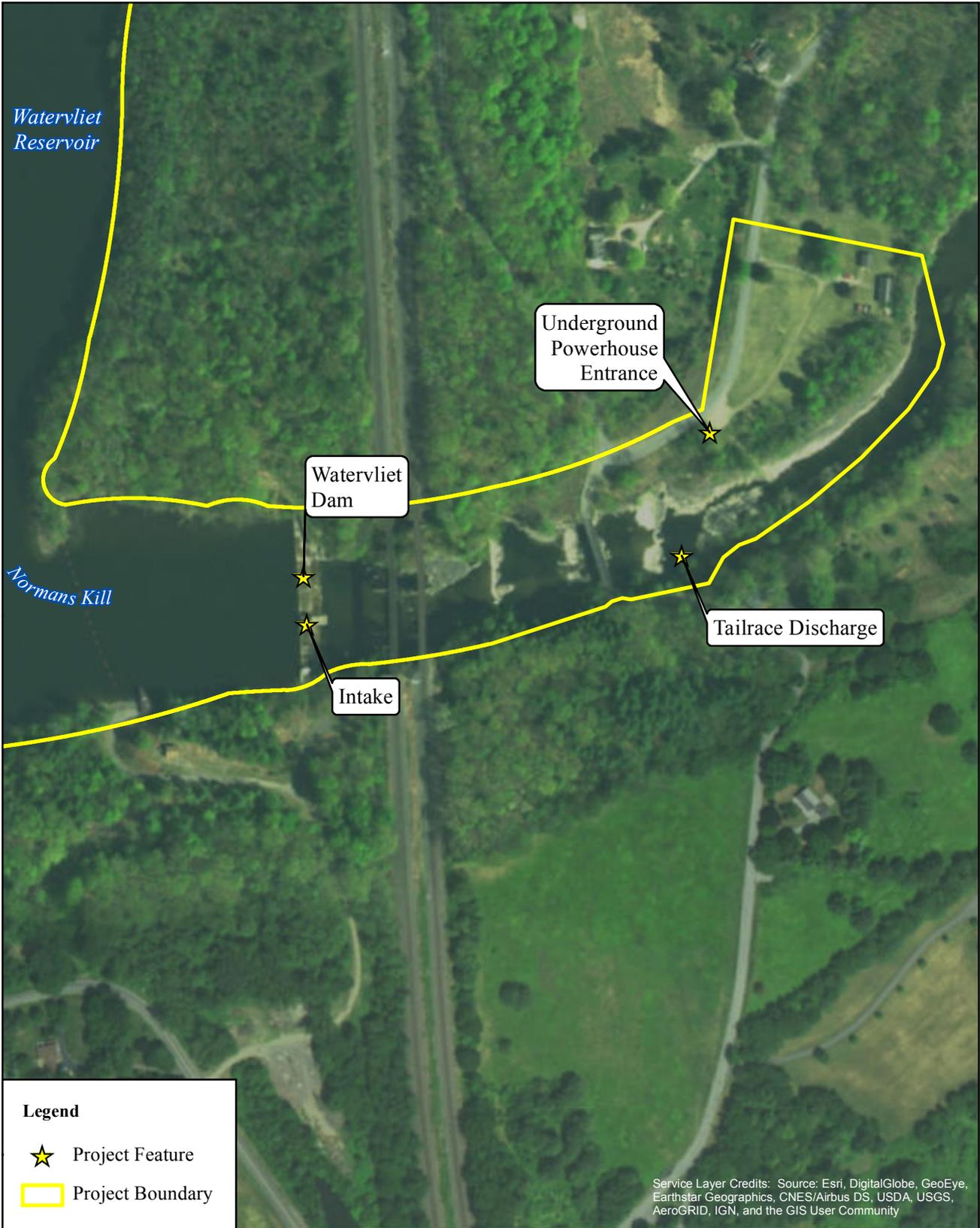


FERC Relicensing of the
Normanskill Project
(FERC NO. 2955)



Figure 3.2-1:
Normanskill Project Boundary





FERC Relicensing of the
Normanskill Project
(FERC NO. 2955)



Figure 3.2-2:
Normanskill Project Facilities

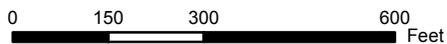


Figure 3.2.4-1: Normanskill Project Single Line Diagram (CEII)

This figure constitutes Critical Energy Infrastructure Information (CEII) in accordance with 18 C.F.R. § 388.113(c) and has been removed from the public version of this PAD.

This material is contained in Volume 2 (CEII), the non-public version filed with the Commission.

Procedures for obtaining access to CEII may be found at 18 CFR § 388.113.

Figure 3.3-1: Watervliet Reservoir Water Surface Elevation Annual Duration Curve (1995-2016)

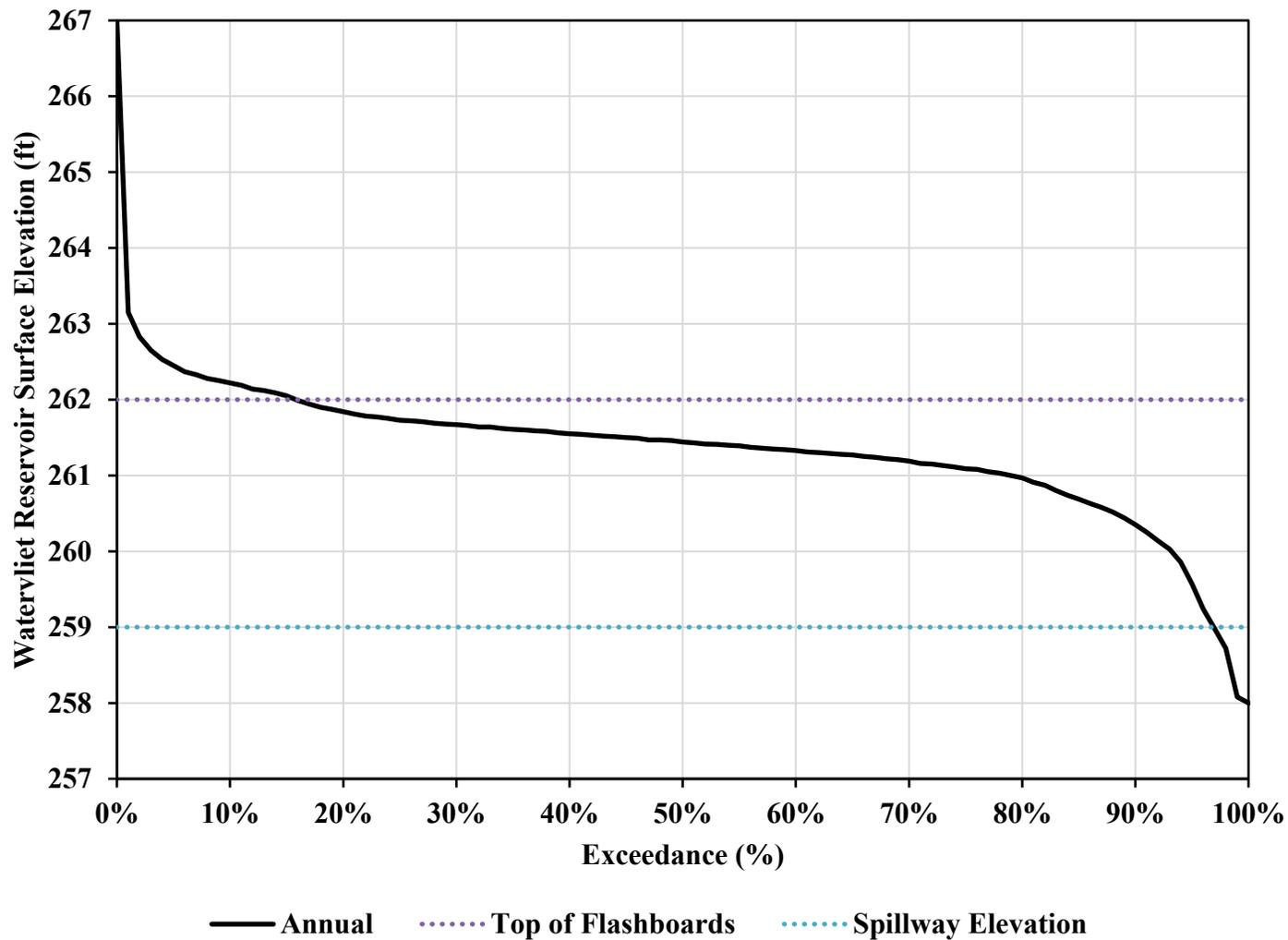


Figure 3.3-2: Watervliet Reservoir Water Surface Elevation Duration Curves for January, February, and March (1995-2016)

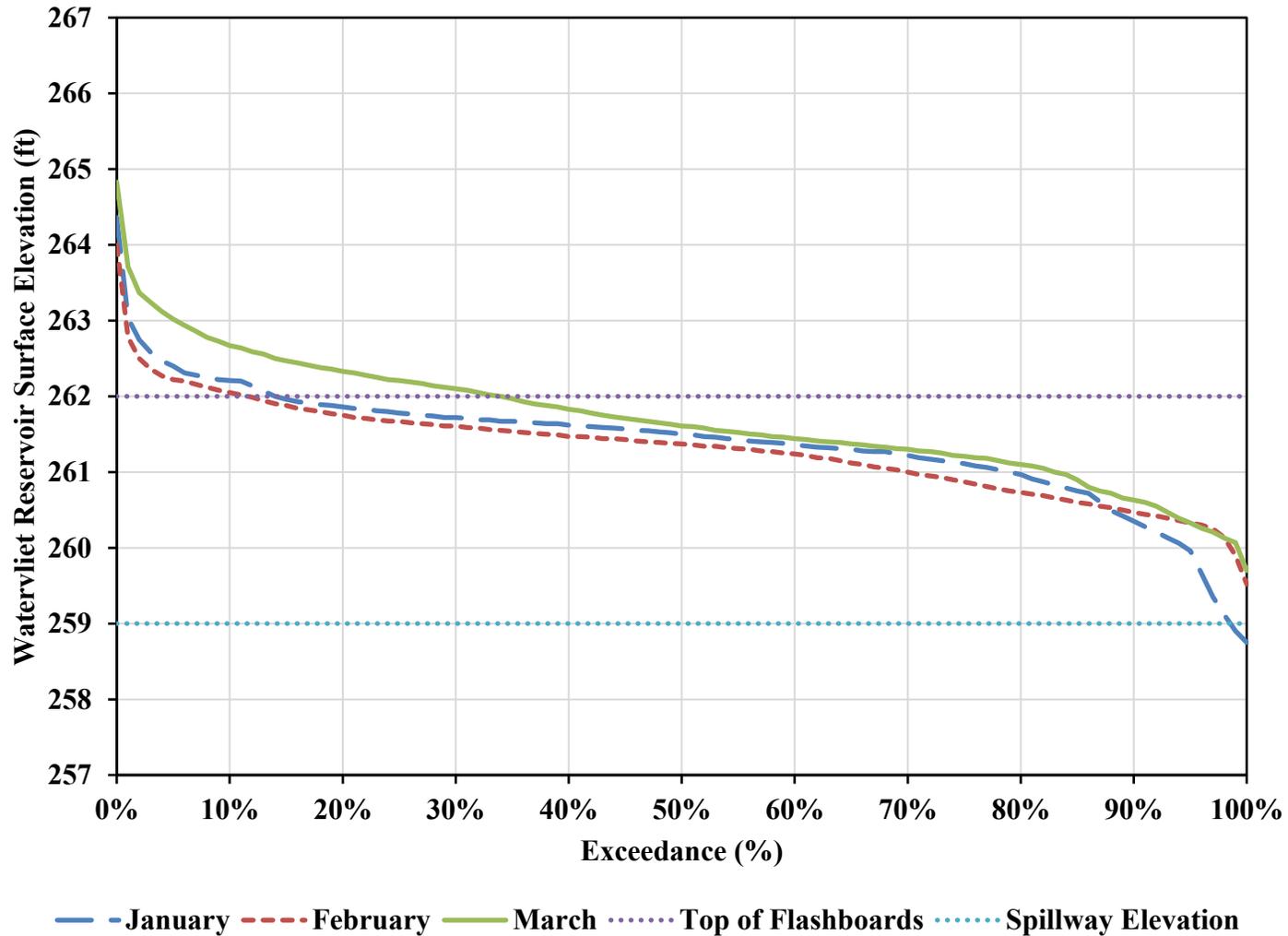


Figure 3.3-3: Watervliet Reservoir Water Surface Elevation Duration Curves for April, May, and June (1995-2016)

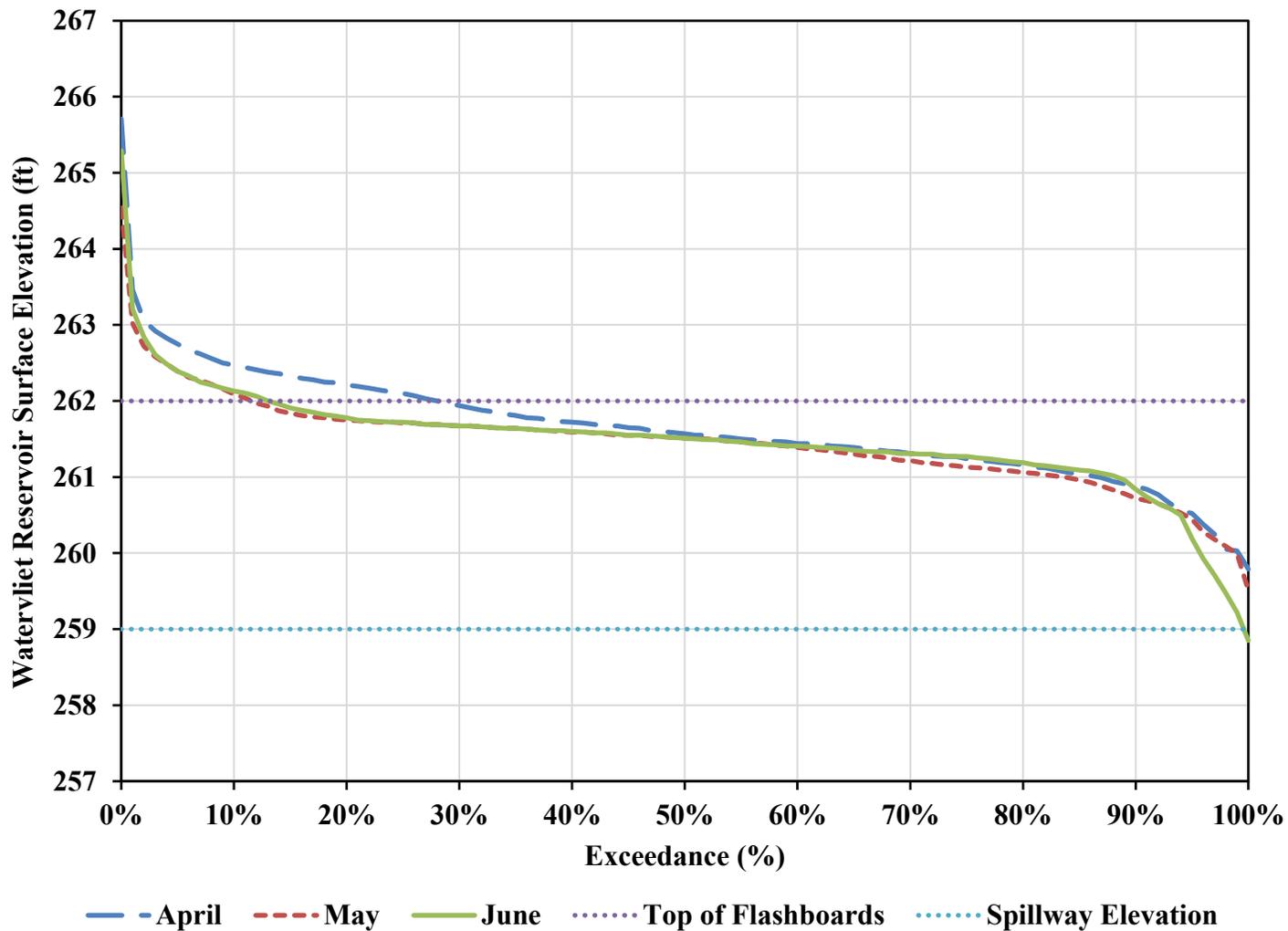


Figure 3.3-4: Watervliet Reservoir Water Surface Elevation Duration Curves for July, August, and September (1995-2015)

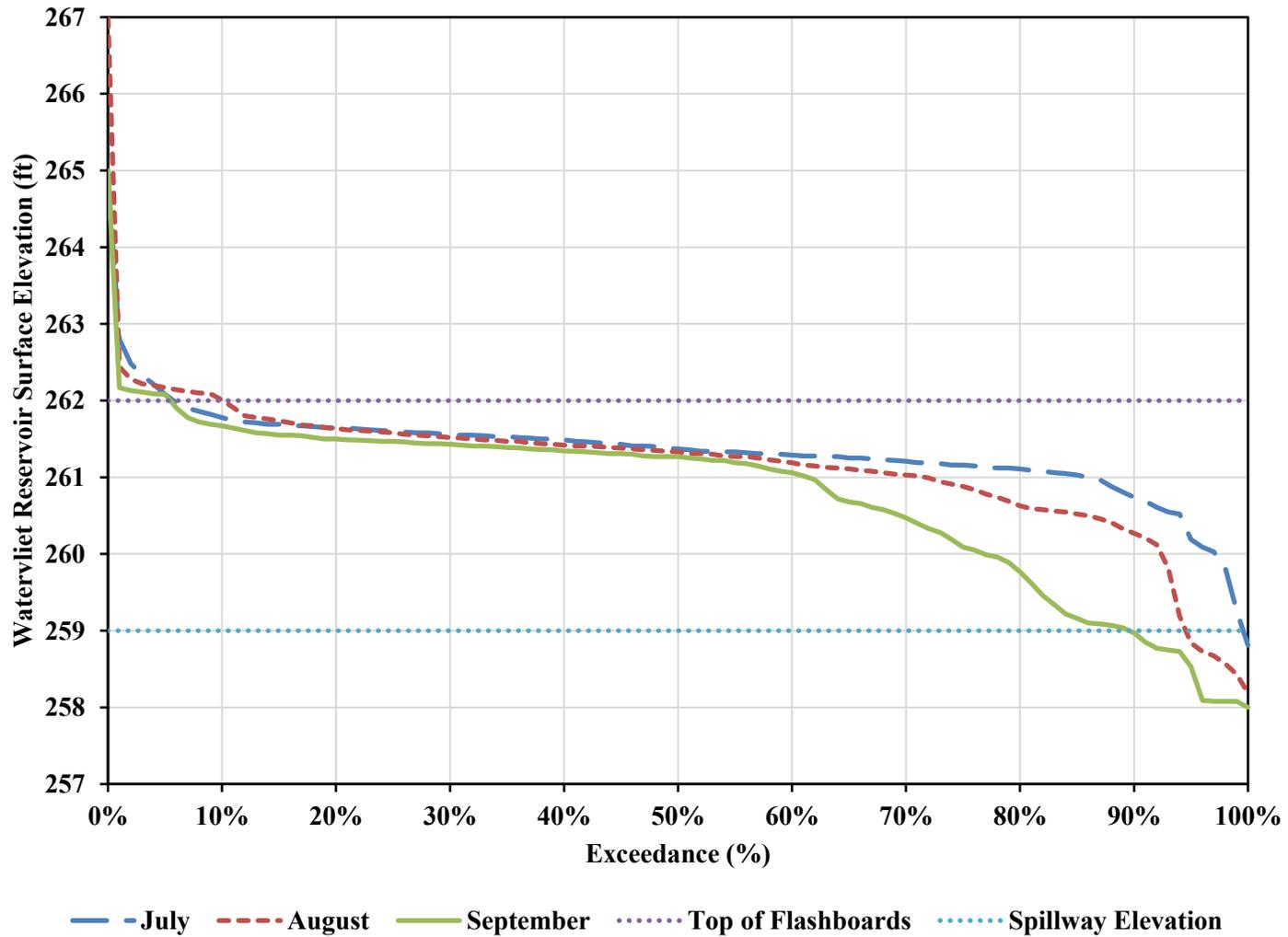
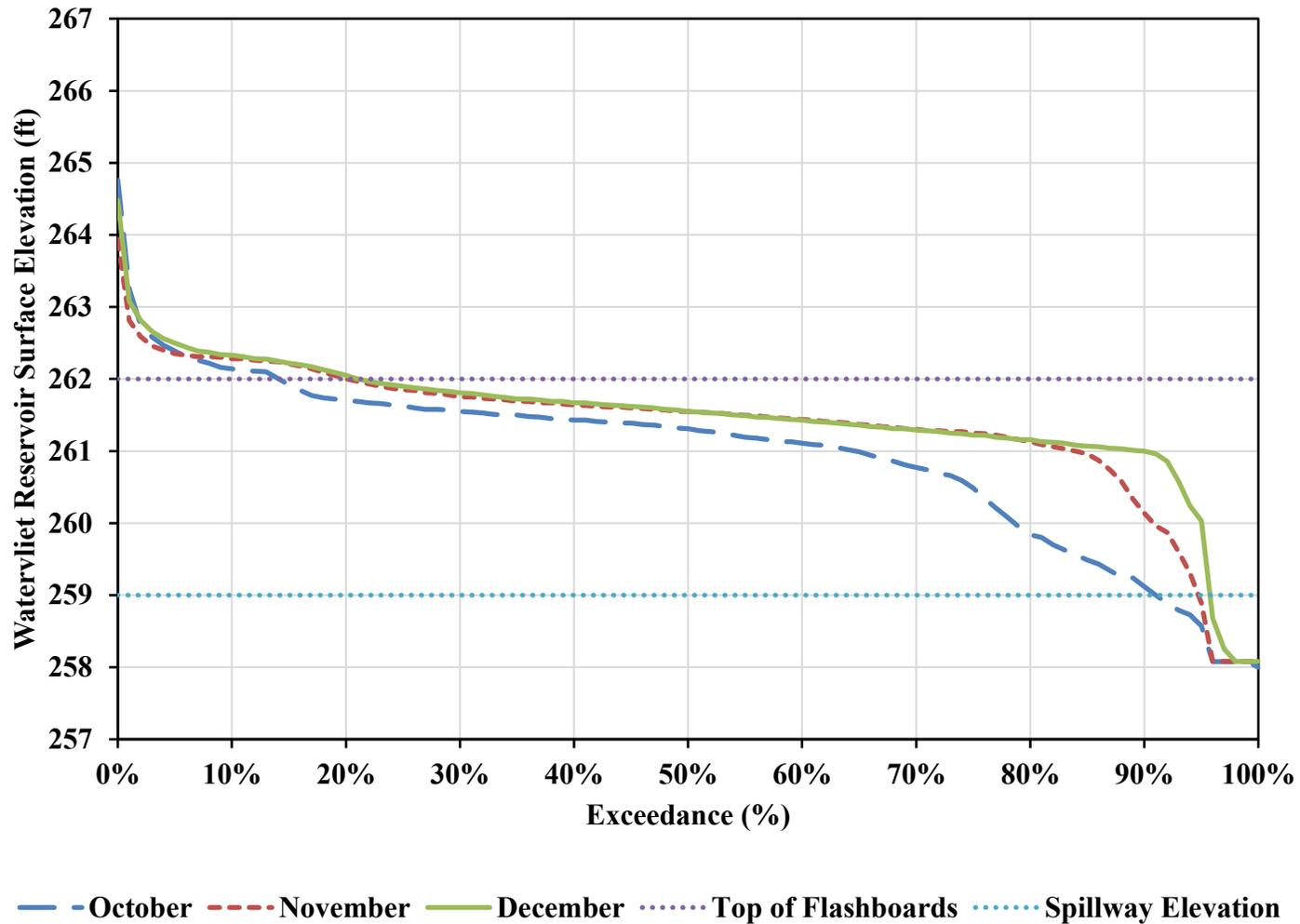


Figure 3.3-5: Watervliet Reservoir Water Surface Elevation Duration Curves for October, November and December (1995-2015)



4 DESCRIPTION OF EXISTING ENVIRONMENT AND RESOURCE IMPACTS (18 CFR §5.6 (D)(3))

4.1 General Description of the River Basin (18 CFR §5.6 (d)(3)(xiii))

4.1.1 Normans Kill Watershed

The Normans Kill basin lies to the west of the Hudson River, and south of the Mohawk River. The stream flows over 45 miles from its headwaters to the tidal Hudson River. It drains over 177 square miles across Schenectady and Albany Counties of New York State ([Figure 4.1.1-1](#)). The main-stem is primarily a medium-gradient warmwater stream. A reach containing high gradients and small waterfalls is present approximately two miles upstream of its confluence with the Hudson; below this location, the stream becomes tidally influenced. The Watervliet Dam is the only dam on the Normans Kill.

4.1.2 Land Use within the Normans Kill Watershed

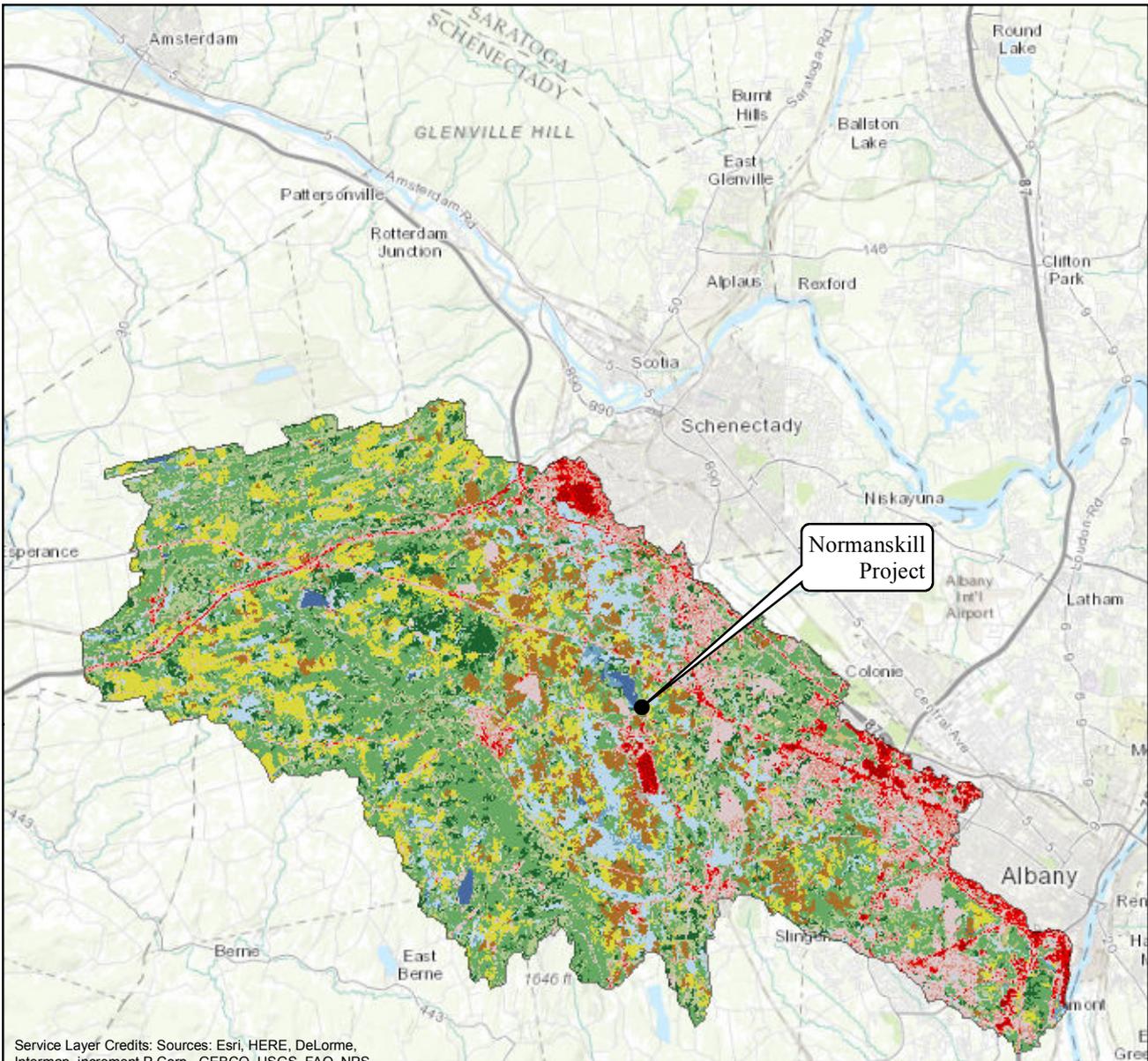
The Normans Kill watershed is primarily undeveloped. According to the National Land Cover Database ([NLCD, 2011](#)), land cover is dominated by forest (47.6%), most of which is deciduous ([Table 4.1.2-1](#)). Developed land is most common in the northern and eastern portions of the watershed, accounting for approximately 22.4% of the land cover in the watershed, though only a small portion was classified as medium or high intensity ([Figure 4.1.2-1; Table 4.1.2-1](#)). Farmland covers approximately 19.7% of the watershed, primarily in the form of pasture and hay fields, along with some cropland. Wetlands are also present, covering around 8.7% of the watershed, most of which were classified as Woody Wetlands.

According to NYSDEC in their response to the PAD questionnaire ([Appendix B](#)), there are multiple active sand and gravel mines located to the west of the Watervliet Reservoir, some within approximately 1,500 feet of the Reservoir. The Town of Guilderland dump is located to the south of the Watervliet Reservoir, approximately 1,500 feet south of the dam. Keenholts Park is located to the south of the Reservoir, adjacent to the Town dump. French's Hollow Fairways, a golf course off of Hurst Rd, is located within approximately 700 feet of the south side of the Reservoir.

Table 4.1.2-1: Land Use/Land Cover in the Normans Kill Watershed

Land Use/Cover Type	Area (acres)	Percentage
Deciduous Forest	35,074	30.87%
Pasture/Hay	15,111	13.30%
Developed, Open Space	13,779	12.13%
Mixed Forest	12,248	10.78%
Woody Wetlands	9,284	8.17%
Developed, Low Intensity	7,294	6.42%
Cultivated Crops	7,240	6.37%
Evergreen Forest	6,766	5.95%
Developed, Medium Intensity	2,952	2.60%
Developed, High Intensity	1,412	1.24%
Shrub/Scrub	813	0.72%
Open Water	664	0.58%
Emergent Herbaceous Wetlands	626	0.55%
Grassland/Herbaceous	324	0.29%
Barren Land (Rock/Sand/Clay)	49	0.04%

Source: [NLCD, 2011](#)



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Legend

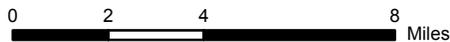
- Project Location
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

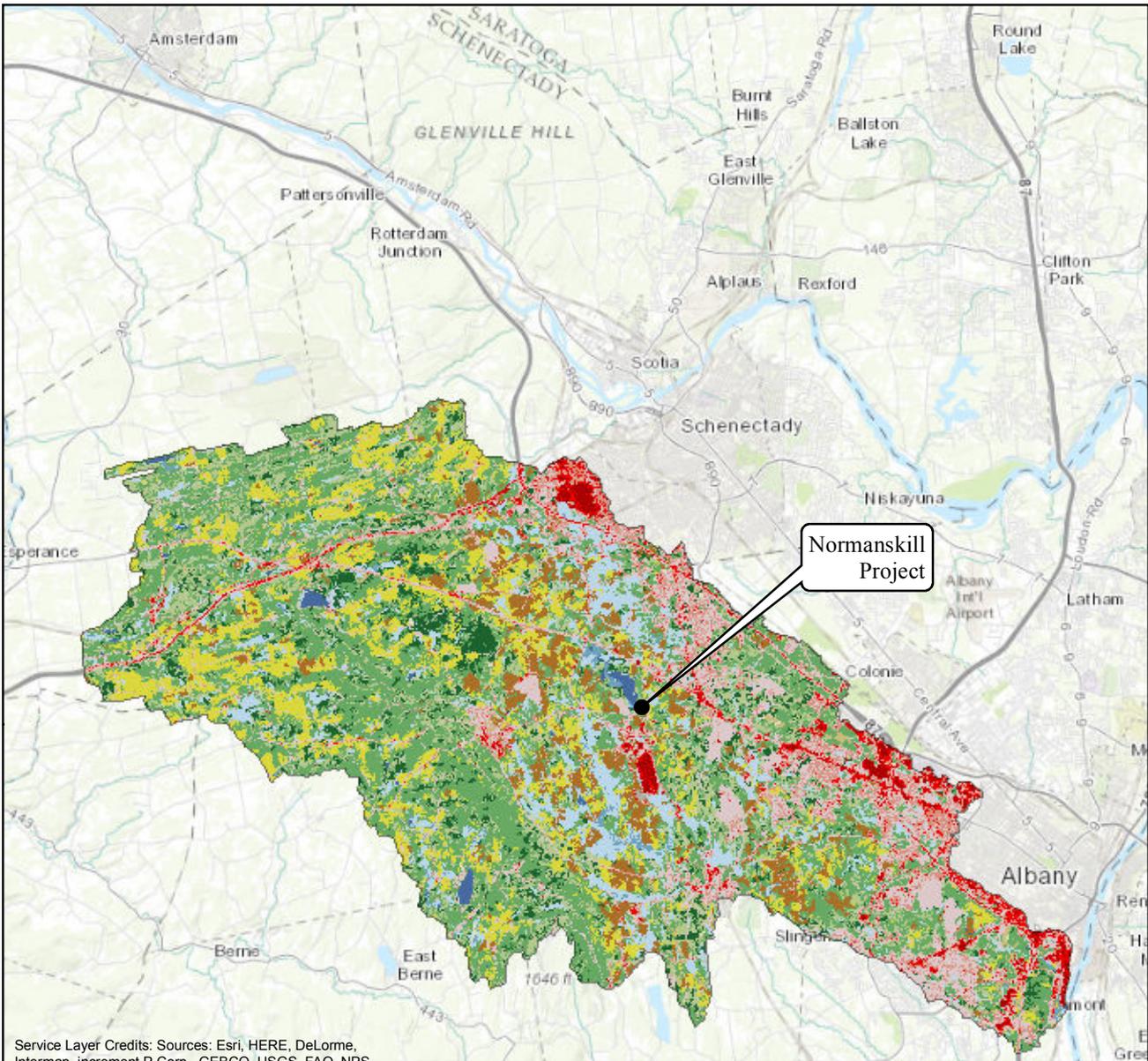


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Figure 4.1.2-1: Land Use within the Normans Kill Watershed





Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Legend

- Project Location
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands



FERC Relicensing of the Normanskill Project (FERC NO. 2955)



Figure 4.1.2-1: Land Use within the Normans Kill Watershed



4.2 **Geology and Soils (18 CFR §5.6(d)(3)(ii))**

4.2.1 **Physiography**

The Normanskill Project lies in the Hudson-Mohawk Lowlands physiographic province. This region consists of low-relief lowlands, underlain by weak sedimentary rocks. On the Normans Kill, the Hudson-Mohawk lowlands are bounded closely by the Catskill Mountains to the west ([NYSDOT, 2013](#)). Much of the watershed upstream of the Project is contained within the Catskill Mountain province, and is characteristic of hilly, higher-elevation terrain. The higher relief is driven by bedrock, consisting of stratified sandstone and shales, and capped with resistant conglomerates in the high areas.

4.2.2 **Bedrock Geology**

The bedrock of almost the entire Normanskill Project and adjacent areas is classified as Upper Ordovician age, (approximately 440 million years) Schenectady formation ([Figure 4.2.2-1](#)). This formation is primarily composed of course-grained sandstone (greywacke), secondarily composed of medium-grained sandstone, and also contains siltstone and shale. A small portion (0.01%) of the area within 1,000 ft. of the Project Boundary is classified as Middle Ordovician age (approximately 460 million years) Normanskill formation. This formation is primarily composed of shale and also contains argillite and siltstone ([USGS, 2016](#)).

Greywacke is a dark gray, course-grained sandstone that is firmly indurated (cohered into solid rock). It consists of poorly sorted angular to subangular grains of quartz and feldspar and has a variety of dark rock and mineral fragments embedded in a compact clayey matrix. The clayey matrix is generally composed of slate, rich in very fine-grained illite, chloritic, and sericite minerals ([USGS, 2016](#)).

4.2.3 **Surficial Geology**

The surficial geology in the vicinity of the Project primarily consists of lacustrine silt and clay, but also includes recent alluvium, till, kame deposits, and small amounts of outwash sand and gravel ([Figure 4.2.3-1](#)). Descriptions and percentages of each type are listed below (descriptions from [NYSM, 2016](#)):

- Lacustrine silt and clay (lcs) (84.9%): Lacustrine silt and clay are generally laminated and calcareous, with low permeability. They are deposited in proglacial lakes and can cause potential land instability.
- Recent alluvium (al) (8.3%): Recent alluvium consists of fine sand to gravel and is generally limited to flood plains within a valley. It may be overlain by silt in larger valleys and is subject to flooding.
- Till (t) (3.5%): Till is variable in texture, ranging from boulders to silt. It is usually a poorly sorted sand-rich diamict found in deposits beneath glacier ice. Till permeability varies depending on compaction.
- Kame deposits (k) (3.3%): Kame deposits are generally fine gravel, and or sand, and include kames, kame terraces, kame deltas, eskers, ice contact, or ice cored deposition. Kame deposits have a lateral variability in texture, permeability and sorting, and may be firmly cemented with calcareous cement.
- Outwash sand and gravel (og) (0.03%): Outwash sand and gravel is coarse to fine gravel with proglacial fluvial deposition and sand. Outwash sand and gravel is stratified and well-rounded and generally finer in texture away from the ice border.

4.2.4 Soils

Dominant soil types found within and adjacent to the Project are shown in [Figure 4.2.4-1](#). Approximately twenty-seven percent of the area was classified as water, and have been removed from further analysis. The remaining extent of the area consisted of 24 soil types ([Table 4.2.4-1](#)). The soil types discussed below represent the dominant soil classifications found in the vicinity of the Project (from [USDA et. al., 1992](#)).

Hudson: The Hudson series is a very deep, moderately drained soil formed in silty and clayey lacustrine sediments. It slopes between 3 to 45 percent within the vicinity of the Project but can slope 0 to 60 percent elsewhere. The solum thickness ranges from 20 to 60 inches and depth to bedrock is more than 60 inches.

Scio: Scio silt loam is very deep, moderately well drained soil formed in very fine sand and water-deposited silt. It slopes between 0 to 8 percent within the vicinity of the Project and can be found on lake plains. The solum thickness ranges from 20 to 34 inches and the depth to bedrock is over 60 inches.

Chenango: Chenango series is very deep, well drained or somewhat excessively drained formed in glacial outwash deposits. It slopes between 0 to 25 percent within the vicinity of the Project. It is found on kames and terraces of glacial outwash plains. Areas of this soil are irregular in shape. The solum thickness ranges from 24 to 60 inches.

Unadilla: Unadilla silt loam are very deep, well drained soils found on lake plain terraces and silty lacustrine deltas. They were formed in water-laid deposits of very fine sand and silt. It slopes from 3 to 25 percent within the vicinity of the Project but can slope as low as 0 percent in other areas. The solum thickness ranges from 20 to 50 inches and depth to bedrock is more than 60 inches.

Riverhead: Riverhead fine sandy loam is very deep and well-drained soil found on low terraces near Normans Kill. It slopes 0 to 15 percent within the vicinity of the Project and was formed in deltaic deposits, beach and glacial outwash. The solum thickness ranges from 22 to 36 inches and depth to bedrock is over 60 inches.

Rhinebeck: Rhinebeck silty clay loam is gently sloping, very deep and somewhat poorly drained. It slopes 0 to 8 percent within the vicinity of the project. It can be found on lake plains and is formed in in silt and clay deposits. The solum thickness ranges from 10 to 40 inches and depth to bedrock is over 60 inches.

Fluvaquents-Udifluvents complex:

Fluvaquents (often called alluvial land) are very deep, somewhat poorly drained to very poorly drained, variable soils. Found on stream flood plains, they remain saturated with water for part of the year, and are frequently flooded when they are found together with the Udifluvents series. The solum thickness ranges from 6 to 15 inches and depth to bedrock is more than 5 ft.

Udifluvents are very deep, well drained and moderately well drained soils. They are subject to frequent flooding and are found on flood plains of large, fast-flowing streams as well as recent alluvial deposits as this is where they were formed. They slope between 0 and 3 percent and have a depth to bedrock of more than 60 inches.

Pits, gravel: Pits are locations excavated for use in construction and can typically be found in glacial outwash. They have steep sides and a fairly level floor. Permeability is moderately rapid to very rapid. Gravel is angular or rounded rock fragments up to 3 inches in diameter.

Teel: Teel silt loam is very deep, moderately well drained soil formed in recently deposited alluvium from nearby overflowing streams. They slope between 0 and 3 percent. The solum thickness ranges from 24 to 40 inches.

Colonie: The Colonie series is very deep and well drained to somewhat excessively drained soil. It slopes between 0 to 25 percent within the vicinity of the Project and can be found on deltas, dunes and lake plains. The solum thickness ranges from 48 to 75 inches. Depth to bedrock is over 60 inches.

4.2.5 Reservoir Shoreline and Streambanks

The Watervliet Reservoir extends approximately 1.3 miles upstream from the dam, has a surface area of approximately 430 acres and approximately 8.7 miles of shoreline. The banks found along the Reservoir are undeveloped and bounded primarily by forested areas. The only notable exception to this is the area where U.S. Route 20 bounds part of the upstream areas of the reservoir; at this location, the banks are not forested, though the banks are vegetated.

Erosion was not found to be a significant issue above the Watervliet Reservoir, according to a Normans Kill watershed study prepared by the SCS, Forest Service, NYSDEC, and Economic Research Service in 1982 (as cited in [ACDECCP, 2007](#)). Erosion was found to be more of an issue downstream of the Reservoir, but at a moderate level, according to a 1981 study conducted by the Albany County Environmental Management Council (as cited in [ACDECCP, 2007](#)). The 1977 NYSDEC fisheries survey in the reservoir noted slumping cliffs of clay, particularly along the north shore, which would create localized areas of high turbidity within the reservoir (See fisheries data in [Appendix B](#) response from NYSDEC). More recently, shoreline erosion was documented during a Phase IB Archeological Field Survey completed in 2006 and 2007, which was performed on the entire reservoir shoreline ([Fenton and Clark, 2008](#)). Areas of erosion from steep-sided clay and silt banks were documented in multiple locations ([Fenton and Clark, 2008](#)). The study attributed the erosion to wave action and water fluctuations that occur for drawdowns, particularly those that would occur during drought ([Fenton and Clark, 2008](#)).

4.2.6 Known or Potential Adverse Impacts

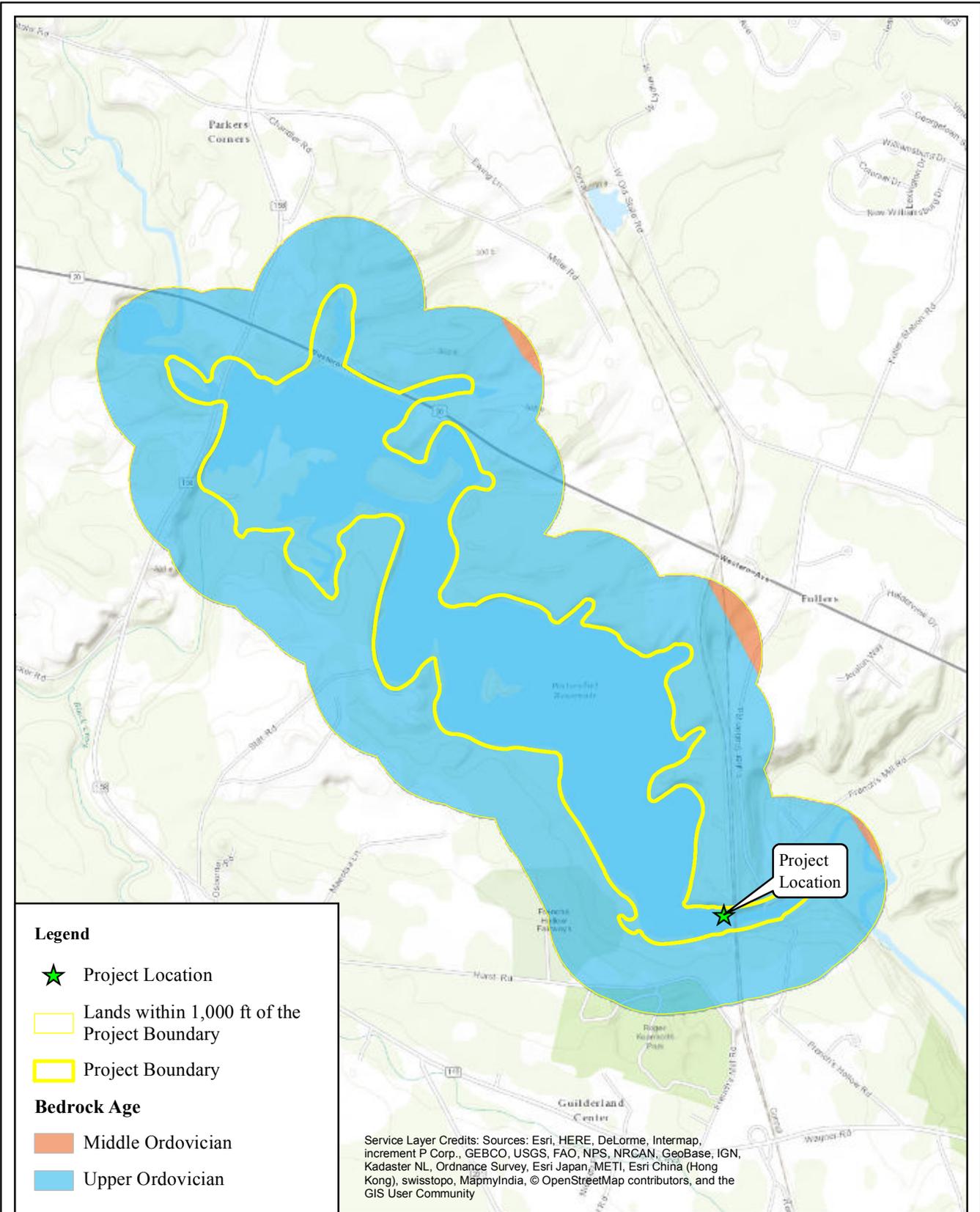
Some areas of erosion have been documented along the reservoir shorelines, particularly at areas with steep banks consisting of silt and clay.

4.2.7 Protection, Mitigation and Enhancement Measures

The current operation of the facility is limited to a relatively narrow operation range, limiting erosion potential due to hydropower operation. Also, the Project reservoir area uses that would increase erosion (i.e. motorboat operation) are prohibited.

Table 4.2.4-1. Soil Types within 1,000 feet of the Normanskill Project Boundary

Soil Type	Area (acres)	Percentage
Hudson Silt Loam	223.7	21.9%
Scio Silt Loam	144.3	14.1%
Chenango Gravelly Silt Loam	121.5	11.9%
Unadilla Silt Loam	74.4	7.3%
Riverhead Fine Sandy Loam	56.5	5.5%
Rhinebeck Silty Clay Loam	55.4	5.4%
Fluvaquents-Udifluvents Complex	49.3	4.8%
Pits, Gravel	42.1	4.1%
Teel Silt Loam	35.5	3.5%
Colonie Loamy Fine Sand	34.5	3.4%
Medihemists and Hydraquents	34.0	3.3%
Sudbury Fine Sandy Loam	33.7	3.3%
Raynham Very Fine Sandy Loam	25.8	2.5%
Wayland Silt Loam	18.0	1.8%
Castile Gravelly Loam	13.2	1.3%
Elnora Loamy Fine Sand	11.8	1.2%
Claverack Loamy Fine Sand	10.9	1.1%
Elmridge Fine Sandy Loam	9.9	1.0%
Udorthents, Loamy	9.0	0.9%
Dumps	6.9	0.7%
Nunda Silt Loam	3.4	0.3%
Cosad Loamy Fine Sand	3.1	0.3%
Tioga Silt Loam	2.0	0.2%
Shaker Fine Sandy Loam	1.4	0.1%



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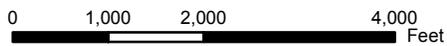
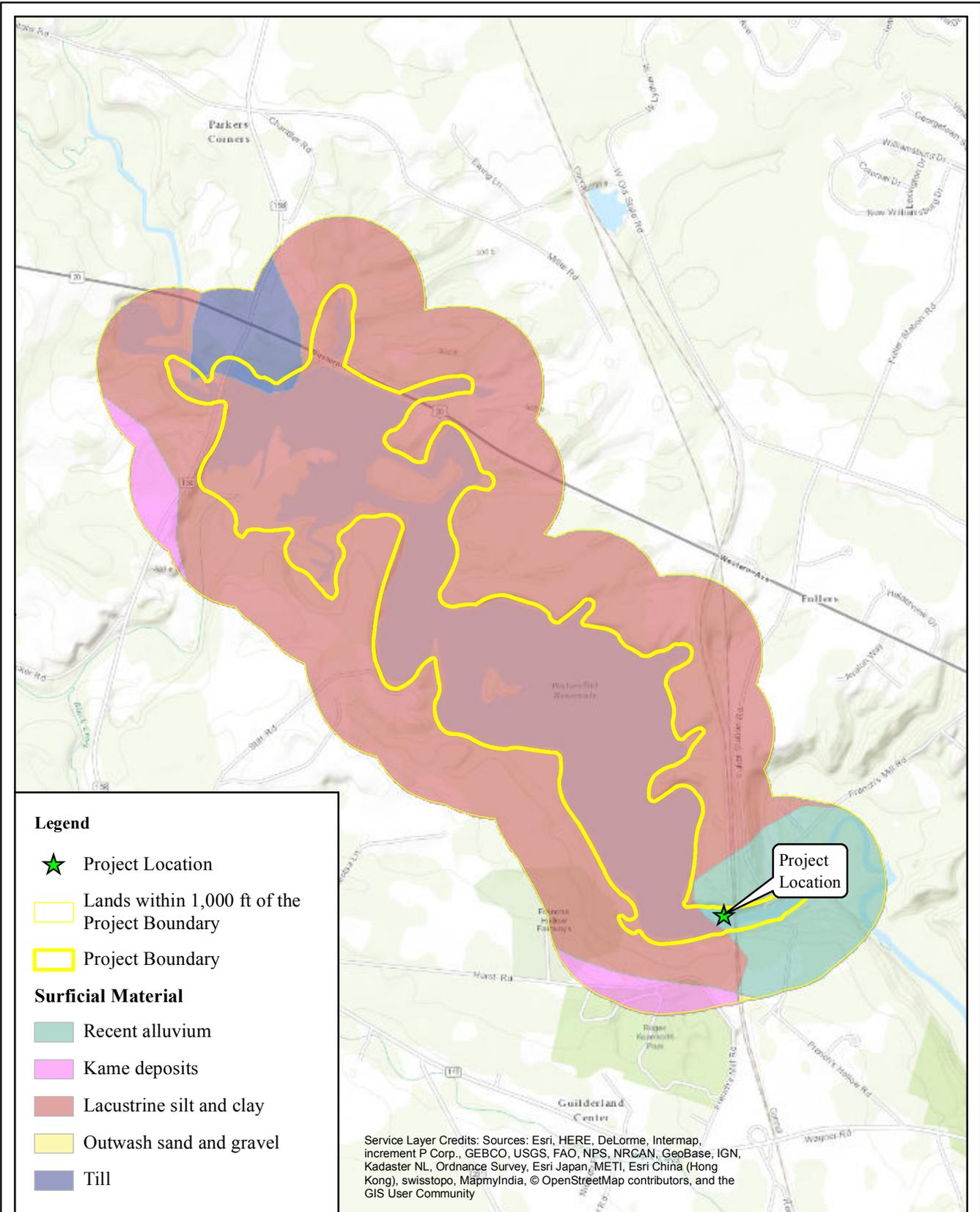


Figure 4.2.2-1:
Bedrock Geology in the Vicinity
of the Project

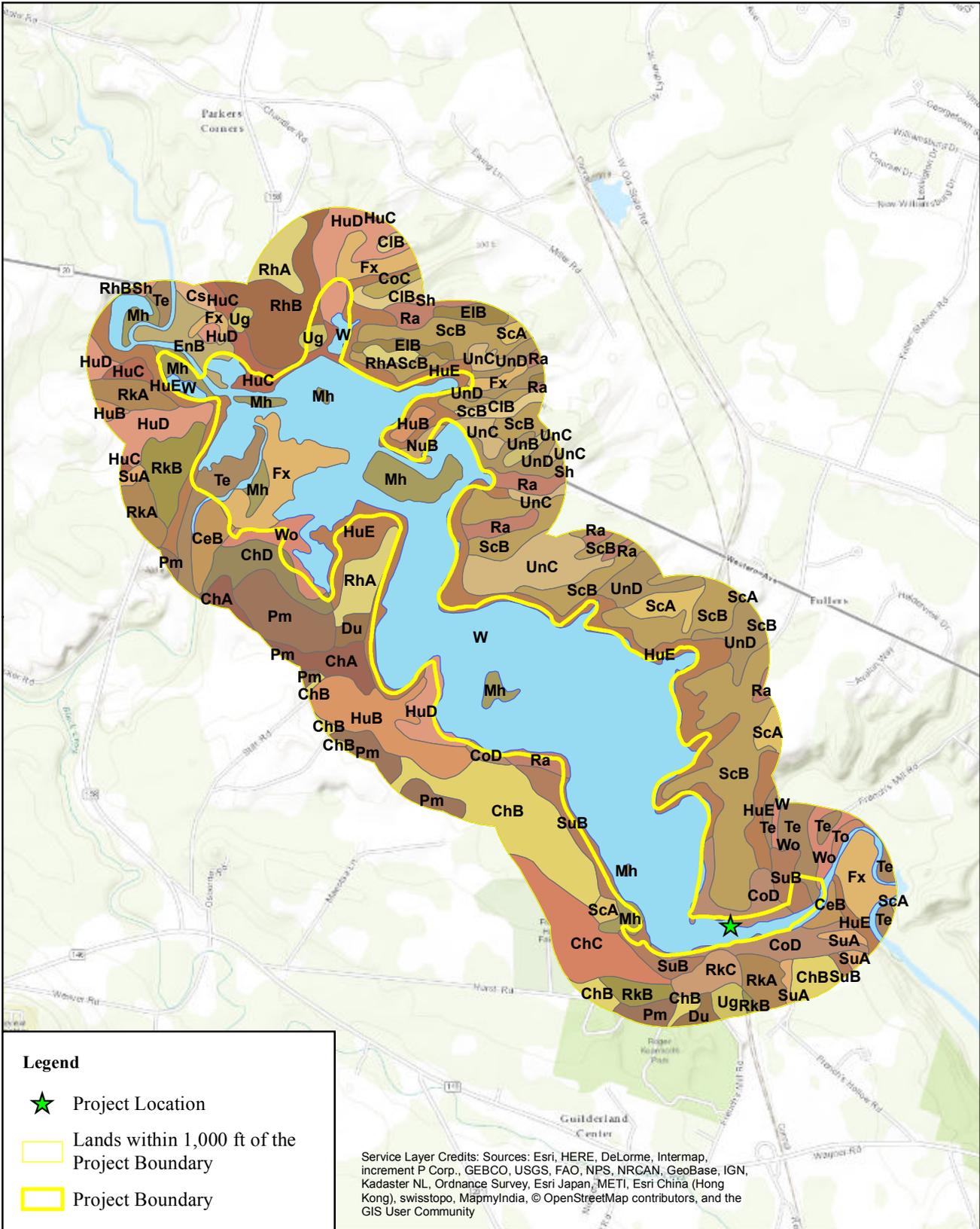


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Figure 4.2.3-1:
Surficial Geology in the Vicinity
of the Project





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Figure 4.2.4-1:
Soil Units in the Vicinity
of the Project



4.3 Water Resources (18 CFR §5.6 (d)(3)(iii))

4.3.1 Streamflow

The Project has a drainage area of approximately 113 square miles. The USGS currently operates one streamflow gaging station that records discharge on the Normans Kill many miles downstream of the Project, Normans Kill at Albany, NY (Gage No. 01359528) with a drainage area of 168 square miles. Although the period of record of the gage is listed as 1979-2017², there are large data gaps and much of the data is characterized as fair ($\pm 15\%$) by USGS or provisional. Out of 2671 daily records, only 67% of the daily discharge values are characterized as good ($\pm 10\%$) which equates to about five years of data. Because the current gage is a considerable distance downstream, and data from that gage is limited, an alternative method was employed to estimate streamflow at the Project.

To estimate streamflow at the Project, 21 years of water level on the Watervliet Reservoir and generation records at the Project were used. These records contain readings of reservoir surface elevation, power generation, and gate position on a 20-minute interval. A turbine discharge curve establishing the relationship between generation and turbine discharge was used to determine turbine flow. To capture flow over the spillway during times when the water level exceeded the top of the flashboards, the weir equation was used. Below the project, the streamflow is the combination of generation and spillway flow, plus leakage through the 3' high flashboards. However, due to the lack of quantitative information about leakage, leakage is not currently included in the streamflow estimation so the estimated streamflows are likely lower than actual streamflows.

[Table 4.3.1-1](#) lists the minimum, maximum, median and average annual and monthly flows of the Normans Kill at the Normanskill Project for the period of record of January 1995 through June 2016. In addition, [Figures 4.3.1-1](#) through [4.3.1-5](#) show annual and monthly flow duration curves at the Project. As noted earlier, the total hydraulic capacity of the Project is 240 cfs. This flow was equaled or exceeded approximately 12% of the time on an annual basis ([Figure 4.3.1-2](#)).

During the summer months, there are many periods when no water was discharged from the Project by generation into the Normans Kill ([Table 4.3.1-1](#)) and the only water downstream of the Project was leakage through the dam and flashboards. Since the calculated streamflows do not include leakage, there were times when no streamflow was estimated, particularly from June to October when the median flow was 0 cfs. As explained in [Section 3.3](#), the Project does not operate (and therefore does not release water) until water supply needs are met.

4.3.2 Water Use

The Watervliet Reservoir is primarily used as a municipal water supply reservoir and secondarily as a source of hydropower. The reservoir is the sole drinking water source for the City of Watervliet, and is also the primary public drinking water source for the town of Guilderland. The total population serviced through the City's municipal supply is approximately 10,250 people. The average daily demand by the City of Watervliet from the reservoir is 2,228,000 gallons³, and the average yearly withdrawal is over 1 billion gallons ([City of Watervliet, 2015](#)). Additionally, the Town of Guilderland withdrew 859 million gallons of water in 2015 ([Town of Guilderland, 2016](#)).

² Data are only available for 5/15/1979 to 4/30/1983, 7/1/2012 to 2/28/2014, and 5/28/2015 to current.

³ The average daily demand of 2,228,000 gallons is equal to approximately 3.45 cfs.

Hydropower generation generally only occurs when the reservoir water surface elevation is 161 feet or greater. Some of the power produced by the Normanskill Project is used to pump water from Watervliet Reservoir to the City's treatment plant. Excess power is sold to Niagara Mohawk.

4.3.3 Water Quality Classifications and Standards

The New York State waterbody classifications and water quality standards apply to all surface water and groundwater throughout the State. All waters in New York State are assigned a letter classification that denotes their best uses. The Normans Kill is a protected stream, as defined at 6 NYCRR 608.1(aa), and is subject to the stream protection provision of the Protection of Waters regulations implemented by New York State.

The NYSDEC establishes water quality standards which can be either narrative or numeric. [Table 4.3.3-1](#) outlines the water quality standards and criteria applicable to the surface waters of Watervliet Reservoir (Class A) and the Project waters just downstream of the Reservoir (Class B). According to NYSDEC's regulations, the minimum daily average dissolved oxygen (DO) for Class A (non-trout) and Class B (non-trout), waters shall not be less than 5.0 mg/L, and at no time shall the DO concentration be less than 4.0 mg/L ([Thomson Reuters, 2017](#)). The best usage of Class A water is for drinking and the best usages of Class B waters are primary and secondary contact recreation and fishing. Class A and Class B waters shall be suitable for fish, shellfish, and wildlife propagation and survival ([Thomson Reuters, 2017](#)).

4.3.4 Existing Water Quality Data

4.3.4.1 *Upstream of Watervliet Reservoir*

The NYSDEC performed a biological assessment approximately 13 miles upstream of the Project in 2009, in response to results from a rapid bioassessment performed by the Environmental Study Team (EST) of the Schoharie River Center in 2008 ([EST, 2008](#)). Though the rapid bioassessment indicated some concern of water quality being impacted by groundwater seepage from the Duanesburg landfill, results from NYSDEC indicated there was no biological impairment downstream of the Duanesburg landfill groundwater seep ([Smith et.al., 2009](#)). Overall, the NYSDEC characterized the water quality there as non-impacted, reflecting natural conditions.

The City collects water quality data from inflowing streams on a monthly basis, for a number of parameters. Eleven years of data (2006-2016) are summarized in [Table 4.3.4.1-1](#). Tributary locations included:

- Bozen Kill (at Rt. 158 bridge, ~0.75 miles upstream of reservoir)
- Normans Kill (at Old State Rd. bridge, ~1.3 miles upstream of reservoir)
- Bozen Kill (north of Altamont sewage treatment plant)
- Bozen Kill (south of Altamont sewage treatment plant)
- Black Creek (at Rt. 146 bridge before it enters the Bozen Kill)

In general, the water flowing into the Project tends to be of relatively good quality, though Black Creek periodically experiences low dissolved oxygen concentrations during the summer months, which may affect the quality of some inflows.

4.3.4.2 *Watervliet Reservoir*

Watervliet Reservoir was identified by NYSDEC as potentially experiencing minor impacts due to algal blooms and excessive weed growth ([NYSDEC, 2007](#)). Potential sources of nutrients and pollutants in the lake include runoff from residential/commercial development, sewage treatment plant discharges from upriver, storm sewers from an industrial park on Black Creek, and agriculture ([NYSDEC, 2007](#)). The invasive Water Chestnut (*Trapa natans*) has proliferated in the reservoir and may also impact water chemistry by forming dense mats, which can reduce dissolved oxygen levels and influence nutrient cycling ([Caraco and Cole, 2002](#)).

The NYSDEC collected data in the Watervliet Reservoir for the Lake Classification and Inventory (LCI) survey. The most recent LCI Lake Water Quality Summary for Watervliet Reservoir was prepared in 2008. Samples were collected at a deep hole near the outlet of the Reservoir, upstream of the Normanskill Project on June 5, 2008 and September 26, 2008. Water was collected from both the epilimnion (surface waters in a stratified lake), as well as the hypolimnion (deeper waters below a thermocline/chemocline in a stratified lake) during each sampling event, and was analyzed for a number of parameters. Results from the sampling are included in [Table 4.3.4.2-1](#) and [Table 4.3.4.2-2](#) ([NYSDEC, 2008](#)). The most notable results are elevated iron and manganese in the hypolimnion, which would be characteristic of oxygen depletion and an anaerobic environment. Dissolved oxygen depletion in the hypolimnion was also observed during a high-school student's scientific research study on phosphorus in the lake ([Table 4.3.4.2-3](#)), though only a slight thermal gradient was observed from surface to bottom ([Tomasik, 2004](#)).

Monthly water samples are collected by the City of Watervliet at the water supply intake in the Watervliet Reservoir ([Table 4.3.4.1-1](#)). The reservoir intake samples were collected at the intake, which draws water from an elevation of 243 ft. or approximately 19 ft. below the water surface at normal maximum pool elevation of 262 ft. Analyzed parameters include: ammonia, chlorides, DO concentration and percent saturation, K-Nitrogen, nitrates, organic nitrogen, pH, temperature, total organic carbon (TOC) and turbidity. [Figure 4.3.4.2-1](#) and [Figure 4.3.4.2-2](#) show monthly dissolved oxygen concentrations and water temperature at the City's intake for the last eleven years. High temperatures and oxygen depletion were observed during the summer months, primarily between June and September ([Figure 4.3.4.2-1](#) and [Figure 4.3.4.2-2](#)). Anoxic conditions did not always persist between summer month samples, likely due to a lack of thermal stratification, which would allow for occasional mixing. Because of the depth of the intake, anoxic hypolimnetic water may be drawn into the water supply during these months. However, though the hypolimnion becomes anoxic, the design of the hydropower intake area as a sluiceway near the reservoir surface should prevent passage of anoxic water into the Normans Kill downstream through generation.

4.3.4.3 *Downstream of the Reservoir*

Water quality data downstream of the Project appear to be limited. The nearest biological monitoring survey downstream of the project appears to have been collected in 1993 as part of NYSDEC biomonitoring near the Route 155 (State Farm Road) bridge, which is approximately 5.4 miles downstream of the Project, and is downstream of the Normans Kill confluence with the Hunger Kill ([NYSDEC, 1993](#)). Another survey location was sampled an additional 1.3 miles downstream. The water quality at both locations was characterized as slightly impacted based on the macroinvertebrate communities present, though there appeared to be slight improvement at the further downstream location ([NYSDEC, 1993](#)). The primary stressors identified for the Normans Kill were nonpoint source nutrient enrichment and siltation ([Bode et al., 2004](#)). Some data may also be though the College of Saint Rose, for which researchers have monitored water quality on the lower sections of the Normans Kill to study the effects of urbanization ([Finnegan et al., 2013](#)).

4.3.5 Wastewater Discharges

National Pollutant Discharge Elimination System (NPDES) permits in the area were identified. A review of the GIS data found five NPDES discharge points in the Normans Kill watershed, all of which are downstream of the Project ([Figure 4.3.5-1](#)).

4.3.6 Known or Potential Adverse Impacts

Primary usage of the reservoir as a municipal water supply results in dewatering downstream of the Project when no surplus water is available for generation and/or spill.

4.3.7 Protection, Mitigation and Enhancement Measures

None existing or proposed.

**Table 4.3.1-1: Annual and Monthly Average, Median, Maximum, and Minimum Flows (cfs)
of the Normans Kill at the Normanskill Project**

Period of Record January 1995 – June 2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
min	0	0	0	0	0	0	0	0	0	0	0	0
max	3694	3106	5082	7476	4334	6304	5340	11393	5524	4815	2982	4210
mean	136	110	331	252	127	121	60	40	35	100	121	167
median	71	69	182	157	69	0	0	0	0	0	81	109

Table 4.3.3-1: Summary of New York State Surface Water Quality Standards for Class A and Class B Waters

Parameter	Standard
Taste-, color-, and odor producing, toxic and other deleterious substances	None in amounts that will adversely affect the taste, color or odor thereof, or impair the waters for their best usages.
Turbidity	No increase that will cause a substantial visible contrast to natural conditions.
Suspended, colloidal and settle-able solids	None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages.
Oil and floating substances	No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease.
Phosphorus and nitrogen	None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.
Flow	No alteration that will impair the waters for their best usages.
pH	Shall not be less than 6.5 or more than 8.5.
Dissolved Oxygen	For non-trout waters, the minimum daily average shall not be less than 5.0 mg/L, and at no time shall the DO concentration be less than 4.0 mg/L.
Dissolved Solids	Shall be kept as low as practicable to maintain the best usage of waters but in no case shall it exceed 500 mg/L.
Total Coliform (per 100mL)	The monthly median value and more than 20 percent of the samples, from a minimum of five examinations, shall not exceed 2,400 and 5,000, respectively.
Fecal Coliforms (per 100mL)	The monthly geometric mean, from a minimum of five examinations, shall not exceed 200

Source: *New York State Water Quality Standards, Part 703* ([Thomson Reuters, 2017](#))

Table 4.3.4.1-1: Statistical Summary of Water Quality Data Collected by the City of Watervliet (2006 to 2016)

Note: ND means Non-Detect (i.e., analysis results were below the method detection limit).

Analysis	Statistic	Bozen Kill at Rt. 158 bridge	Normans Kill at Old State Road bridge	Bozen Kill, north of Altamont sewage treatment plant	Bozen Kill, south of Altamont sewage treatment plant	Black Creek at Rt. 146 bridge before it enters the Bozen Kill	Watervliet raw water intake
Ammonia (mg/l)	Max	0.9	1.9	0.9	4.5	1.6	0.6
	Min	ND (<0.1)	ND (<0.1)	ND (<0.1)	ND (<0.1)	ND (<0.1)	ND (<0.1)
	Average	0.3	0.3	0.5	0.4	0.2	0.3
Chlorides (mg/l)	Max	202.0	287.0	85.9	109.0	69.8	161.0
	Min	17.7	28.1	15.6	18.8	15.4	25.2
	Average	51.9	119.3	43.1	56.2	37.8	65.9
DO (mg/l)	Max	19.3	17.1	18.8	18.9	15.8	15.3
	Min	3.0	6.4	7.5	5.3	3.2	0.4
	Average	13.6	12.0	13.5	13.5	9.9	9.1
DO (%)	Max	100.0	100.0	100.0	100.0	100.0	100.0
	Min	32.5	69.4	78.0	57.7	34.7	4.9
	Average	99.3	95.4	99.7	99.7	83.3	74.8
K-Nitrogen (mg/l)	Max	6.2	5.9	4.5	6.4	8.4	17.9
	Min	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
	Average	2.7	1.1	1.4	2.4	2.0	1.7
Nitrates (mg/l)	Max	1.1	1.0	0.4	8.1	2.7	0.5
	Min	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)
	Average	0.3	0.4	0.1	1.2	0.1	0.2
Organic Nitrogen (mg/l)	Max	6.2	5.9	4.3	6.4	8.4	17.9
	Min	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<1.0)
	Average	2.7	1.1	1.4	2.3	2.0	1.7

Analysis	Statistic	Bozen Kill at Rt. 158 bridge	Normans Kill at Old State Road bridge	Bozen Kill, north of Altamont sewage treatment plant	Bozen Kill, south of Altamont sewage treatment plant	Black Creek at Rt. 146 bridge before it enters the Bozen Kill	Watervliet raw water intake
pH	Max	9.4	8.9	9.0	9.2	8.8	9.1
	Min	7.2	6.7	6.7	6.9	6.9	6.4
	Average	8.2	8.0	8.2	8.3	7.9	7.8
Temperature (°C)	Max	24.6	23.6	25.1	22.5	25	25.8
	Min	0.1	0.0	0.0	0.2	0.0	1.5
	Average	11.3	10.4	11.3	11.3	12.8	11.5
Total Organic Carbon (mg/l)	Max	10.1	8.6	8.5	8.7	10.8	8.4
	Min	1.8	1.4	1.1	1.4	3.4	1.2
	Average	4.2	3.7	3.4	3.3	6.6	4.8
Total Phosphate (mg/l)	Max	0.6	0.2	0.2	2.1	0.3	0.2
	Min	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)	ND (<0.02)
	Average	0.1	0.0	0.0	0.3	0.1	0.1
Turbidity (N.T.U.)	Max	15.2	20.0	8.0	14.3	18.7	85.5
	Min	0.4	1.0	0.2	0.4	0.7	1.5
	Average	2.7	4.1	1.4	2.4	1.8	12.5

Table 4.3.4.2-1: Summary of June 5, 2008 NYSDEC Sample Collection Data at the Deep Hole in Watervliet Reservoir

Sample Analysis	Epilimnion (0 - 6.6 ft. depth)		Hypolimnion (26.2 ft. depth)		Analytical Method	Analytical Method Title
	Result	Unit	Result	Unit		
Alkalinity	129	mg/l	120	mg/l	APHA method 2320-B	Alkalinity by Gran Titration
Ammonia-nitrogen	0.0295	mg/l	0.288	mg/l	USEPA method 350.1	Ammonia Nitrogen by Colorimetry
Calcium	45,900	ug/l	44,500	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Chloride	77.9	mg/l	65.6	mg/l	USEPA method 300	Inorganic Anions by Ion Chromatography
Chlorophyll-a	40.6	ug/l	--	--	USEPA method 446	Chlorophylls and Pheopigments in Phytoplankton by Spectrophotometry
Secchi depth	8.5	ft.	--	--	NYSDEC Secchi method	Secchi disk depth
Inorganic nitrogen (nitrate and nitrite)	0.0316	mg/l	0.0399	mg/l	USEPA method 353.2	Nitrate-Nitrite Nitrogen by Colorimetry
Iron	167	ug/l	477	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Kjeldahl nitrogen	0.434	mg/l	0.696	mg/l	USEPA method 351.2	Total Kjeldahl Nitrogen by Colorimetry
Magnesium	9,140	ug/l	8,740	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Manganese	205	ug/l	836	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Total organic carbon (TOC)	4.60	mg/l	4.66	mg/l	USEPA method 5310-C	Total Organic Carbon in Water- Ultraviolet Oxidation Method
Phosphorus (total)	0.0047	mg/l	0.0084	mg/l	USEPA method 365.1	Phosphorus by Colorimetry
Phosphorus (dissolved)	0.0132	mg/l	0.025	mg/l	USEPA method 365.1	Phosphorus by Colorimetry
Potassium	ND ¹ <2000	ug/l	ND ¹ <2000	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Sodium	45,400	ug/l	41,900	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Sulfate	23.9	mg/l	19.2	mg/l	USEPA method 300	Inorganic Anions by Ion Chromatography
True color	15	PCU	20	PCU	USEPA method 110.2	Color Analysis Using Platinum/Cobalt

Source: [NYSDEC, 2008](https://www.nysdec.gov). Analyses methods can be found at <https://www.nemi.gov/methods/>

¹ND: Non-Detect (i.e., analysis results were below the method detection limit).

Table 4.3.4.2-2: Summary of September 26, 2008 NYSDEC Sample Collection Data at the Deep Hole in Watervliet Reservoir

Sample Analysis	Epilimnion (0 - 6.6 ft. depth)		Hypolimnion (29.5 ft. depth)		Analytical Method	Analytical Method Title
	Result	Unit	Result	Unit		
Alkalinity	137	mg/l	139	mg/l	APHA method 2320-B	Alkalinity by Gran Titration
Ammonia-nitrogen	0.045	mg/l	1.32	mg/l	USEPA method 350.1	Ammonia Nitrogen by Colorimetry
Calcium	42,600	ug/l	40,400	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Chloride	65.2	mg/l	56.7	mg/l	USEPA method 300	Inorganic Anions by Ion Chromatography
Chlorophyll-a	9.61	ug/l	--	--	USEPA method 446	Chlorophylls and Pheopigments in Phytoplankton by Spectrophotometry
Secchi depth	8.9	ft.	--	--	NYSDEC Secchi method	Secchi disk depth
Inorganic nitrogen (nitrate and nitrite)	0.0101	mg/l	ND ¹ <0.02	mg/l	USEPA method 353.2	Nitrate-Nitrite Nitrogen by Colorimetry
Iron	131	ug/l	5370	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Kjeldahl nitrogen	0.439	mg/l	1.96	mg/l	USEPA method 351.2	Total Kjeldahl Nitrogen by Colorimetry
Magnesium	8,230	ug/l	7,640	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Manganese	187	ug/l	2260	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Total organic carbon (TOC)	5.98	mg/l	8.66	mg/l	USEPA method 5310-C	Total Organic Carbon in Water- Ultraviolet Oxidation Method
Phosphorus (total)	0.0158	mg/l	0.096	mg/l	USEPA method 365.1	Phosphorus by Colorimetry
Phosphorus (dissolved)	0.0053	mg/l	0.0589	mg/l	USEPA method 365.1	Phosphorus by Colorimetry
Potassium	2,130	ug/l	2,170	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Sodium	37,800	ug/l	34,100	ug/l	USEPA method 200.7	Metals in Water by ICP-AES
Sulfate	17.4	mg/l	10.7	mg/l	USEPA method 300	Inorganic Anions by Ion Chromatography
True color	20	PCU	150	PCU	USEPA method 110.2	Color Analysis Using Platinum/Cobalt

Source: [NYSDEC, 2008](#). Analyses methods can be found at <https://www.nemi.gov/methods>

¹ND means Non-Detect (i.e., analysis results were below the method detection limit).

Table 4.3.4.2-3: Summary of August 17, 2004 Water Quality Data, Watervliet Reservoir

Depth (ft.)	Mean Temp. (°C)	Mean DO (mg/l)	Mean Total Phosphorus (ug/l)
0.0	20.8	5.91	-
3.3	20.2	5.32	13.7
6.6	19.8	5.93	16.6
9.8	19.4	5.72	18.5
13.1	19.1	4.52	19.3
16.4	18.3	0.14	20.3
19.7	17.6	0.2	10.1
23.0	17.2	0.08	14.4
26.2	16.9	0.07	24.4

Source: Adapted from Table 2, 4 and 7 of [Tomasik, 2004](#)

Figure 4.3.1-1: Annual Flow Duration Curve Calculated for the Normanskill Project (1995-2016)

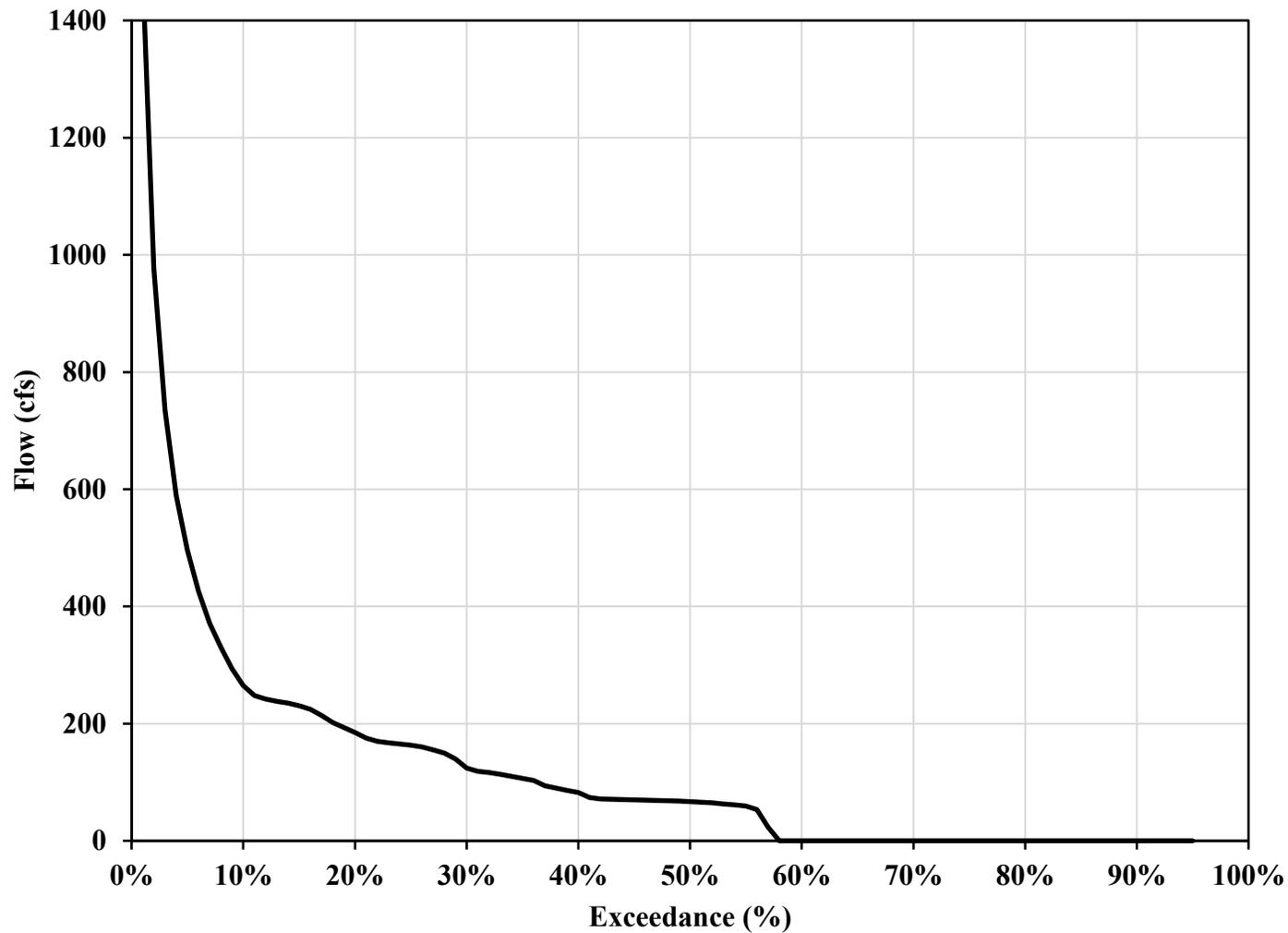


Figure 4.3.1-2: Flow Duration Curve Calculated for the Normanskill Project for the Months of January, February, and March (1995-2016)

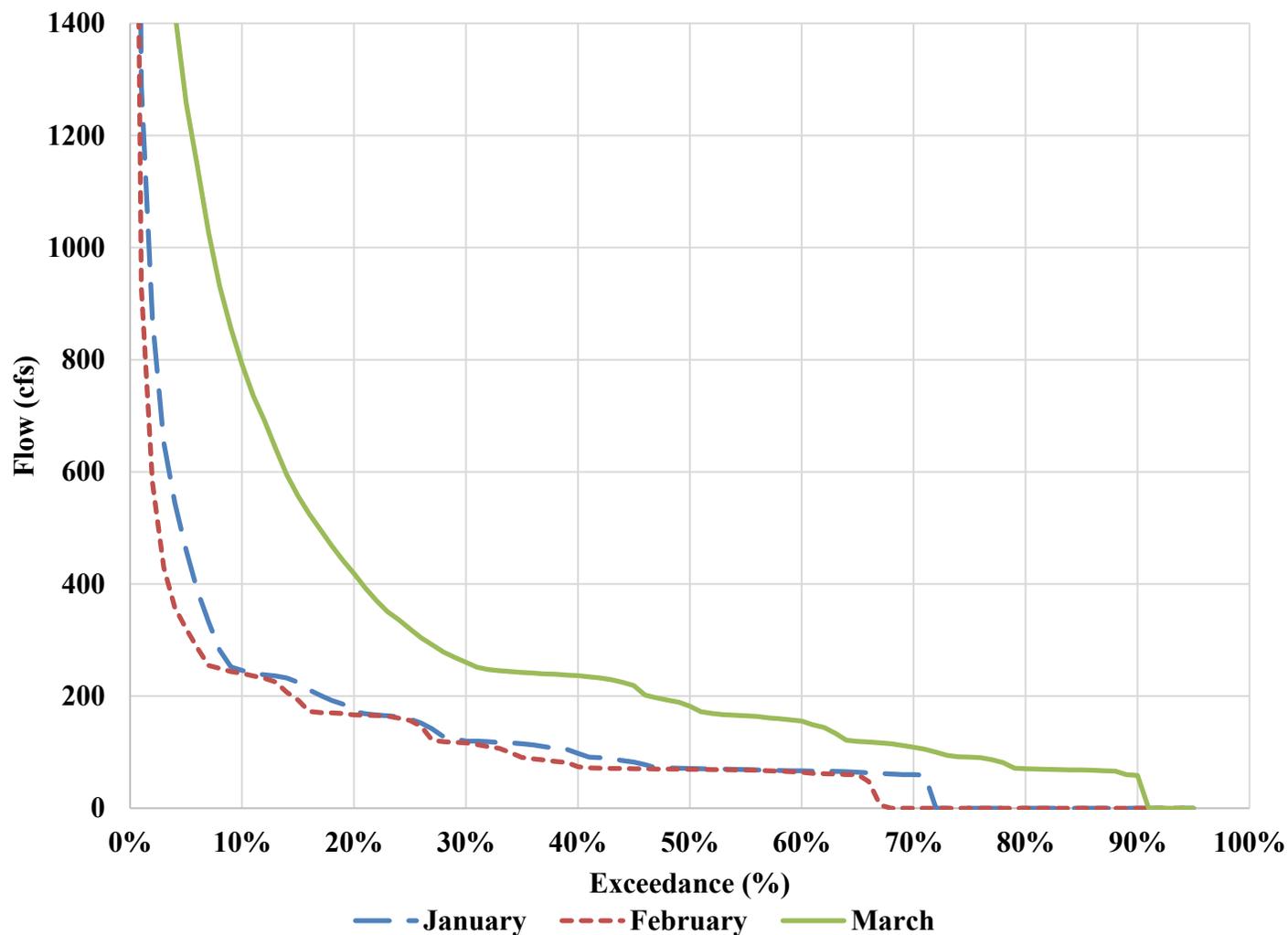


Figure 4.3.1-3: Flow Duration Curves Calculated for the Normanskill Project for the Months of April, May, and June (1995-2016)

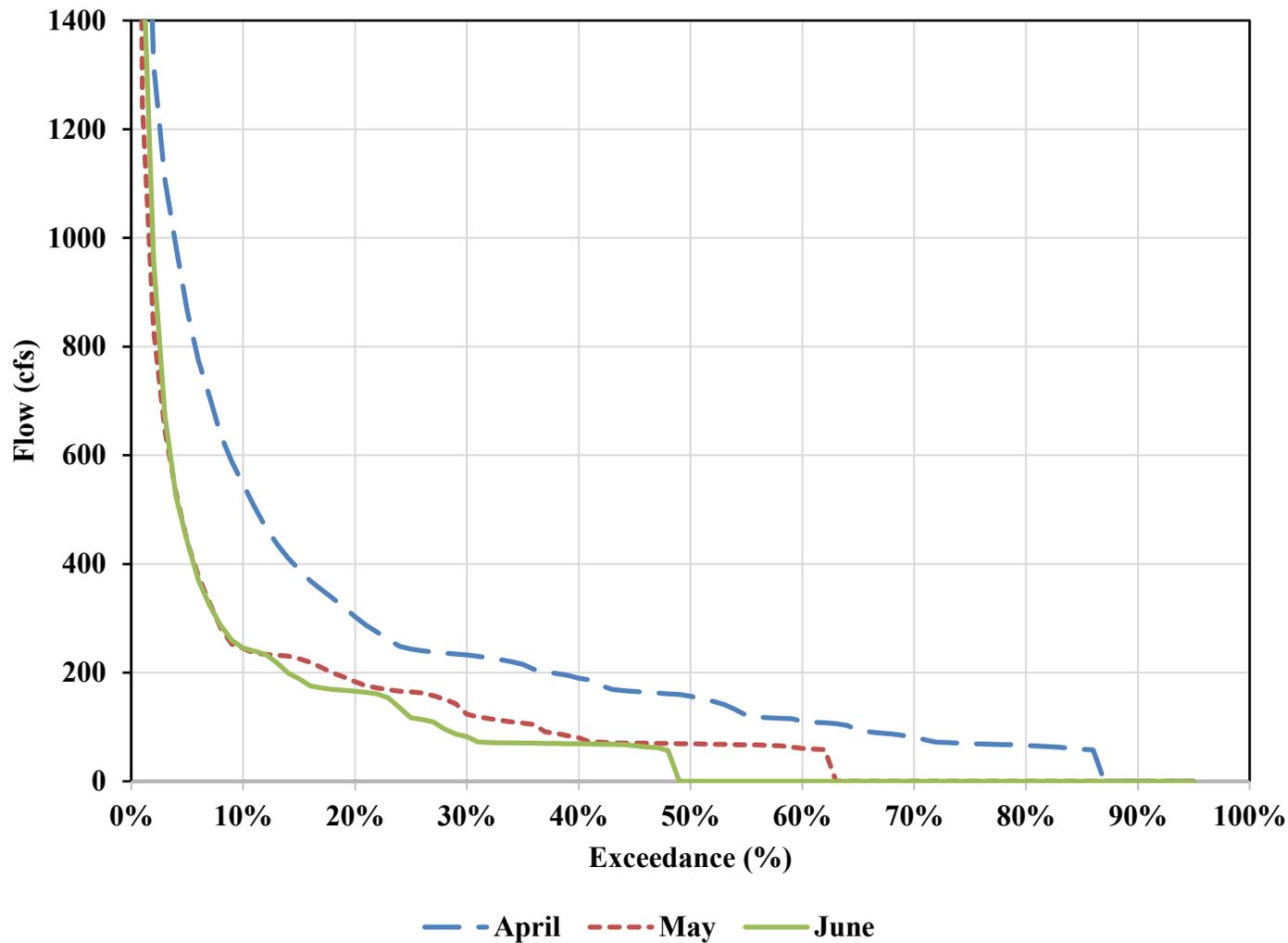


Figure 4.3.1-4: Flow Duration Curves Calculated for the Normanskill Project for the Months of July, August, and September (1995-2015)

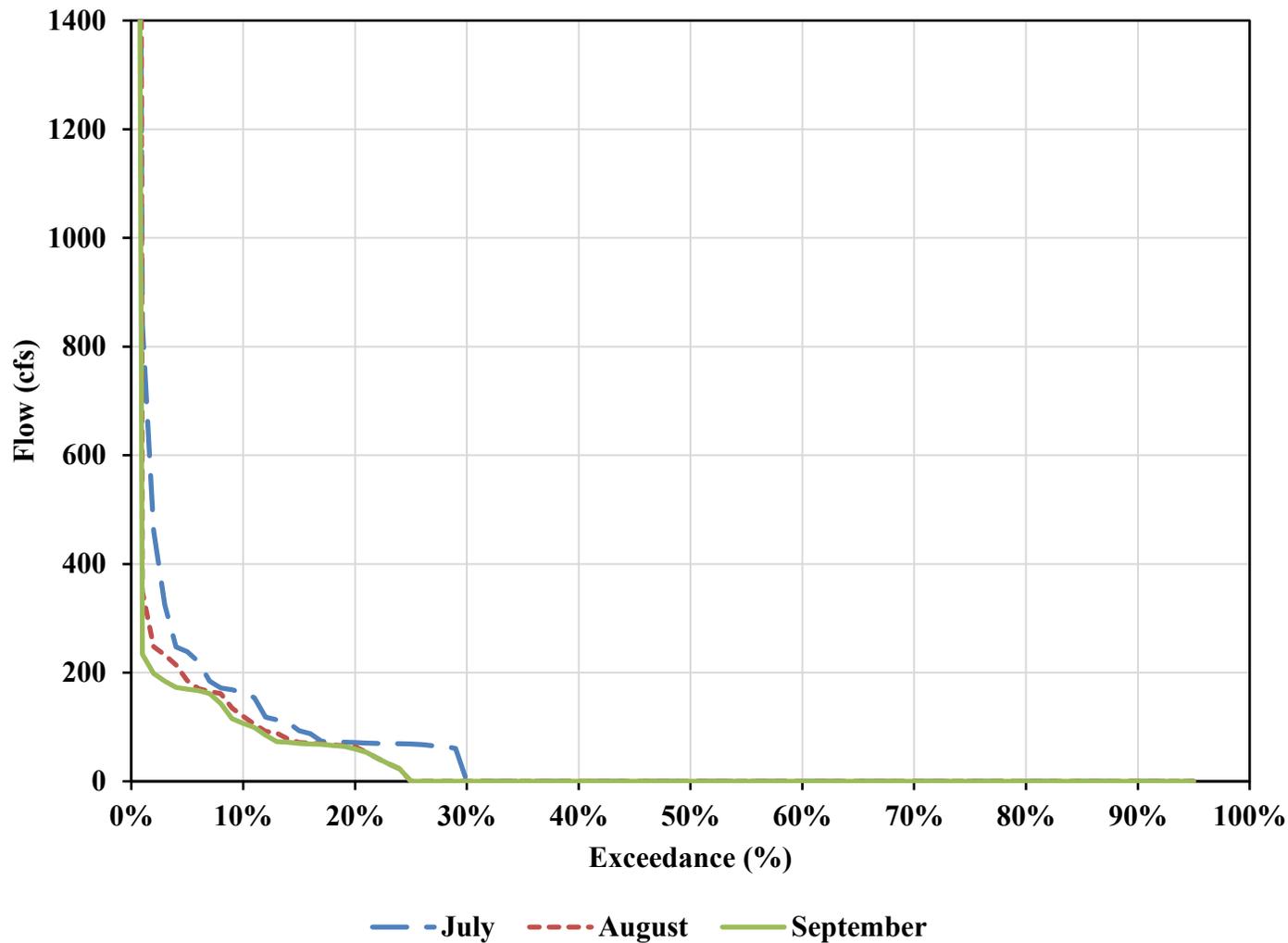


Figure 4.3.1-5: Flow Duration Curves Calculated for the Normanskill Project for the Months of October, November, and December (1995-2015)

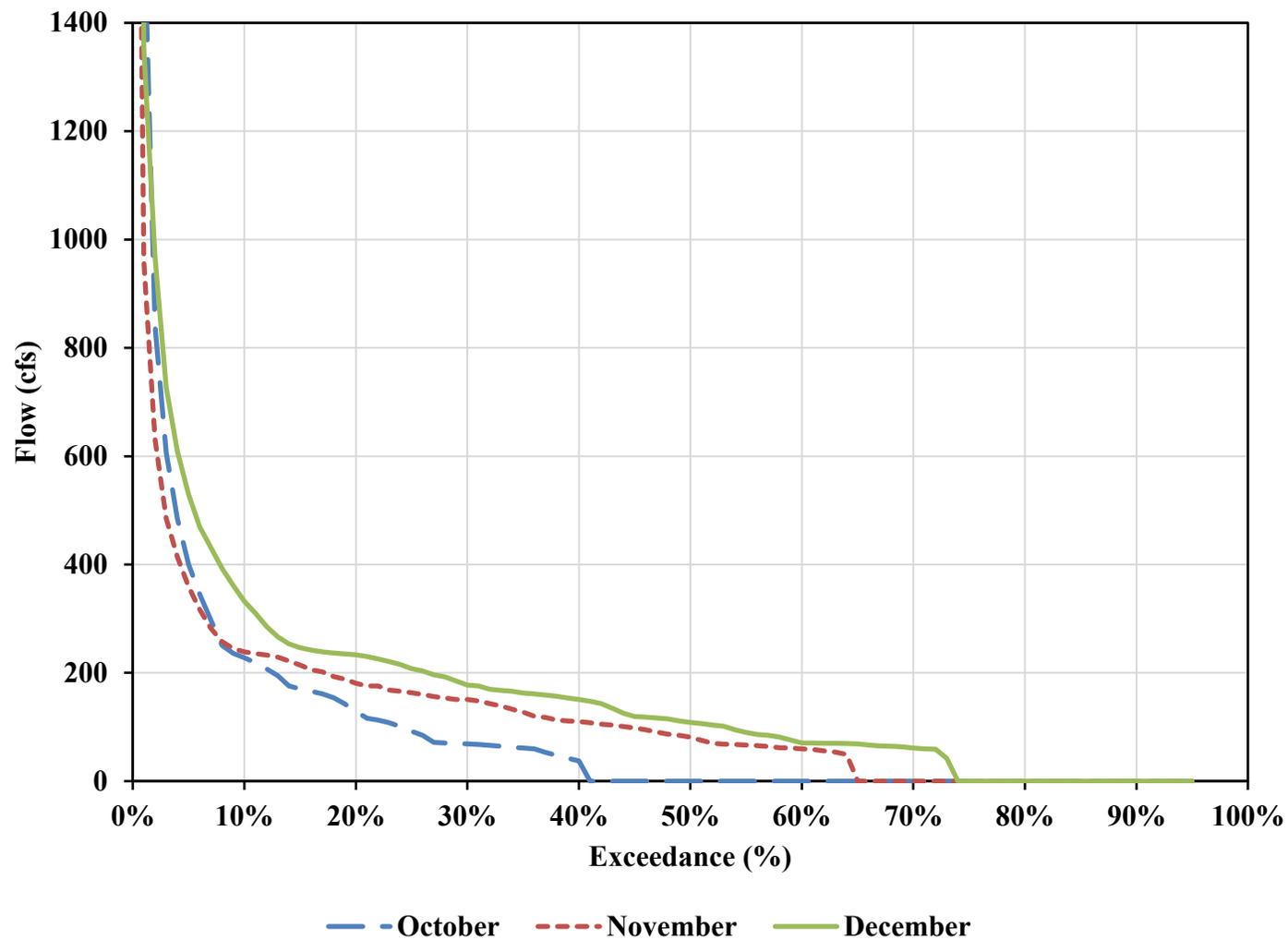


Figure 4.3.4.2-1: Dissolved Oxygen Concentration Measured at Watervliet Reservoir Municipal Water Supply Intake El. 243 ft

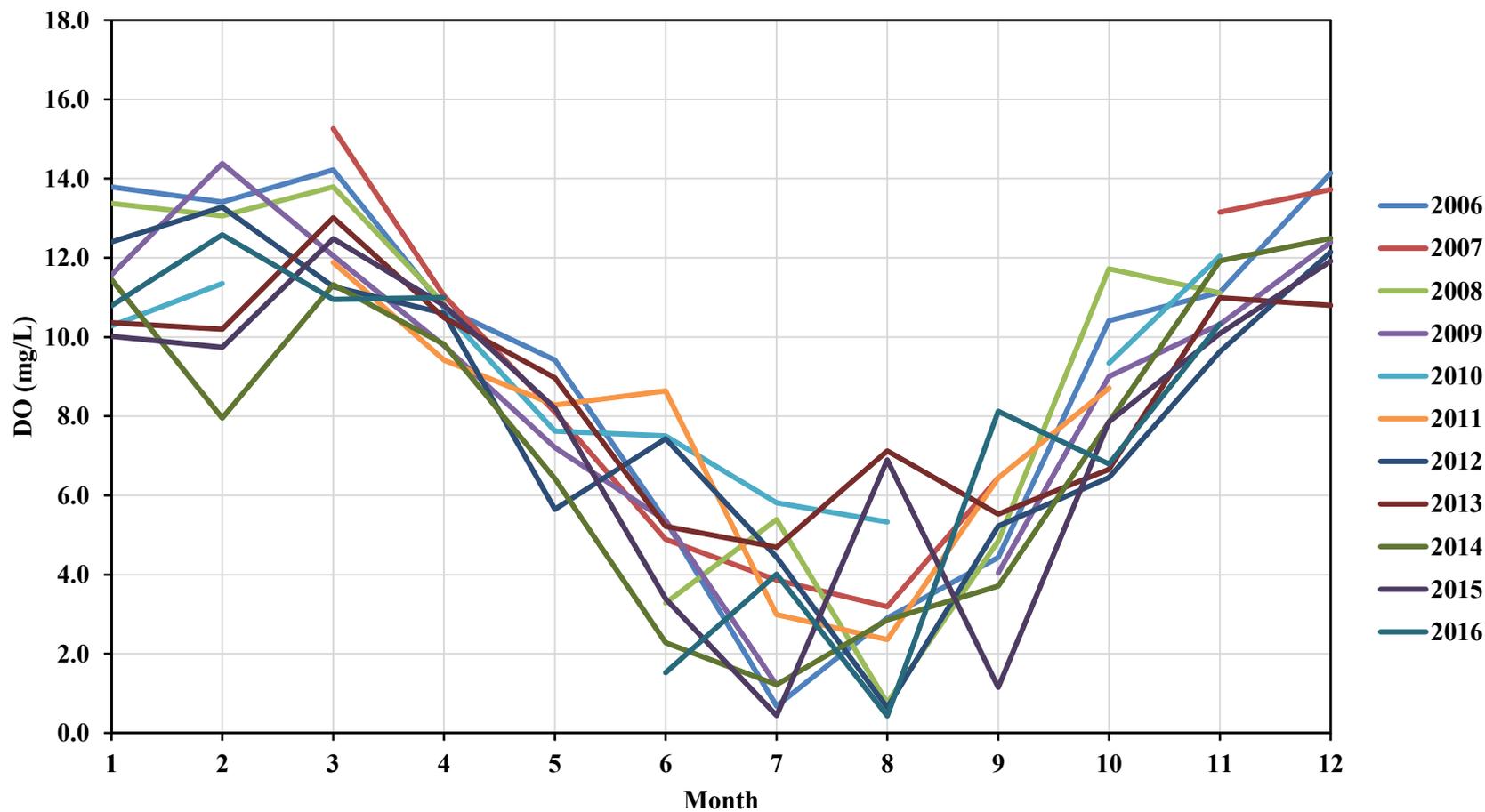
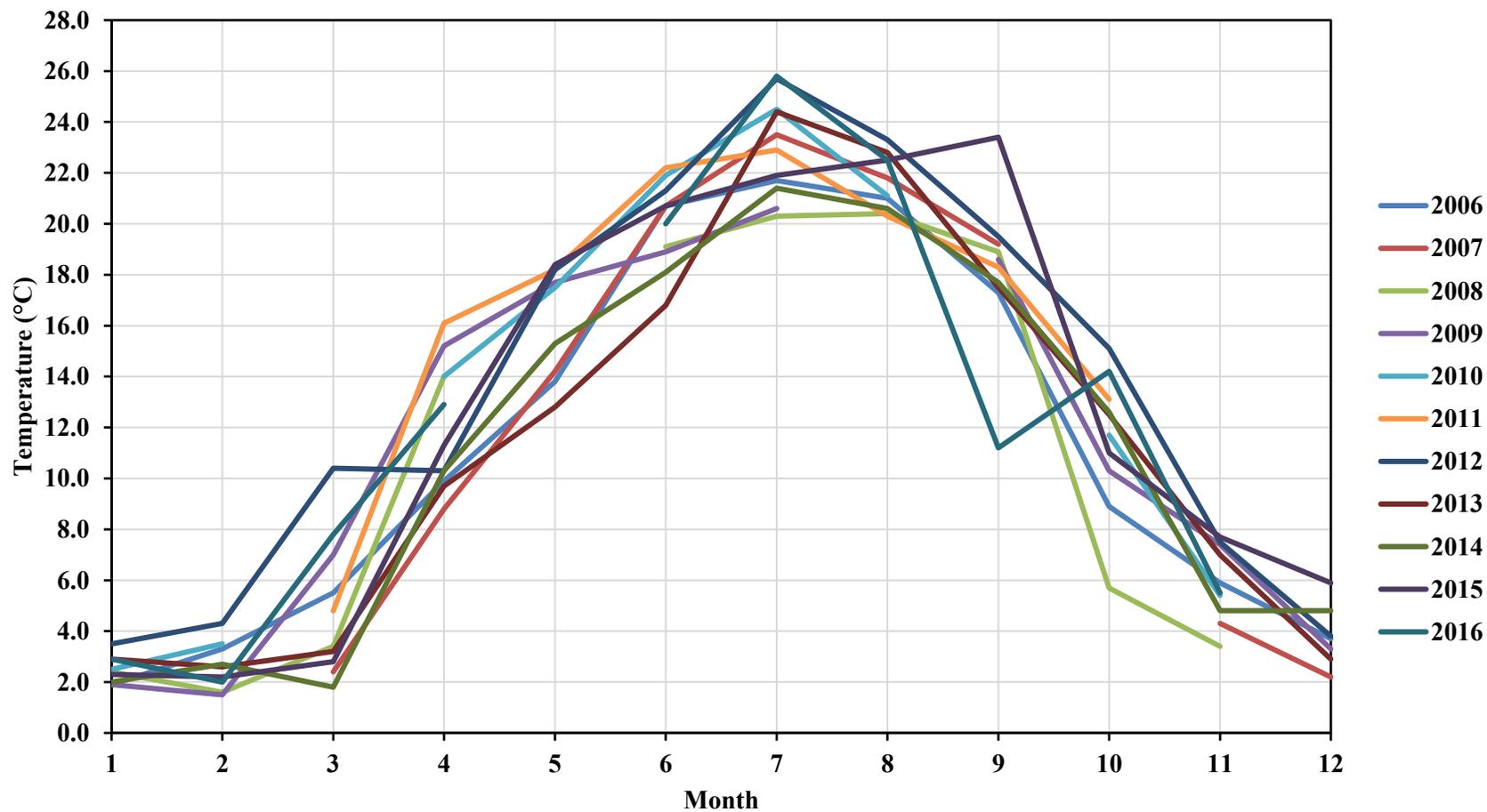
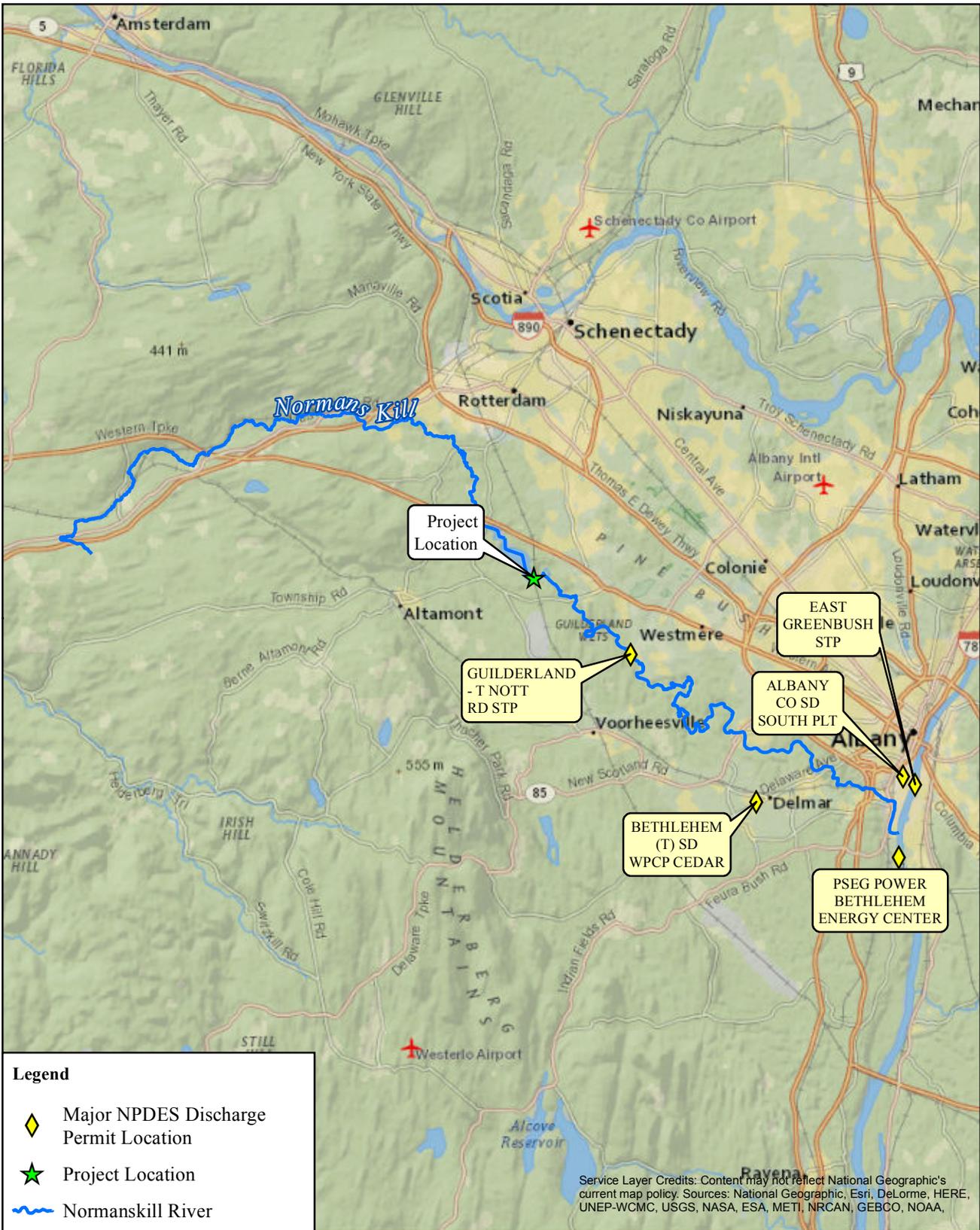


Figure 4.3.4.2-2: Temperature Measured at Watervliet Reservoir Municipal Water Supply Intake





Legend

-  Major NPDES Discharge Permit Location
-  Project Location
-  Normanskill River

Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA,

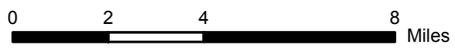
FERC Relicensing of the Normanskill Project (FERC NO. 2955)



N



Figure 4.3.5-1:
NPDES Discharge Locations
on the Normans Kill



0 2 4 8 Miles

4.4 **Fish and Aquatic Resources (18 CFR §5.6 (d)(3)(iv))**

4.4.1 **Aquatic Habitat**

The Normans Kill watershed as a whole provides a wide variety of aquatic habitats, including headwater streams, the medium-sized main-stem, a reservoir, and tidal, estuarine areas. As a result, the stream is host to a relatively diverse aquatic community, with a number of resident and migratory fish species, along with macroinvertebrate taxa.

4.4.1.1 *Project Impoundment*

Most aquatic habitat in the vicinity of the Project is the 430-acre Watervliet Reservoir. It appears to contain a number of shallow areas with weed beds, along with many areas with deeper water. The reservoir is deepest near the dam, at approximately 39 feet, with an average depth of approximately 33 feet. The primary tributaries that enter Watervliet Reservoir include the Normans Kill, Bozen Kill, and Black Creek. Based on the water quality data, persistent fisheries would be restricted to warmwater species.

4.4.1.2 *Downstream Areas*

Because the generating facility is underground, the streambed downstream is minimally modified by the facility. Substrate consists of large amount of bedrock and multiple small waterfalls between the dam and the Project discharge, and flow occurs here only from spill or leakage at the dam, or passage of water through the sluice. The Normans Kill downstream of Watervliet Reservoir appears to be characterized by a relatively shallow creek, with pool, riffle, and run habitat. This reach is subject to low water periods when the Project is not generating and streamflows at the Project are limited to leakage and inflow from the intervening drainage downstream of the Project. During these periods, remaining habitat is limited to standing pools of water or is dewatered. The 4.9-mile stream reach of the Normans Kill between Watervliet Dam and the confluence with the Hunger Kill is impacted by the altered hydrologic regime. When power generation and/or spillage occurs, there is flowing water in the Normans Kill from the Project to its tidal portion.

New York's Department of State has designated the first two miles of the Normans Kill upstream from the Hudson River as Significant Coastal Fish and Wildlife Habitat, specifically pertaining to spawning of anadromous Alewife (*Alosa pseudoharengus*) and Blueback Herring (*Alosa aestivalis*), along with estuarine White Perch (*Morone americana*) ([ACDECCP, 2007](#)). The upstream end of this designated reach is believed to be an impassible, high-gradient area with small waterfalls. The only sea-run fish expected to traverse the falls and have potential to migrate into or through the Project Area, are American Eel (*Anguilla rostrata*) and Sea Lamprey (*Petromyzon marinus*) ([Scott Wells, NYSDEC, pers. comm., 2016](#)), though lamprey have not been documented in the Normans Kill ([Evans, 2013](#)).

4.4.1.3 *Essential Fish Habitat*

No essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act and established by the National Marine Fisheries Service was identified in the Project area.

4.4.2 **Fish Community**

Some data have been collected on the main-stem Normans Kill, but most data were collected in tributary streams. Based on samples collected by NYSDEC in Region 4, 29 species have been collected in the Normans Kill and main-stem tributaries ([Table 4.4.2-1](#)). Most surveys were

relatively recent, between the years 2007 and 2013. All of these species were documented in areas of the watershed downstream of the Project, and 20 were documented in areas upstream of the Project. Most species that were documented in the watershed downstream of the Project that were not documented upstream are warm-water species that prefer slower water and larger streams or lentic habitat. The species composition is primarily characteristic of a warmwater stream community, though some tributaries in the watershed support fish that prefer cold water such as Brook Trout and Slimy Sculpin.

The nearest community-based samples found for the main-stem Normans Kill were 3.4 miles upstream of Watervliet Reservoir and 6.8 miles downstream of the Watervliet Dam. Both of these locations were sampled on June 5th, 2009; the upstream location was sampled with a combination of backpack electrofishing and beach seining, and the downstream location was sampled with backpack electrofishing only. Sampling at the downstream location yielded 165 individuals of 17 species, and the catch was primarily dominated by Longnose Dace, White Sucker, American Eel, Creek Chub, and Pumpkinseed. Sampling at the upstream location yielded fewer fish (n=53) of 11 species, and was dominated by Tessellated Darter, Fathead Minnow, Bluntnose Minnow, Creek Chub, and Pumpkinseed.

Fisheries surveys were completed on Watervliet Reservoir in 1968 and 1977. The fish community documented consisted of warmwater species ([Table 4.4.2-2](#)). American eel that were captured in the surveys appeared to be relatively large, and many eels were observed that were not collected, as noted in the 1977 survey. The primary gamefish in the reservoir appeared to be Largemouth Bass. Species that were documented in Watervliet Reservoir that were not captured in the Normans Kill and/or main-stem tributaries included Common Carp (*Cyprinus carpio*), White Crappie (*Pomoxis annularis*), and Chain Pickerel (*Esox niger*).

4.4.2.1 Diadromous Fish

Diadromous fish are species which utilize both saltwater and freshwater habitats to complete their life cycle. Migratory anadromous fish, which typically reside in the ocean but spawn in freshwater, migrate into the Normans Kill to spawn. However, a waterfall over 20 miles downstream of the Project restricts passage of most species further upriver. The only diadromous fish species known to exist within the Project Area is the catadromous American Eel, which is spawned in the ocean and often grows to maturity in freshwater habitats. This species has been documented both upstream and downstream of the Project ([Table 4.4.2-1](#)), despite an absence of fish passage facilities there, though their abundance appears to be low upstream of the Project. American Eel are known for passing obstacles such as dams and waterfalls to reach upstream habitats where they live and grow for a number of years until maturity, after which they will migrate to the ocean to spawn.

4.4.3 Fisheries

The Normans Kill supports recreational fisheries. NYSDEC has not stocked trout in the main-stem Normans Kill in recent years, though Vly Creek, a major tributary in the lower watershed, is stocked annually and has received between 220 and 270 8-inch Brown Trout (*Salmo trutta*) per year between 2011 and 2015 according to NYSDEC Stocking Lists. No fishing is currently allowed on Watervliet Reservoir, but the Normans Kill provides a popular fishery for smallmouth bass, particularly in the lower reaches ([ACDECCP, 2007](#)). The NYSDEC has developed special fishing regulations for Black Bass (Smallmouth and Largemouth Bass) from Watervliet Dam downstream to the first impassible barrier to fish upstream of the Hudson River, which includes:

- 10-inch minimum size limit, and a bag limit of five fish from the 3rd Saturday in June through November 30th
- Catch and release, using artificial lures only from December 1st through the Friday preceding the 3rd Saturday in June

Staff members of the NYSDEC surveyed multiple locations downstream of the Watervliet Reservoir Dam in 2013 to evaluate the special regulations. Due to limitations in boat access, navigability, and wadability, the surveys were completed by angling. In the 2-mile reach of the Normans Kill between the Watervliet Dam and Route 146, 13.66 hours of angler fishing effort yielded 86 fish ([Table 4.4.3-1](#)). The most frequently caught species were Smallmouth Bass, followed by Bluegill and Redbreast Sunfish. Only five Smallmouth Bass met or exceeded the 10" minimum size criteria. As such, there are fishable populations in the areas downstream of the Project, upstream of the confluence with the Hungerkill, despite dewatering when no generation or spill occurs.

4.4.4 Benthic Macroinvertebrates

No macroinvertebrate data were found for the Normans Kill in the vicinity of the Project, though NYSDEC implements a biomonitoring program on the lower reaches of the Normans Kill, and has also collected data in upstream areas. Macroinvertebrate communities appear to follow a gradient from relatively un-impacted reaches in the upper watershed, with diverse macroinvertebrate communities, to slightly impacted locations in the lower reaches where nutrient loading, pollution, or other anthropogenic impacts are likely affecting the macroinvertebrate community, where there are fewer intolerant species.

The nearest survey appears to have been collected in 1993 as part of NYSDEC biomonitoring near the Route 155 (State Farm Road) bridge, which is approximately 5.4 miles downstream of the Project, and is downstream of the Normans Kill confluence with the Hunger Kill. The kick net sample documented aquatic stages or taxa of worms, snails, beetles, mayflies, caddisflies, crane flies, snipe flies, dance flies, and midges. Overall, mayfly abundance was low, and various midge species were abundant. Approximately 1.3 miles downstream of this location, another biomonitoring sample yielded more species and greater abundance of mayflies and caddisflies, plus the addition of a species of alderfly and aquatic sow bug. Both of these locations were deemed slightly impacted based on the macroinvertebrate community. Other taxa documented in downstream areas of the Normans Kill include black flies, scuds, freshwater mussels, and crayfish. Stoneflies were reported in far upstream areas of the watershed, near Duanesburg ([Smith et al. 2009](#)), and likely occur in other areas within the watershed.

The only freshwater mussels recorded by the biomonitoring surveys in the Normans Kill were *Sphaerium* spp. (fingernail clam) located far downstream of the Project, at sites near the Albany Municipal Golf Course in 1993 and the Delaware Avenue (Route 443) Bridge in 1993, 1998, and 2007. Species such as the Eastern Pondmussel (*Ligumia nasuta*), Tidewater Mucket (*Leptodea ochracea*), and Yellow Lampmussel (*Lampsilis cariosa*) were last documented in the far downstream reaches below Route 9W prior to 1980, but the exact locations of these species is unknown ([ACDECCP, 2007](#)).

Crayfish (undetermined species) have been reported in the reach downstream of Watervliet Reservoir to Tawasentha Park ([ACDECCP, 2007](#)). Surveys in the upper watershed near Duanesburg documented the non-native Rusty Crayfish (*Orconectes rusticus*) as being present.

4.4.5 Known or Potential Adverse Impacts

Relative to fisheries and aquatic resources, the USFWS has identified upstream passage of American Eel, downstream fish passage and protection, and flows/dewatering downstream of the Project as potential issues. NYSDEC has identified American Eel as a species that they may require more information on relative to the Normans Kill and the Project Dam.

4.4.6 Protection, Mitigation and Enhancement Measures

None existing or proposed.

Table 4.4.2-1: Species documented by NYSDEC in the Normans Kill and main-stem tributaries relative to the Watervliet Project

Common Name	Scientific Name	Downstream Watershed	Upstream Watershed
American Eel	<i>Anguilla rostrata</i>	X	X
Banded Killifish	<i>Fundulus diaphanus</i>	X	
Black Crappie	<i>Pomoxis nigromaculatus</i>	X	
Bluegill	<i>Lepomis macrochirus</i>	X	
Bluntnose Minnow	<i>Pimephales notatus</i>	X	X
Brook Trout	<i>Salvelinus fontinalis</i>	X	X
Brown Bullhead	<i>Ameiurus nebulosus</i>	X	X
Brown Trout	<i>Salmo trutta</i>	X	X
Central Mudminnow	<i>Umbra limi</i>	X	X
Central Stoneroller	<i>Campostoma anomalum</i>	X	
Common Shiner	<i>Luxilus cornutus</i>	X	X
Creek Chub	<i>Semotilus atromaculatus</i>	X	X
Cutlip Minnow	<i>Exoglossum maxillingua</i>	X	X
Eastern Blacknose Dace	<i>Rhinichthys atratulus</i>	X	X
Fallfish	<i>Semotilus corporalis</i>	X	X
Fathead Minnow	<i>Pimephales promelas</i>	X	X
Golden Shiner	<i>Notemigonus crysoleucas</i>	X	X
Largemouth Bass	<i>Micropterus salmoides</i>	X	
Longnose Dace	<i>Rhinichthys cataractae</i>	X	X
Pumpkinseed	<i>Lepomis gibbosus</i>	X	X
Redbreast Sunfish	<i>Lepomis auritus</i>	X	
Rock Bass	<i>Ambloplites rupestris</i>	X	X
Slimy Sculpin	<i>Cottus cognatus</i>	X	X
Smallmouth Bass	<i>Micropterus dolomieu</i>	X	X
Spottail Shiner	<i>Notropis hudsonius</i>	X	
Tessellated Darter	<i>Etheostoma olmstedii</i>	X	X
White Perch	<i>Morone americana</i>	X	
White Sucker	<i>Catostomus commersonii</i>	X	X
Yellow Perch	<i>Perca flavescens</i>	X	

Table 4.4.2-2: Species documented by NYSDEC in Watervliet Reservoir, 1968, 1977, and 1986.

Species	May 1968 Trapnet Survey	June 1977 Gill Net, Trapnet, Seine, and Electrofishing Surveys	April 1986 Electrofishing
Largemouth Bass		X	X
Yellow Perch	X	X	X
Bluegill	X	X	X
Pumpkinseed	X	X	X
Brown Bullhead	X	X	X
American Eel	X	X	X
Common Carp	X	X	X
White Sucker	X	X	X
Golden Shiner	X	X	X
White Crappie		X	X
Black Crappie		X	X
Chain Pickerel			X

Table 4.4.3-1: Species captured during an angling survey by NYSDEC in 2013 on the Normans Kill between Watervliet Dam and Route 146

Species	Number (n)	Minimum Length (inches)	Maximum Length (inches)	Mean Length (inches)
Black Crappie	3	6.3	7.6	6.8
Bluegill	17	4.1	8.2	5.7
Common Shiner	1	5.4	5.4	5.4
Fallfish	8	6.6	10.8	8.5
Golden Shiner	1	8.0	8.0	8.0
Largemouth Bass	2	8.8	9.0	8.9
Pumpkinseed	2	5.7	6.2	5.9
Redbreast Sunfish	13	5.9	6.8	6.3
Rock Bass	9	5.6	8.5	7.0
Smallmouth Bass	30	3.3	14.5	7.3

4.5 Wildlife and Botanical Resources (18 CFR §5.6 (d)(3)(v))

4.5.1 Ecoregion Description

The United States Forest Service defines ecoregions as “ecosystems of regional extent”. There are four levels of ecosystems to define an ecoregion. The four levels from broadest to narrowest are: domain, divisions, province, and sections. Domains are related climates differentiated by precipitation and temperature. Divisions are climates located in domains that are separated by patterns and amounts of precipitation and temperature. Provinces are climates in divisions that are determined by natural land covers such as vegetation. Sections are determined by terrain types within a province. The Project Area is located in the Humid Temperate Domain, Hot Continental Division, Eastern Broadleaf Forest Oceanic Province, and Hudson Valley Section. This categorization helps define the flora and fauna that may be present in the Project Area ([Bailey, 2008](#)).

4.5.2 Wildlife

There is a forested riparian zone and wetlands located in and bordering the Project Area. These habitat types have the potential to support many wildlife species that have terrestrial, aquatic or mixed habitat needs. The forested areas are mostly Hemlock-Northern Hardwood Forest. The mammals typically associated with this forest type include Black Bear, Fisher, Gray Fox, Northern Flying Squirrel, Porcupine, Smoky Shrew, White-Footed Mouse, and Woodland Jumping Mouse. Reptiles and amphibians may utilize the Project’s available terrestrial, wetland and aquatic habitats during their various life stages. The Project is located on the Atlantic Flyway, the major bird migratory path on the East Coast of the United States. Migratory bird species may utilize the Project Area as a foraging or rest stop on their journey and some species may utilize the area during the breeding season. In addition to migratory bird species, the birds associated with Northern Hardwood Forests include but are not limited to: Barred Owl, Blackburnian Warbler, Black-Throated Blue Warbler, Hermit Thrush, Ovenbird, Ruffed Grouse, and Wood Thrush ([The Nature Conservancy, 2017](#)).

In 2007, a Riparian Corridor Study was conducted along the Normans Kill in Albany County. This report summarizes the environmental features within one kilometer of the Normans Kill. The data collected on mammal ([Table 4.5.2-1](#)), reptile and amphibian ([Table 4.5.2-2](#)), and bird ([Table 4.5.2-3](#)) species within the corridor are for Albany County and therefore representative of species that may utilize the Project Area ([ACDECCP, 2007](#)).

Table 4.5.2-1: Mammals Identified in Normans Kill Riparian Corridor Study

Common Name	Scientific Name
White-Tailed Deer	<i>Odocoileus virginianus</i>
Eastern Coyote	<i>Canis latrans var.</i>
Raccoon	<i>Procyon lotor</i>
Striped Skunk	<i>Mephitis mephitis</i>
Red Fox	<i>Vulpes vulpes</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Beaver	<i>Castor canadensis</i>
Muskrat	<i>Ondatra zibethicus</i>
Woodchuck	<i>Marmota monax</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Gray Squirrel	<i>Sciurus carolinensis</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Fisher	<i>Martes pennanti</i>
Mink	<i>Neovison vison</i>
Bobcat	<i>Lynx rufus</i>
Porcupine	<i>Erethizon dorsatum</i>
Short-Tailed Weasel	<i>Mustela erminea</i>
Long-Tailed Weasel	<i>Mustela frenata</i>
North American Least Shrew	<i>Cryptotis parva</i>
Opossum	<i>Didelphis virginiana</i>

Source: [ACDECCP, 2007](#)

Table 4.5.2-2: Amphibians and Reptiles Identified in the Normans Kill Riparian Corridor Study

Common Name	Scientific Name
Jefferson Salamander Complex	<i>Ambystoma jeffersonianum</i>
Blue-Spotted Salamander	<i>Ambystoma laterale</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Red-Spotted Newt	<i>Notophthalmus viridescens</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Northern Redback Salamander	<i>Plethodon cinereus</i>
Northern Two-Lined Salamander	<i>Eurycea bislineata</i>
Eastern American Toad	<i>Anaxyrus americanus</i>
Fowler's Toad	<i>Anaxyrus fowleri</i>
Gray Treefrog	<i>Hyla versicolor</i>
Northern Spring Peeper	<i>Pseudacris crucifer</i>
Bullfrog	<i>Lithobates catesbeianus</i>
Green Frog	<i>Rana clamitans</i>
Wood Frog	<i>Lithobates sylvaticus</i>
Northern Leopard Frog	<i>Lithobates pipiens</i>
Northern Water Snake	<i>Nerodia sipedon</i>
Northern Brown Snake	<i>Storeria dekayi</i>
Northern Redbelly Snake	<i>Storeria occipitomaculata occipitomaculata</i>
Common Garter Snake	<i>Thamnophis sirtalis</i>
Eastern Hognose Snake	<i>Heterodon platirhinos</i>
Eastern Worm Snake	<i>Carphophis amoenus amoenus</i>
Eastern Milk Snake	<i>Lampropeltis triangulum</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Wood Turtle	<i>Glyptemys insculpta</i>
Common Map Turtle	<i>Graptemys geographica</i>
Painted Turtle	<i>Chrysemys picta</i>

Source: [ACDECCP, 2007](#)

Table 4.5.2-3: Birds Identified in the Normans Kill Riparian Corridor Study

Common Name	Scientific Name
Canada Goose	<i>Branta canadensis</i>
Wood Duck	<i>Aix sponsa</i>
American Black Duck	<i>Anas rubripes</i>
Mallard	<i>Anas platyrhynchos</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Pied-Billed Grebe	<i>Podilymbus podiceps</i>
Double Crested Cormorant	<i>Phalacrocorax auritus</i>
American Bittern	<i>Botaurus lentiginosus</i>
Least Bittern	<i>Ixobrychus exilis</i>
Great Blue Heron	<i>Ardea herodias</i>
Green Heron	<i>Butorides virescens</i>
Turkey Vulture	<i>Cathartes aura</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Sharp-Shinned Hawk	<i>Accipiter striatus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-Shouldered Hawk	<i>Buteo lineatus</i>
Broad-Winged Hawk	<i>Buteo platypterus</i>
Red-Tailed Hawk	<i>Buteo jamaicensis</i>
American Kestrel	<i>Falco sparverius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
Common Moorhen	<i>Gallinula chloropus</i>
Killdeer	<i>Charadrius vociferus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Wilson's Snipe	<i>Gallinago delicata</i>
American Woodcock	<i>Scolopax minor</i>
Rock Pigeon	<i>Columba livia</i>
Mourning Dove	<i>Zenaida macroura</i>
Monk Parakeet	<i>Myiopsitta monachus</i>
Black-Billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
Yellow-Billed Cuckoo	<i>Coocyzus americanus</i>
Eastern Screech Owl	<i>Meagascops asio</i>
Great Horned Owl	<i>Bubo virginianus</i>
Barred Owl	<i>Strix varia</i>
Whip-Poor-Will	<i>Caprimulgus vociferus</i>
Chimney Swift	<i>Chaetura pelagica</i>
Ruby-Throated Hummingbird	<i>Archilochus colubris</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Red-Bellied Woodpecker	<i>Melanerpes carolinus</i>
Yellow-Bellied Sapsucker	<i>Sphyrapicus varius</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>

Common Name	Scientific Name
Northern Flicker	<i>Colaptes auratus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Least Flycatcher	<i>Empidonax minimus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Yellow-Throated Vireo	<i>Vireo flavivrons</i>
Blue-Headed Vireo	<i>Vireo solitarius</i>
Warbling Vireo	<i>Vireo gilvus</i>
Red-Eyed Vireo	<i>Vireo olivaceus</i>
Blue Jay	<i>Cyanocitta cristat</i>
American Crow	<i>Corvus brachyrhynchos</i>
Fish Crow	<i>Corvus ossifragus</i>
Common Raven	<i>Corvus corax</i>
Purple Martin	<i>Progne subis</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Northern Rough-Winged Swallow	<i>Stelgidopteryx serripens</i>
Bank Swallow	<i>Riparia riparia</i>
Barn Swallow	<i>Hirundo rustica</i>
Black-Capped Chickadee	<i>Poecile atricapillus</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>
Red-Breasted Nuthatch	<i>Sitta candensis</i>
White-Breasted Nuthatch	<i>Sitta carolinensis</i>
Brown Creeper	<i>Certhia americana</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
House Wren	<i>Troglodytes aedon</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Marsh Wren	<i>Cistothorus palustris</i>
Blue-Gray Gnatcatcher	<i>Poliophtila caerulea</i>
Eastern Bluebird	<i>Sialia sialia</i>
Veery	<i>Catharus fuscescens</i>
Hermit Thrush	<i>Catharus guttatus</i>
Wood Thrush	<i>Hylocichla mustelina</i>
American Robin	<i>Turdus migratorius</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus pilyglottos</i>
Brown Thrasher	<i>Toxostoma furum</i>
European Starling	<i>Stumus vulgaris</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Blue-Winged Warbler	<i>Vermivora pinus</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Yellow Warbler	<i>Dendroica petechia</i>
Chestnut-Sided Warbler	<i>Dendroica pensylvanica</i>
Black-Throated Blue Warbler	<i>Densroica caerulescens</i>
Black-Throated Green Warbler	<i>Dendroica virens</i>

Common Name	Scientific Name
Pine Warbler	<i>Dendroica pinus</i>
Prairie Warbler	<i>Dendroica discolor</i>
Black-And-White Warbler	<i>Mniotilta varia</i>
American Redstart	<i>Setophaga ruticilla</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Louisiana Waterthrush	<i>Seiurus motacilla</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Hooded Warbler	<i>Wilsonia citrina</i>
Scarlet Tanager	<i>Piranga olivacea</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Chipping Sparrow	<i>Spizella passerina</i>
Field Sparrow	<i>Spizella pusilla</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Song Sparrow	<i>Melospiza melodia</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
White Throated Sparrow	<i>Zonotrichia albicollis</i>
Dark-Eyed Junco	<i>Junco hyemalis</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Rose-Winged Grosbeak	<i>Pheucticus ludovicianus</i>
Indigo Bunting	<i>Passerina cyanea</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-Headed Cowbird	<i>Molothrus ater</i>
Orchard Oriole	<i>Icterus spurius</i>
Baltimore Oriole	<i>Icterus galbula</i>
Purple Finch	<i>Carpodacus purpureus</i>
House Finch	<i>Carpodacus mexicanus</i>
Red Crossbill	<i>Loxia curvirostra</i>
Pine Siskin	<i>Carduelis pinus</i>
American Goldfinch	<i>Carduelis tristis</i>
House Sparrow	<i>Passer domesticus</i>

Source: [ACDECCP, 2007](#)

4.5.3 Botanical

The majority of the terrestrial land in and adjacent to the Project is considered to be Northern Hardwood and Conifer forest. It is a broadly defined forest type that occurs in multiple states on the Eastern Coast of the United States. It can usually be found in low to mid-elevation ranges with variations in dominant hardwoods and species mixes occurring as climate and soil types change. Botanical resources associated with this forest type throughout its range include: Broad Beech Fern, Flowering Dogwood, Four-Leaved Milkweed, Perfoliate Bellwort, Round-Leaved Tick Trefoil, Spicebush, Squawroot, and Pinedrops. A stand of Oak-Pine forest is also located along a section of the Reservoir. The Oak-Pine forests are usually closed canopy and may be comprised of various oak types such as Red Oak, White Oak, Black Oak, and Scarlet Oak. Heath shrub species can be present but are sparse. Plants associated with Oak-Pine forests include: American Wintergreen, Basil Beebalm, Blunt-Lobed Woodsia, Bottlebrush Grass, Early Buttercup, and Sicklepod. The State of New York defines Northern Hardwood and Conifer forest as Hemlock-Northern Hardwood Forest and Oak-Pine forest as Appalachian Oak-Pine Forest. ([The Nature Conservancy, 2017](#))

Hemlock-Northern Hardwood Forest is a mixed type that occurs in various elevation ranges, with different soil characteristics. The canopy is usually closed and Eastern Hemlock may occur in pure stands or mixed in with other canopy level species. Many variants of this forest type exist, however, in the Hudson Valley the dominant tree types are a mix of Eastern Hemlock and Red Oak along with other non-dominant species ([NYNHP, 2017](#)). Appalachian Oak-Pine Forests can be found in sandy or rocky soils and are dominant by several oak species with White Pine providing 25% or greater of the canopy cover. In rocky areas, Pitch Pine may be dominant instead of White Pine. The understory is usually well developed and the herbaceous vegetation is sparse ([NYNHP, 2017](#)).

Wetland vegetation within the Project area includes Central Hardwood Swamps and Northern Swamps. Central Hardwood Swamps occur in poorly drained uplands or depressions. Saturation periods and species composition vary. Some variations have more tree cover with less shrub and herbaceous cover. Open canopy areas have a denser understory. Plants associated with Central Hardwood Swamps include Pin Oak, Swamp White Oak, Bur Oak, Black Gum, Sweet Gum, Red Maple, Buttonbush, Winterberry, Alder, Cinnamon Fern and various sedges. Northern Swamps are typically comprised of mixed conifer and hardwood species in poorly drained acidic soils. They can be found in a variety of areas. Hemlock is often a dominant species along with Red Maple or Black Gum. Species overlap between the swamps and forests occurs ([Table 4.5.3-1](#)) ([The Nature Conservancy, 2017](#)). The State of New York defines Northern Swamps as Red Maple-Hardwood Swamp ([NYNHP, 2017](#)).

Table 4.5.3-1: Botanical Resources Found in or Near the Project Area

Type	Common Name	Scientific Name	Level
Hemlock Northern Hardwood Appalachian Oak-Pine	American Beech	<i>Fagus grandifolia</i>	Canopy
Red Maple-Hardwood Appalachian Oak-Pine	American Elm	<i>Ulmus americana</i>	Canopy
Appalachian Oak-Pine	American Witch Hazel	<i>Hamamelis virginiana</i>	Shrub
Appalachian Oak-Pine	Black Huckleberry	<i>Gaylussacia baccata</i>	Dwarf Shrub
Appalachian Oak-Pine	Black Oak	<i>Quercus velutina</i>	Canopy
Hemlock Northern Hardwood Appalachian Oak-Pine	Canada May-flower	<i>Maianthemum canadense</i>	Ground
Hemlock Northern Hardwood Appalachian Oak-Pine	Chestnut Oak	<i>Quercus montana</i>	Canopy
Hemlock Northern Hardwood	Christmas Fern	<i>Polystichum acrostichoides</i>	Ground
Red Maple-Hardwood	Cinnamon Fern	<i>Osmunda cinnamomea</i>	Herb
Red Maple-Hardwood	Common Winterberry	<i>Ilex verticillata</i>	Shrub
Appalachian Oak-Pine	Early Lowbush Blueberry	<i>Vaccinium pallidum</i>	Dwarf Shrub
Hemlock Northern Hardwood Appalachian Oak-Pine	Eastern Hemlock	<i>Tsuga canadensis</i>	Canopy
Hemlock Northern Hardwood Appalachian Oak-Pine	Eastern White Pine	<i>Pinus strobus</i>	Canopy
Hemlock Northern Hardwood	Evergreen Woodfern	<i>Dryopteris intermedia</i>	Ground
Red Maple-Hardwood	False Nettle	<i>Boehmeria cylindrica</i>	Herb
Hemlock Northern Hardwood	Great Laurel	<i>Rhododendron maximum</i>	Shrub
Red Maple-Hardwood	Green Ash	<i>Fraxinus pennsylvanica</i>	Canopy
Red Maple-Hardwood	Highbush Blueberry	<i>Vaccinium corymbosum</i>	Shrub
Appalachian Oak-Pine	Hophornbeam	<i>Ostrya virginiana</i>	Canopy
Hemlock Northern Hardwood	Indian Cucumber-Root	<i>Medeola virginiana</i>	Ground
Appalachian Oak Pine	Lowbush Blueberry	<i>Vaccinium angustifolium</i>	Dwarf Shrub
Hemlock Northern Hardwood Appalachian Oak-Pine	Mapleleaf Viburnum	<i>Viburnum acerifolium</i>	Dwarf Shrub
Appalachian Oak-Pine	Marginal Wood Fern	<i>Dryopteris marginalis</i>	Herb
Hemlock Northern Hardwood	Northern Starflower	<i>Trientalis borealis</i>	Ground
Red Maple-Hardwood	Northern Wild Raisin	<i>Viburnum nudum</i>	Shrub
Appalachian Oak-Pine	Partridgeberry	<i>Mitchella repens</i>	Herb
Appalachian Oak-Pine	Pennsylvania Sedge	<i>Carex pensylvanica</i>	Herb

Type	Common Name	Scientific Name	Level
Appalachian Oak-Pine	Pitch Pine	<i>Pinus rigida</i>	Canopy
Appalachian Oak-Pine	Poverty Oatgrass	<i>Danthonia spicata</i>	Herb
Hemlock-Northern Hardwood Appalachian Oak-Pine Red Maple-Hardwood	Red Maple	<i>Acer rubrum</i>	Canopy
Hemlock Northern Hardwood Appalachian Oak-Pine	Red Oak	<i>Quercus rubra</i>	Canopy
Red Maple-Hardwood	Royal Fern	<i>Osmunda regalis</i>	Herb
Red Maple-Hardwood	Sensitive Fern	<i>Onoclea sensibilis</i>	Herb
Hemlock Northern Hardwood	Shining Clubmoss	<i>Huperzia lucidula</i>	Ground
Red Maple-Hardwood	Skunk Cabbage	<i>Symplocarpus feotidus</i>	Herb
Red Maple-Hardwood	Slippery Elm	<i>Ulmus rubra</i>	Canopy
Red Maple-Hardwood	Southern Arrowwood	<i>Viburnum dentatum</i>	Shrub
Red Maple-Hardwood	Speckled Alder	<i>Alnus incana ssp. rugosa</i>	Shrub
Red Maple-Hardwood	Spicebush	<i>Lindera benzoin</i>	Dwarf Shrub
Red Maple-Hardwood	Spotted Jewelweed	<i>Impatiens capensis</i>	Herb
Hemlock Northern Hardwood	Striped Maple	<i>Acer pensylvanicum</i>	Shrub
Hemlock Northern Hardwood Appalachian Oak-Pine	Sugar Maple	<i>Acer saccharum</i>	Canopy
Hemlock Northern Hardwood Appalachian Oak-Pine	Sweet Birch	<i>Betula lenta</i>	Canopy
Red Maple-Hardwood	Tall Meadow-Rue	<i>Thalictrum pubescens</i>	Herb
Red Maple-Hardwood	Tussock Sedge	<i>Carex stricta</i>	Herb
Appalachian Oak-Pine	Wavy Hair Grass	<i>Deschampsia flexuosa</i>	Herb
Appalachian Oak-Pine	White Ash	<i>Fraxinus americana</i>	Canopy
Hemlock Northern Hardwood Appalachian Oak-Pine	White Oak	<i>Quercus alba</i>	Canopy
Red Maple-Hardwood	Yellow Birch	<i>Betula alleghaniensis</i>	Canopy

Source: [NYNHP, 2017](#)

4.5.4 Known or Potential Adverse Impacts

Continued operation of the Project is not expected to have any adverse effects on wildlife and botanical resources in the vicinity of the Project (See [Section 4.7.4](#) for RTE Species Impacts)

4.5.5 Protection, Mitigation and Enhancement Measures

None existing or proposed.

4.6 Wetlands, Riparian and Littoral Habitat (18 CFR §5.6 (d)(3)(vi))

4.6.1 Existing Environment

Wetlands are defined by the U.S. Fish and Wildlife Service (USFWS), as per the Federal Geographic Data Committee (FGDC) as, lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands are classified based on three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of the year ([FGDC, 2013](#)). Animal species with the potential to use wetland habitat are presented in [Section 4.5](#).

Information with regard to wetland classifications occurring within 1,000 ft. of the Project Boundary were obtained from the USFWS National Wetland Inventory (NWI) and the NYSDEC and are displayed in [Figure 4.6.1-1](#). The NWI coverage is developed from aerial photography, not field surveys ([USFWS, 2016](#)). Wetlands within the vicinity of the Project and adjacent lands are classified as palustrine systems. Palustrine systems can be dominated by shrubs, trees, persistent emergent vegetation or include each of the following four characteristics: (1) area is less than 8 ha (20 acres); (2) lack active wave-formed or bedrock shoreline features; (3) water depth in the deepest part of basin is less than 2.5 m (8.2 ft) at low water; and (4) salinity due to ocean-derived salts is less than 0.5 ppt. Three classes of wetlands commonly associated with lakes, impoundments and slow-moving streams such as the Watervliet Reservoir have the potential to be present within the vicinity of the Project, including emergent, forested and scrub-shrub wetland types ([Table 4.6.1-1](#)). Note that there may also be wetland areas that transition seasonally from emergent to an open body of water (i.e., unconsolidated bottom).

The New York State Legislature passed The Freshwater Wetlands Act in 1975 with the intent to preserve, protect and conserve freshwater wetlands and their benefits, consistent with the general welfare and beneficial economic, social and agricultural development of the state. To be protected under the Freshwater Wetlands Act, a wetland must be 12.4 acres (5 hectares or larger). NYSDEC classifies wetlands on a scale of 1-4, with 1 providing the most benefits and 4 providing the fewest. Each regulated wetland is also surrounded by a 100-foot-wide regulated area. There are two NYSDEC freshwater within or adjacent to the Project Area that are regulated by New York State ([Figure 4.6.1-1](#)). Wetland V-7 encompasses 176.6 acres near the upstream end of the Watervliet Reservoir, and is considered a Class 1 wetland. Wetland V-45 is a 47.4-acre Class 2 wetland, which is located along the Normans Kill immediately downstream of the Project Boundary. NYSDEC regulated wetlands cover an estimated total of 125.5 acres (26%) of the area within the Project Boundary based on the NYSDEC GIS data.

4.6.2 Known or Potential Adverse Impacts

The City manages Watervliet Reservoir water levels within a relatively narrow band, though fluctuations will occur naturally based on river flow. Wetlands in the Project vicinity have likely adapted to the conditions resulting from Project operations since the construction of Watervliet Reservoir. Continued operation of the Project is not expected to have any adverse effects on wetlands in the vicinity of the Project.

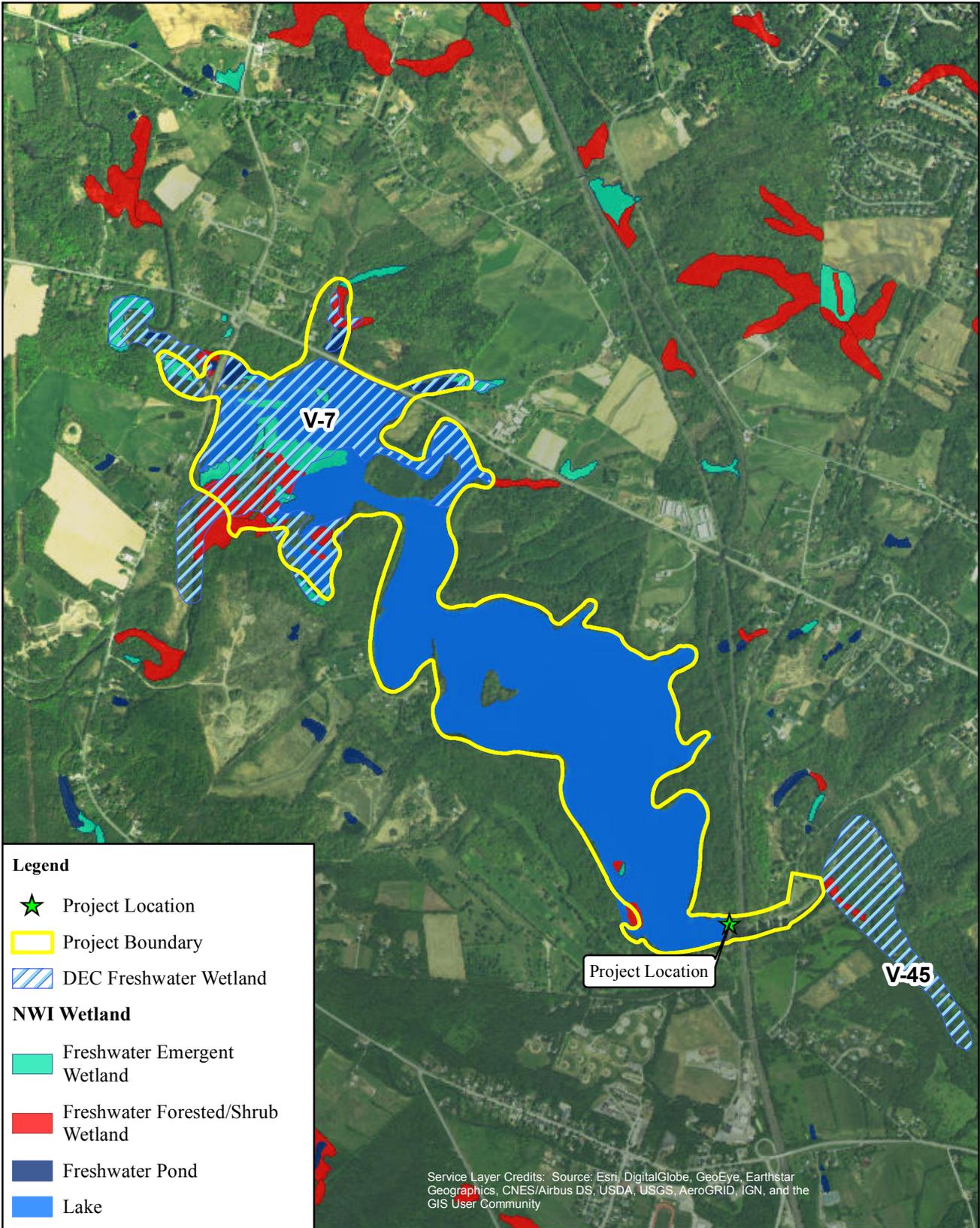
4.6.3 Protection, Mitigation and Enhancement Measures

None existing or proposed.

Table 4.6.1-1. NWI Classification Code Descriptions for Wetlands within 1,000 ft. of the Project Boundary

NWI Code	System	Subclass or Subsystem	Class	Water Regime	Modifiers
PEM1/UBH	Palustrine	Persistent	Emergent/Unconsolidated bottom	Permanently/seasonally flooded	None
PEM1B	Palustrine	Persistent	Emergent	Seasonally saturated	None
PEM1C	Palustrine	Persistent	Emergent	Seasonally flooded	None
PEM1Ch	Palustrine	Persistent	Emergent	Seasonally flooded	Dike/impounded
PEM1Eh	Palustrine	Persistent	Emergent	Seasonally flooded/saturated	Dike/impounded
PEM1F	Palustrine	Persistent	Emergent	Semi-permanently flooded	None
PEM1Fh	Palustrine	Persistent	Emergent	Semi-permanently flooded	Dike/impounded
PFO1A	Palustrine	Broad-leaved deciduous	Forested	Temporary flooded	None
PFO1Ah	Palustrine	Broad-leaved deciduous	Forested	Temporary flooded	Dike/impounded
PFO1C	Palustrine	Broad-leaved deciduous	Forested	Seasonally flooded	None
PFO1Eh	Palustrine	Broad-leaved deciduous	Forested	Seasonally flooded/saturated	Dike/impounded
PSS1Eh	Palustrine	Broad-leaved deciduous	Scrub-shrub	Seasonally flooded/saturated	Dike/impounded

Source: [USFWS, 2016](#)



Legend

- ★ Project Location
- ▭ Project Boundary
- ▨ DEC Freshwater Wetland
- NWI Wetland**
- ▭ Freshwater Emergent Wetland
- ▭ Freshwater Forested/Shrub Wetland
- ▭ Freshwater Pond
- ▭ Lake

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



FERC Relicensing of the
Normanskill Project
(FERC NO. 2955)



Figure 4.6-.1-1:
Wetlands
in the Vicinity of the Project



4.7 Rare, Threatened, and Endangered Species (18 CFR §5.6(d)(3)(vii))

4.7.1 Federal Endangered Species Act-Listed and Candidate Species

According to the U.S Fish & Wildlife Service’s Information for Planning and Conservation ([IPaC, 2017](#)) tool, two listed bat species and 15 Birds of Conservation Concern could be found in the Project Area ([Table 4.7.1-1](#)). These species may utilize the Project Area either year round or at specific times during the year, such as the migration season. Watervliet Reservoir is located in the Atlantic Flyway Zone, the main migration path for avian species on the East Coast of the United States.

Shortnose Sturgeon, federally listed as endangered, have been recorded in Albany County ([NYSDEC Nature Explorer](#)), and may enter the lower Normans Kill from the Hudson. However, an area of high-gradient stream approximately two miles upstream (~20 miles downstream of the Project) would prohibit Shortnose Sturgeon from reaching the Project.

Table 4.7.1-1: Federally Listed Species Potentially Utilizing the Project Area

Common Name	Scientific Name	Federal Status
Indiana Bat	<i>Myotis sodalis</i>	Endangered
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened
American Bittern	<i>Botaurus lentiginosus</i>	Bird of Conservation Concern
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird of Conservation Concern
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Bird of Conservation Concern
Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	Bird of Conservation Concern
Blue-winged Warbler	<i>Vermivora pinus</i>	Bird of Conservation Concern
Canada Warbler	<i>Wilsonia canadensis</i>	Bird of Conservation Concern
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Bird of Conservation Concern
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Bird of Conservation Concern
Peregrine Falcon	<i>Falco peregrinus</i>	Bird of Conservation Concern
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Bird of Conservation Concern
Prairie Warbler	<i>Dendroica discolor</i>	Bird of Conservation Concern
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Bird of Conservation Concern
Short-eared Owl	<i>Asio flammeus</i>	Bird of Conservation Concern
Willow Flycatcher	<i>Empidonax traillii</i>	Bird of Conservation Concern
Wood Thrush	<i>Hylocichla mustelina</i>	Bird of Conservation Concern

Source: [IPaC, 2017](#)

4.7.2 New York State Listed Species

The [NYSDEC’s New York Nature Explorer](#) tool was used to search for state-listed species at the county and town levels. The Nature Explorer includes data from the NY Natural Heritage Program, the second NY Breeding Bird Atlas Project, and the NY Amphibian and Reptile Atlas Project. Thirty-eight state-listed species were identified as having potential to be present in or utilize the Project Area ([Table 4.7.2-1](#)). Of these 38 species, four are listed as endangered, ten are listed as threatened, 23 are listed as species of special concern, and one species is listed as rare. Species confirmed before 1980 were not included (confirmation date is before the previous licensing). Species of special concern are species that do not meet the requirements of endangered or threatened status, but are vulnerable and have the potential to become threatened or endangered in New York State.

Table 4.7.2-1: New York State Listed Species Identified in Albany County and/or the Town of Guilderland

Common Name	Scientific Name	State Status	Identified Location	Most Recent Confirmation Date
Eastern Small-footed Myotis	<i>Myotis leibii</i>	Special Concern	Albany County	2011
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Albany County	2010
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Albany County	2014
American Bittern	<i>Botaurus lentiginosus</i>	Special Concern	Albany County	2005
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Albany Count	2016
Cerulean Warbler	<i>Setophaga cerulea</i>	Special Concern	Albany County	2005
Cooper's Hawk	<i>Accipiter cooperii</i>	Special Concern	Albany County	2005
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Special Concern	Albany County	2005
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Special Concern	Albany County	2005
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Threatened	Albany County	1992
King Rail	<i>Rallus elegans</i>	Threatened	Albany County	1984
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	Albany County	2013
Northern Goshawk	<i>Accipiter gentilis</i>	Special Concern	Albany County	2005
Northern Harrier	<i>Circus cyaneus</i>	Threatened	Albany County	2002
Osprey	<i>Pandion haliaetus</i>	Special Concern	Albany County	2005
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered	Albany County	2009
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Threatened	Albany County	2012
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Special Concern	Albany County Guilderland	2013
Red-shouldered Hawk	<i>Buteo lineatus</i>	Special Concern	Albany County	2005
Sedge Wren	<i>Cistothorus platensis</i>	Threatened	Albany County	1991
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Special Concern	Albany County	2005
Upland Sandpiper	<i>Bartramia longicauda</i>	Threatened	Albany County	1983
Vesper Sparrow	<i>Pooecetes gramineus</i>	Special Concern	Albany County	2005
Whip-poor-will	<i>Antrostomus vociferus</i>	Special Concern	Albany County	2005
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern	Albany County	1999

Common Name	Scientific Name	State Status	Identified Location	Most Recent Confirmation Date
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	Special Concern	Albany County	1999
Eastern Wormsnake	<i>Carphophis amoenus</i>	Special Concern	Albany County Guilderland	2009
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern	Albany County	1999
Wood Turtle	<i>Glyptemys insculpta</i>	Special Concern	Albany County	1999
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Special Concern	Albany County	1999
Eastern Spadefoot	<i>Scaphiopus holbrookii</i>	Special Concern	Albany County	2006
Frosted Elfin	<i>Callophrys irus</i>	Threatened	Albany County	2014
Henry's Elfin	<i>Callophrys henrici</i>	Special Concern	Albany County	2012
Inland Barrens Buckmoth	<i>Hemileuca maia maia</i>	Special Concern	Albany County Guilderland	2002
Karner Blue	<i>Plebejus melissa samuelis</i>	Endangered	Albany County	2009
Mottled Duskywing	<i>Erynnis martialis</i>	Special Concern	Albany County Guilderland	2014
Schweinitz's Flatsedge	<i>Cyperus schweinitzii</i>	Rare	Albany County Guilderland	2001
Slender Marsh Bluegrass	<i>Poa paludigena</i>	Endangered	Albany County	1990

Source: [NYSDEC 2017](#)

4.7.3 Natural Communities

The New York Nature Explorer identified four natural communities that are present within the Town of Guilderland and may be present in or near the Project Boundary. These upland natural communities include Calcareous Cliff, Maple-Basswood Rich Mesic Forest, Pitch Pine-Oak Forest, and Pitch Pine-Scrub Oak Barrens, which can be described by a number of indicator species ([Table 4.7.3-1](#)).

Calcareous Cliff Communities form on exposed bedrock, usually limestone or dolomite but can occur on any calcareous bedrock, with little to no soil formation and sparse vegetation. The plant species that can be found in this community varies by region and climate type and can be inconsistent even in the same region due to the differences in elevation, amount of shade present, and amount of moisture available. In the limited amounts of soil that may be present on ledges, cracks or in crevices, vegetation can take root ([NYNHP, 2017](#)).

Maple-Basswood Rich Mesic Forest is a hardwood forest with multiple species types that usually occurs in well drained, moist soils like those found in and adjacent to the Project Area. In this forest type, the dominant hardwood species are Basswood and Sugar Maple. The rich soil allows for a high diversity of herbaceous species to occur in the understory forest levels ([NYNHP, 2017](#)).

Pitch Pine-Oak Forest is a mixed forest type that are typically mature with a closed canopy and occur on well drained sandy soils that occur in or adjacent to the Project Boundary. There is usually a well-developed shrub layer and a sparse herbaceous layer. This community is found in glacial outwash moraines or plains ([NYNHP, 2017](#)).

Pitch Pine-Scrub Oak Barrens usually form on sandy, drained soils in areas of glacial till or outwash. It is comprised of a shrub layer of scrub oaks which usually form a thicket over the area. The ground layer is formed by various heath species and there are small open patches that contain various grasses and other herbaceous plants ([NYNHP, 2017](#)).

Table 4.7.3-1: Natural Communities' Indicator Species

Natural Community	Common Name	Scientific Name	Type
Maple Basswood Rich Mesic Forest	Alternate-Leaf Dogwood	<i>Cornus alternifolia</i>	Shrub
Calcareous Cliff Maple-Basswood Rich Mesic Forest	American Basswood	<i>Tilia americana</i>	Tree
Calcareous Cliff	American Bladdernut	<i>Staphylea trifolia</i>	Dwarf Shrub
Calcareous Cliff	American Harebell	<i>Campanula rotundifolia</i>	Herb
Maple-Basswood Rich Mesic Forest	American Hornbeam	<i>Carpinus caroliniana</i>	Tree
Maple-Basswood Rich Mesic Forest	American Witch-Hazel	<i>Hamamelis virginiana</i>	Shrub
Pitch Pine-Oak Forest	Black Oak	<i>Quercus velutina</i>	Tree
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Black Huckleberry	<i>Gaylussacia baccata</i>	Dwarf Shrub
Maple-Basswood Rich Mesic Forest	Blue Cohosh	<i>Caulophyllum thalictroides</i>	Herb
Calcareous Cliff	Bristleleaf Sedge	<i>Carex eburnea</i>	Herb
Calcareous Cliff	Broad-Leaved Goldenrod	<i>Solidago flexicaulis</i>	Herb
Calcareous Cliff	Broad-Leaved Sedge	<i>Carex platyphylla</i>	Herb
Calcareous Cliff Maple-Basswood Rich Mesic Forest	Bulblet Fern	<i>Cystopteris bulbifera</i>	Herb
Calcareous Cliff	Canada Bluegrass	<i>Poa compressa</i>	Herb
Pitch Pine-Oak Forest	Canada Mayflower	<i>Maianthemum canadense</i>	Herb
Calcareous Cliff	Canada Moonseed	<i>Menispermum canadense</i>	Herb
Calcareous Cliff	Canada yew	<i>Taxus canadensis</i>	Dwarf Shrub
Maple-Basswood Rich Mesic Forest	Christmas Fern	<i>Polystichum acrostichoides</i>	Herb
Calcareous Cliff	Climbing Bittersweet	<i>Celastrus scandens</i>	Vine
Calcareous Cliff	Common Hackberry	<i>Celtis occidentalis</i>	Shrub

Natural Community	Common Name	Scientific Name	Type
Calcareous Cliff	Downy Arrow-Wood	<i>Viburnum rafinesquianum</i>	Dwarf Shrub
Maple-Basswood Rich Mesic Forest	Dutchman's Breeches	<i>Dicentra cucullaria</i>	Herb
Pitch Pine-Scrub Oak Barrens	Dwarf Chinquapin Oak	<i>Quercus prinoides</i>	Shrub
Calcareous Cliff Maple-Basswood Rich Mesic Forest	Early Meadow-Rue	<i>Thalictrum dioicum</i>	Herb
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Eastern Bracken	<i>Pteridium aquilinum</i>	Herb
Calcareous Cliff	Eastern Poison Ivy	<i>Toxicodendron radicans</i>	Vine
Calcareous Cliff	Fragrant Sumac	<i>Rhus aromatica</i>	Dwarf Shrub
Calcareous Cliff	Herb-Robert	<i>Geranium robertianum</i>	Herb
Pitch Pine-Oak Forest	Highbush Blueberry	<i>Vaccinium corymbosum</i>	Shrub
Calcareous Cliff Maple-Basswood Rich Mesic Forest	Hophornbeam	<i>Ostrya virginiana</i>	Tree
Calcareous Cliff	Kalm's Lobelia	<i>Lobelia kalmii</i>	Herb
Maple-Basswood Rich Mesic Forest	Lady Fern	<i>Athyrium filix-femina</i>	Herb
Maple-Basswood Rich Mesic	Large False Solomon's Seal	<i>Maianthemum racemosum</i>	Herb
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Lowbush Blueberry	<i>Vaccinium angustifolium</i>	Dwarf Shrub
Calcareous Cliff	Maidenhair Spleenwort	<i>Asplenium trichomanes</i>	Herb
Maple-Basswood Rich Mesic Forest	Marginal Wood Fern	<i>Dryopteris marginalis</i>	Herb
Maple-Basswood Rich Mesic Forest	Mountain Maple	<i>Acer spicatum</i>	Shrub
Maple-Basswood Rich Mesic Forest	Narrow-Leaved Wild Leek	<i>Allium tricoccum</i>	Herb
Maple-Basswood Rich Mesic Forest	Nodding Trillium	<i>Trillium cernuum</i>	Herb

Natural Community	Common Name	Scientific Name	Type
Maple-Basswood Rich Mesic Forest	Northern Maidenhair-Fern	<i>Adiantum pedatum</i>	Herb
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Pennsylvania Sedge	<i>Carex pennsylvanica</i>	Herb
Calcareous Cliff	Pignut Hickory	<i>Carya glabra</i>	Tree
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Pitch Pine	<i>Pinus rigida</i>	Tree
Maple-Basswood Rich Mesic Forest	Plantain-Leaved Sedge	<i>Carex plantaginea</i>	Herb
Calcareous Cliff	Prickly Gooseberry	<i>Ribes cynosbati</i>	Dwarf Shrub
Calcareous Cliff	Purple Flowering Raspberry	<i>Rubus odoratus</i>	Dwarf Shrub
Calcareous Cliff	Purple Oat	<i>Schizachne purpurascens</i>	Herb
Calcareous Cliff	Purple-Stem Cliff-Brake	<i>Pellaea atropurpurea</i>	Herb
Pitch Pine-Oak Forest	Red Maple	<i>Acer rubrum</i>	Tree
Calcareous Cliff Maple-Basswood Rich Mesic Forest Pitch Pine-Oak Forest	Red Oak	<i>Quercus rubra</i>	Tree
Calcareous Cliff	Roundleaf Dogwood	<i>Cornus rugosa</i>	Dwarf Shrub
Calcareous Cliff	Smooth Cliff-Brake	<i>Pellaea glabella</i>	Herb
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Scarlet Oak	<i>Quercus coccinea</i>	Tree
Pitch Pine-Oak Forest Pitch Pine-Scrub Oak Barrens	Scrub Oak	<i>Quercus ilicifolia</i>	Shrub
Calcareous Cliff Maple-Basswood Rich Mesic Forest	Sugar Maple	<i>Acer saccharum</i>	Tree
Pitch Pine-Oak Forest	Teaberry	<i>Gaultheria procumbens</i>	Herb
Calcareous Cliff	Virginia Saxifrage	<i>Saxifraga virginiensis</i>	Herb
Maple-Basswood Rich Mesic Forest	Virginia Springbeauty	<i>Claytonia virginica</i>	Herb

Natural Community	Common Name	Scientific Name	Type
Calcareous Cliff	Walking-Fern Spleenwort	<i>Asplenium rhizophyllum</i>	Herb
Calcareous Cliff	Wall-Rue Spleenwort	<i>Asplenium ruta-muraria</i>	Herb
Calcareous Cliff	Wavy Hair Grass	<i>Deschampsia flexuosa</i>	Herb
Calcareous Cliff Maple-Basswood Rich Mesic Forest	White Ash	<i>Fraxinus american</i>	Tree
Pitch Pine-Oak Forest	White Pine	<i>Pinus strobus</i>	Tree
Pitch Pine-Oak Forest	White Oak	<i>Quercus alba</i>	Tree
Calcareous Cliff	Wild Black Cherry	<i>Prunus serotina</i>	Shrub
Calcareous Cliff	Wild Columbine	<i>Aquilegia canadensis</i>	Herb
Calcareous Cliff	Windflower	<i>Thalictrum thalictroides</i>	Herb
Maple-Basswood Rich Mesic Forest	Yellow Birch	<i>Betula alleghaniensis</i>	Tree
Maple-Basswood Rich Mesic Forest	Yellow Trout-Lily	<i>Erythronium americanum</i>	Herb

Source: [NYNHP 2017](#)

4.7.4 Known or Potential Adverse Impacts

The USFWS, NYSDEC and the New York Natural Heritage Program have identified that Bald Eagle have been documented nesting within the Project Area, near the reservoir. Additionally, New York Natural Heritage has identified the removal of roost trees for Northern Long-Eared Bat as the main impact of concern.

4.7.5 Protection, Mitigation and Enhancement Measures

None existing or proposed.

4.8 Recreation and Land Use (18 CFR §5.6 (d)(3)(viii))

4.8.1 Recreation

Regional Recreation

The Capital District provides its residents and visitors with a variety of recreational opportunities through all seasons. Located in close proximity to the Mohawk and Hudson River, the region provides numerous boating and fishing options. In the City of Albany, the Albany Pine Bush Preserve contains over 18 miles of excellent hiking and walking trails ([Albany Pine Bush Preserve, 2011](#)). John Boyd Thacher State Park, located approximately five miles southwest of the Project, offers a campground, nature center and nature trails, numerous playgrounds and ball fields, picnic areas and pavilions, in addition to the opportunity to hunt, hike, mountain bike, snowmobile and cross-country ski ([NYSOPRHP, 2013](#)).

The National Rivers Inventory (NRI) identified a 14-mile stretch of Normans Kill, from the NYS Thruway up to NYS Route 146, as having an “Outstandingly Remarkable Value” for Recreational opportunities. Given in 1982, this listing was based on the river’s unique proximity to Albany and Schenectady, and a segment that includes a diversity of flow gradients ([NPS, 2005](#)). American Whitewater, a national non-profit organization with the mission of conserving, restoring, and enhancing the recreational opportunities of America’s whitewater resources, has identified two areas of the Normans Kill that offer whitewater opportunities. The five-mile section from the Reservoir to NYS Route 155 contains Class II and Class III rapids, and the three mile run from Delaware Avenue/NYS Route 143 to NYS Route 32 contains Class III and Class V rapids ([American Whitewater, 2017](#)).

The section of the Normans Kill downstream of the Project provides numerous recreational opportunities for the more than one million residents of the Capital District ([ACDECCP, 2007](#)). The facilities located along the Normans Kill are listed below. A map of these facilities in relation to the Project is shown in [Figure 4.8.1-1](#).

- Tawasentha Park is a large, 200-acre park located in the center of the Town of Guilderland. Consisting of a mix of wooded areas, grasslands, and open play areas, the park offers numerous recreation amenities, such as playgrounds, tennis and pickleball courts, basketball courts, shuffleboard and horseshoes, swimming pools, and hiking trails. The park also includes a winter recreation area, offering cross country skiing, sledding, and snowshoeing. A recently constructed foot bridge that crosses the Normans Kill provides easy fishing access as well as an area to launch canoes and kayaks.
- Normans Kill Farm is located downstream of the Project in the City of Albany. Recreational amenities include a dog park, community gardens, picnic facilities, and a hiking trail which begins along the bank of the Normans Kill.
- Normans Kill Preserves, which are owned and operated by the Mohawk Hudson Land Conservancy, consist of two separate parcels (Normans Kill Preserve East and Normans Kill Preserve West). Located adjacent to the Normans Kill Farm, the two parcels total 42 acres in size and consist of hiking and walking trails through a mix of forested hills and open fields. In addition, the preserves contain over a half-mile of frontage on the Normans Kill.
- Nott Road Park, owned and operated by the Town of Guilderland, is a large park consisting of softball, soccer, and football fields, as well as a dog park and large public pavilion. The southern portion of the park borders Normans Kill.

- The Albany Pocket Park is a small recreational area located on Normans Kill just east of New York State Route 85. The small park consists of streamside picnic tables and although steep, it may be used by the public as a canoe and kayak take-out location.
- Albany County Helderberg-Hudson Rail Trail is a public recreation trail that travels along approximately a half mile of the Normans Kill. This trail, totally nine miles in length, connects the Port of Albany and Voorheesville.
- Island Creek Waterfront Park is located in the South End of Albany approximately two miles north of the mouth of the Normans Kill. This small park is a popular picnicking and fishing destination. In addition, it offers paddlers a take-in/take-out location for paddling the up to Normans Kill or on the Hudson River.

Existing Recreation at the Project

There are no formal recreation facilities maintained by the City at the Project. Additionally, there are no formal fishing access points or fishing areas provided on or within the Project Impoundment or downstream of the dam. As per the NYS Department of Health Watershed Rules and Regulations (Section 100.2 (g) - City of Watervliet), no boating of any kind, fishing from boats or ice fishing shall be allowed in or upon the waters or ice of the reservoir.

Recreation Needs

The relative index of need values for various recreational activities within Albany County that were identified in the New York State 2014-2019 Statewide Comprehensive Outdoor Recreation Plan (SCORP) are shown below in [Table 4.8.1-1](#). Recreation need considers the supply of recreation facilities and the level of participation (demand) in estimating how this level of participation will change, both geographically and quantitatively in the future. The Relative Index of Needs translates this need by county into a numerical scale where +10 is the highest level of need and +1 is the least. Five is considered the statewide average.

Table 4.8.1-1: Albany County Relative Index of Recreation Needs

Activity Code	Description	Relative Index of Needs
Park	Relaxing in the park, picnicking, playground use, other generic day use.	4
Swim	Outdoor swimming, either pool, lake, ocean or other.	7
Bike	Non-motorized use of bicycles whether on trails, established paths, off-road or on highways for recreational purposes.	6
Golf	Golfing on either regulation 18 or 9-hole courses as well as par 3 and pitch and putt courses.	5
Court	Court games includes basketball, handball and similar sports.	8
Field	Field games includes baseball, football, soccer and other similar sports.	6
Walk	Walking/jogging on paths and trails. Walking for pleasure, generally requiring less equipment than hiking.	4
Camp	Camping including tent, RV camping and backpacking.	5
Fish	Fishing, salt and Fresh Water fishing from either shore or a boat, but not ice fishing.	6
Boat	Boating including canoeing, sailing, motorboating, row boating.	5
LocW	Miscellaneous local winter activities: ice skating, sledding, hockey	6
Ski	Downhill skiing and snowboarding	6
SnM	Snowmobiling	6

Source: [NYSOPRHP, 2014](#).

4.8.2 Land Use

The Normanskill Project boundary totals 485.8 acres in size. As defined by the National Land Cover Database 2011 ([NLCD 2011](#)), the most common land use classification within the Project are wetlands (46.3%), which consist of emergent herbaceous wetlands (27.2%) and woody wetlands (19.1%). Open water accounts for 40.7% of the Project boundary area. Forested areas cover 9.1% of the area within the Project boundary, with mixed forest, deciduous forest, and evergreen forest being equally represented. Developed land comprises 3.8% of the Project boundary area and represents where roads are present. Cultivated crops cover just 0.1% of the Project boundary area ([Homer et al., 2015](#)).

The land within and adjacent to the Project boundary is managed by the City of Watervliet, and is bordered primarily by private landowners. Downstream of the Project, where the railroad crosses the Norman Kill, the City of Watervliet has been granted a permanent easement for the river bed from the railroad company.

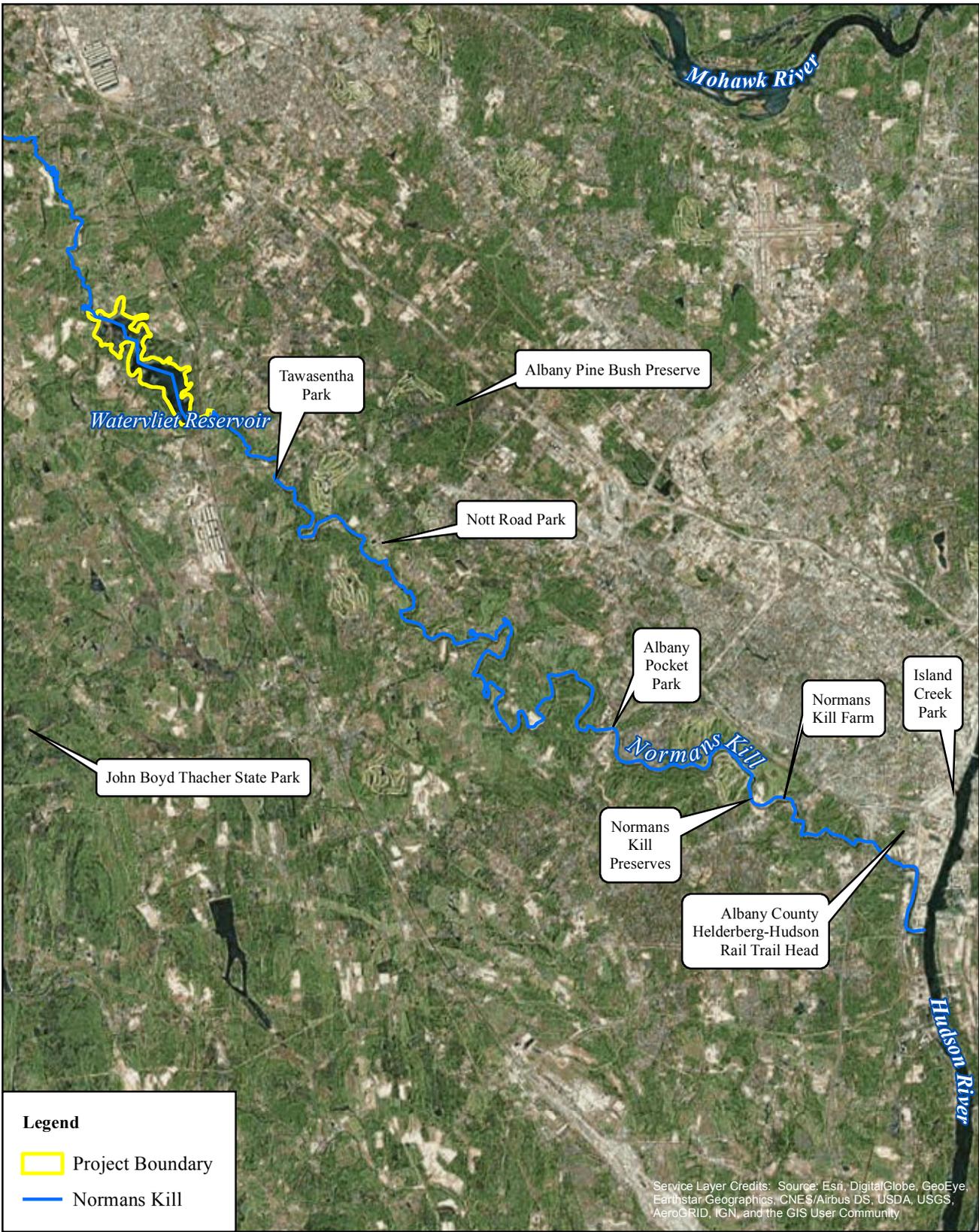
There are no federal lands, National Trails, National Wild or Scenic Rivers, or Wilderness Areas present within the Project boundary and adjacent lands.

4.8.3 Known or Potential Adverse Impacts

NYSDEC has noted that the Watervliet Reservoir previously had public access, but that since 2001, the parking lot has been blocked and has not been maintained.

4.8.4 Protection, Mitigation and Enhancement Measures

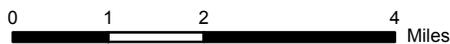
None existing or proposed.



FERC Relicensing of the
Normanskill Project
(FERC NO. 2955)



Figure 4.8.1-1
Recreation Facilities in the
Vicinity of the Project



4.9 Aesthetic Resources (18 CFR §5.6 (d)(3)(ix))

4.9.1 Existing Environment

The Project resides in a rural setting, though given its location near the outskirts of the cities of Albany and Schenectady, it is in close proximity to suburban areas. Most of the stream corridor flows through private lands consisting of mostly forest, along with some farmland and residential areas. Even in the lower reaches, where the stream passes between relatively large suburban areas prior to reaching the Hudson, the areas in close proximity to the stream remain largely undeveloped.

U.S. Federal Route 20, which runs near to the Watervliet Reservoir, and State Route 158, which crosses the Normans Kill at the upstream end of the reservoir, both provide views of the upper end of the waterbody, though most of the reservoir is surrounded by private forest land and is not easily viewed except from a small number of private landowner residences. Boating is not allowed on Watervliet Reservoir.

The French's Hollow Road Bridge, open only to pedestrian and bicycle traffic, offers views of the dam and the Normans Kill within the downstream sections of the Project Boundary. People may also enter the stream here for fishing or canoeing/kayaking. From this location, along with nearby areas of French's Mill Road, the picturesque bedrock waterfalls in this area of the Normans Kill can be easily viewed by the public. Because the powerhouse and control building are underground, the only Project structure that is observed by the public is the Watervliet Dam. The area downstream of the dam reflects that of a natural streambed and streambanks, which is likely more aesthetically pleasing than if the penstock, powerhouse, or control building were above ground.

4.9.2 Known or Potential Adverse Impacts

The bypassed reach between the dam and tailrace area, which consists of a number of bedrock waterfalls, receives no water from the Project unless spillage occurs at the dam or through the flashboards. Additionally, the areas downstream of the Project receive no water unless there is spillage from the dam and/or generation flows. Aesthetic resources in the area may be affected by the periodic/seasonal lack of flow.

4.9.3 Protection, Mitigation and Enhancement Measures

None existing or proposed.

4.10 Cultural Resources (18 CFR §5.6 (d)(3)(x))

Research was conducted using the New York State Cultural Resource Information System (CRIS) which is maintained by the New York State Historic Preservation Office (SHPO) and the Division for Historic Preservation (DHP) within OPRJP). CRIS contains a comprehensive inventory of archeological sites, State and National Register (NR) properties, properties determined eligible for the NR (NRE) and previous cultural resource surveys ([SHPO, 2017](#)).

The original dam impounding the Watervliet Reservoir was built in 1916 to provide water for the City of Watervliet. Mechanical hydropower was used to pump water to the City's treatment plant prior to construction of the Project. The Normanskill Project was conceptually started in 1978 when the City of Watervliet decided that major rehabilitation was needed to keep the facility as the primary water supply. The option chosen was to convert the former mechanical/electrical pump operation to electrical operation and the construction of a hydroelectric generation station underneath the Normans Kill streambed. The license for the facility was issued March 5, 1982 and construction began in August 1982. The Project began producing electricity in December 1983. Additional improvements were made in 1984 to the dam and intake structure.

4.10.1 Previous Evaluations

In 1980, Sandy Tabor, Consulting Archaeologist completed an archaeological field survey of the Project. While the Project is located in a culturally significant area with multiple sites, no evidence of archaeological or historical sites were found during the survey within the Project Boundary ([Watervliet, 1981](#)). In a letter dated January 12, 1981, the State Historic Preservation Office stated that "there are no known archeological resources included in or being considered for the National Register of Historic Places." The letter also provided the opinion, after review, that Project operations would have no effect on structures included in or under consideration for the National Register of Historic Places ([SHPO, 1981](#)).

However, a Phase IA Literature Review and Sensitivity Assessment, along with a Phase IB Archaeological Field Survey and Reconnaissance Study were performed in 2006/2007 in response to a previously-proposed expansion of the Normanskill Project impoundment capacity ([Fenton and Clark, 2008](#)). Though The City did not expand the reservoir capacity at the facility, those studies describe in great detail the prehistoric, historic and archeological resources at the Project.

4.10.2 Cultural Context

Original peoples within Project vicinity were the Mohican and Mohawk Indian Tribes. In 1629, Patroon Kilaen van Rensselaer, a diamond and pearl merchant who was a founder and director of the Dutch West India Company helped to found the New Netherland Colony. He later founded the Manor of Rensselaerswyck in the current Capitol District of New York. This land was eventually divided and part of it became the Town of Guilderland, where the Project is located. From 1799 until 1803, the Town of Watervliet oversaw the area that would become the Town of Guilderland. The Town of Guilderland was not incorporated until February 26, 1803 ([Watervliet, 1981](#)).

From the creation of the Manor of Rensselaerswyck in the 1600's until incorporation, the area experienced a series of settlements with various industries. In French's Hollow, these industries were established by 1800 and employed settlers in the area and included a clothing factory, a knitting mill, a button factory, and a grist mill. In the Village of Hamilton, the Hamilton Glass Works was started in 1785. The glass industry collapsed after the War of 1812, unable to compete

with cheaper imports. Over the next 200 years, a factory and a foundry occupied the former glass work's site ([Town of Guilderland, 2017](#)).

The Guilderland region also has a long and prosperous tradition as an agricultural community ([Fenton and Clark, 2008](#)). Farming initially supplied the growing populations of the Cities of Schenectady and Albany after the Revolution, eventually expanding due to early 19th century land reforms and technological innovations to farming and transportation. Farmsteads located within the Project Area were prosperous, producing apples and pears from orchards, along with corn and other crops from the fertile terraces and Normans Kill floodplain, along with dairy products and meat ([Fenton and Clark, 2008](#)).

4.10.3 Cultural Resources in the Project Area

The Phase IB Archaeological Field Survey and Reconnaissance Study that was performed in 2006/2007 provides extensive information regarding cultural resources that have been documented in the areas surrounding the Project, and the general findings are summarized below.

4.10.3.1 Prehistoric Resource Types

The study documented 43 prehistoric sites, which were designated as comprising the Upper Normanskill Drainage Prehistoric District ([Fenton and Clark, 2008](#)). The district would be considered potentially eligible under the fourth subpart of Criterion C and Criterion D of the National Register Criteria for Evaluation. All documented prehistoric sites were considered non-sedentary resource procurement and food gathering camps.

4.10.3.2 Historic Resource Types

The study documented 24 historic farmstead sites around the periphery of the Watervliet Reservoir that were designated as comprising the Upper Normanskill Historic Farmstead District ([Fenton and Clark, 2008](#)). The district would be considered potentially eligible under the fourth subpart of Criterion C and Criterion D of the National Register Criteria for Evaluation.

Additionally, the Watervliet Dam, constructed in 1915 and 1916, was identified as a structure that has made significant contribution to local history, having dramatically changed and shaped the Normans Kill drainage for what is now over 100 years, and should be considered eligible for status as an Historic Landmark ([Fenton and Clark, 2008](#)). It is classified in the report as the Normanskill Hydroelectric Facility Historic Site.

4.10.4 Known or Potential Adverse Impacts

The Phase IB study indicated that the development of the Watervliet Reservoir likely inundated prehistoric and historic sites, which may still be present, despite being inaccessible. Cultural deposits in the Project area were affected most profoundly by human activity around the reservoir, including collections by artifact hunters, looting, and vandalism. The report also identified erosion around the Watervliet Reservoir as impacting sites that were located at or near the reservoir shoreline, and attributed the erosion to wave action and fluctuating water levels resulting from both flooding and drawdowns during drought.

4.10.5 Protection, Mitigation and Enhancement Measures

None existing or proposed.

4.11 Socio-Economic Resources (18 CFR §5.6 (d)(3)(xi))

4.11.1 Existing Environment

The Normanskill Project is located in Albany County, New York. Though the location of the Project and the upstream watershed is primarily rural, it is in close proximity to densely populated suburban and urban areas. The Project is located near the heart of New York State's Capital District, and provides socio-economic benefits to a large number of people. Approximately 309,000 people reside within Albany County, with a median household income of \$59,887 ([U.S. Census Bureau, 2016](#); [U.S. Census Bureau, 2015](#)). The population of Albany County is estimated to have increased by about 1.7% since 2010. The Town of Guilderland, where the Project resides, has a total population of 35,303 people, consisting of over 15,000 households ([U.S. Census Bureau, 2010](#)). The City of Watervliet, which owns the Project, had an estimated total population of 10,254 people in 2010 and appears to be relatively stable, with a predicted decrease of only 0.4% between 2010 and 2015 ([U.S. Census Bureau, 2010](#); [U.S. Census Bureau, 2015](#)). Sources of employment are extensive and variable, as would be expected in close proximity to a metropolitan area and a state capital.

The City of Watervliet is home to the U.S. Army's \$1.6 billion Watervliet Arsenal, the oldest continuously active arsenal in the United States. It began operation in 1813 and produces advanced high-power weaponry for cannon, howitzer, and mortar systems. The Watervliet Arsenal also includes a Department of Defense weapons research facility (Benét Laboratories), along with 26 other military and civilian tenet organizations. The Watervliet Arsenal has been designated a Center of Industrial and Technical Excellence by the Secretary of the Army, is a National Historic Registered Landmark, and has an annual economic benefit to the local community of \$100 million ([Snyder, 2016](#)).

Watervliet Reservoir is the sole water supply for the City of Watervliet, and is the primary source of raw water for the Guilderland water district. The City provided water through approximately 2,600 residential services, and produced over 1 billion gallons of water from Watervliet Reservoir in 2015 ([City of Watervliet, 2015](#)). Residential customers were billed a flat rate of \$358.00 per year. The Guilderland Water District is permitted to use 5 million gallons of water per day from the reservoir, and served approximately 26,636 people with water in 2015, in an area where a typical home uses approximately 90,000 gallons of water per year and the average annual water bill cost for a single-family home was \$325.15 ([Town of Guilderland, 2016](#)). The Town of Guilderland pays the City of Watervliet approximately \$800,000 per year for water usage. Almost 77% of the water supplied by the Guilderland Water District in 2015 was drawn from the Watervliet Reservoir, a sum of over 859 million gallons of water. The remaining water was supplied from The City of Albany (~13%) and wells (~10%) ([Town of Guilderland, 2016](#)).

The generation facility at the Project provides a clean source of electricity to the City of Watervliet for pumping of water to their treatment facility. Surplus power, when available, is sold to Niagara Mohawk. The power generated at the Project allows the City of Watervliet to pump water to their treatment facility, while relying less on other sources of power. Between 1992 and 2016, during months when the Project did not generate, the monthly electric bill incurred by The City for pumping of municipal water ranged between \$3,315.16 and \$7,441.20, averaging approximately \$5,468. The ability of the Project to generate saves the City money on pumping municipal water, and also provides additional revenue by selling surplus power.

4.11.2 Known or Potential Adverse Impacts

Continued operation of the Project is not expected to have any adverse effects on socio-economic resources.

4.11.3 Protection, Mitigation and Enhancement Measures

The Project currently provides socio-economic benefits through the production of water supply, which is aided by the production of hydroelectric power. Therefore, additional measures pertaining to socio-economic resources are not proposed at this time.

4.12 Tribal Resources (18 CFR §5.6(d)(3)(xii))

4.12.1 Existing Environment

There are currently no federal or Indian reservation lands in the Project area. The Federally-recognized Indian Nations in Albany County, New York include the Mohawk and Mohican Nations. On January 27, 2017, the following tribes were sent a letter and questionnaire requesting information in support of the development of the PAD:

- Onondaga Nation
- Saint Regis Mohawk Tribe
- Oneida Indian Nation
- Delaware Nation
- Delaware Tribe of Indians
- Mohawk Nation Council of Chiefs
- Cayuga Nation
- Tuscarora Nation
- Seneca Nation of Indians

To date, there have been no tribal resource issues identified with regard to the Normanskill Project.

4.12.2 Known or Potential Adverse Impacts

Continued operation of the Project is not expected to have any adverse effects on tribal resources.

4.12.3 Protection, Mitigation and Enhancement Measures

Article 19 of the Normanskill Project license assures the protection of any tribal resources that might be discovered by requiring the licensee to consult with the SHPO regarding archeological or historic resources, along with any mitigative measures that may be necessary, prior to commencement of any development of any project works or other facilities at the Project. It also requires that a qualified archeologist be consulted to determine the significance of any previously unrecorded archeological or historical sites during any construction activity. The licensee would then consult with SHPO to develop a mitigation plan for the protection of any significant archeological or historic resources.

5 PRELIMINARY ISSUES AND STUDIES LIST (18 CFR §5.6(D)(4))

Identification of issues is a key step in the relicensing process because any specific concerns or questions arising from continued Project operations may need to be addressed in the context of the relicensing proceeding. The City of Watervliet has attempted to identify all of the issues that could have a nexus to the licensing of continued Project operations. It should be noted that the list of issues is not final, given that the agencies and other interested parties have not had the opportunity to review this PAD. During the public scoping process, state and federal resource agencies, Indian tribes, non-governmental organizations, and other interested parties will be invited to participate in refining the resource issues to be analyzed in the license application.

5.1 Issues Pertaining to the Identified Resources

This section identifies preliminary issues pertaining to the continued operation of the Normanskill Project based upon existing resource information summarized in Section 4, responses received to the request for information to develop this PAD, and preliminary discussions with state and federal agencies.

Geology and Soils Issues

Some steep banks around the reservoir consist of deep silt and clay deposits, and have been documented as eroding. The Phase IB Archaeological study attributed erosion primarily to wave action and water level fluctuations due to flooding and drawdowns during drought. These water level fluctuation effects are likely to be outside of the control of the hydroelectric facility, which only operates on a narrow water level fluctuation range. The City proposes to continue with the current operational regime, with a narrow water surface elevation operation range, and to continue prohibiting motorboats, so that the levels of erosion do not increase. Additionally, many areas surrounding the reservoir are naturally forested and/or vegetated, limiting erosion potential.

Water Resources Issues

The dissolved oxygen concentrations in Watervliet Reservoir are depressed at lower depths during the summer, exhibiting eutrophic conditions that could be caused by nutrients, algae growth, or aquatic vegetation. However, the position and design of the hydropower intake structure draws primarily surface water, and would therefore convey water with higher dissolved oxygen downstream rather than anoxic water from the hypolimnion. The City is not proposing any changes to its current operations for the next license term; therefore, continued operations are expected to provide and maintain existing water quality. Primary usage of the reservoir as a municipal water supply results in lower flows in the Normans Kill downstream of the Project when no surplus water is available for generation and/or spill.

Fish and Aquatic Resources Issues

Potential issues related to fisheries and aquatic resources at the Normanskill Project identified by the USFWS include:

- Upstream American Eel Passage
- Fish Protection and Downstream Passage
- Bypass Reach and Base Flow Releases

NYSDEC also identified their interest in American Eel relative to the Project and the Normans Kill.

Wildlife and Botanical Resource Issues

There is a very limited amount of terrestrial habitat inside of the Project Boundary, most of which is undeveloped. There are currently no known issues relating to wildlife and botanical resources at the Project.

Wetlands, Riparian, and Littoral Habitat Issues

The Project area contains a moderate amount of wetland habitat. The wetland plant communities that currently exist at an in the vicinity of the Project have become established under the existing operating conditions of the Project. Additionally, the facility operates within a relatively narrow fluctuation range, and proposes to continue operating under that regime, which would limit impacts to wetlands.

Rare, Threatened and Endangered (RTE) Species Issues

The USFWS, NYSDEC and the New York Natural Heritage Program have identified that Bald Eagle have been documented nesting within the Project Area, near the reservoir. Additionally, New York Natural Heritage has identified the removal of roost trees for Northern Long-Eared Bat as an issue of concern.

Recreation and Land Use Issues

Recreational opportunities are currently limited to downstream areas due to restrictions currently imposed by the City of Watervliet, though low-impact use of the Watervliet Reservoir occurred historically. NYSDEC has expressed interest in providing a public fishing access location with hand launch for non-gas-powdered boats, along with the possibility of creating a trail system as a recreational opportunity for the community. The City is amenable to re-opening areas of the reservoir to certain recreational activities such as fishing, along with a trail system. Because most of the Project lands and adjacent areas are undeveloped forest, there are currently no known issues relating to land use at the Project.

Aesthetic Resources Issues

The aesthetic resources downstream of the dam are affected by managing the facility as a municipal water supply. Generation at the facility or spill over the dam only occurs when surplus water is available. However, the Project generation facility is underground and is not visible to the public. Many locations at the Project could be considered picturesque in their current state, and during the current operational regime. No aesthetic issues specific to operation of the generation facility at the Project, independent of municipal water supply, have been identified.

Cultural Resources Issues

NYSHPO has identified that there are historical/cultural resources in the area, with numerous archeological sites that are considered archaeologically sensitive around the reservoir. The Phase I study completed in 2006/2007 has identified human-related impacts such as collectors, looting, and vandalism as having the greatest impact on cultural resources in the Project area, along with erosion to a lesser degree. The impact from the operation of the facility itself on erosion (and potentially

on cultural resources) was primarily attributed to wave action and water level fluctuations resulting from flooding and drawdown during drought conditions. These types of fluctuations occur outside of the range of normal hydropower operating conditions, and The City proposes to maintain its current operation of a relatively narrow water level fluctuation range for generation at the hydropower facility.

Ground disturbances associated with construction activities can expose culturally significant resources, making them susceptible to alteration, damage, and theft/vandalism. However, no such activities are being proposed in this relicensing. The proposed relicensing of the Project anticipates that the Project will be operated without changes to its facilities or operations. If changes to the Project are found to be necessary during relicensing or after a license has been issued, the City of Watervliet would consult with the NYSHPO before beginning any ground disturbing activities within previously undisturbed areas within the Project Boundary. Consultation will determine the need to conduct archeological/historical survey(s) and to implement further avoidance or mitigation measures before undertaking the action.

Socio-Economic Resources Issues

The Project provides socio-economic benefits to a large number of people via a combination of municipal water supply supplemented by hydropower. There are currently no known issues relating to socio-economic resources at the Project.

Tribal Resources Issues

There are currently no known issues relating to tribal resources at the Project.

5.2 Potential Studies or Information Gathering

This section identifies potential studies or information gathering that may be needed to analyze the preliminary resource issues identified in Section 5.1. In accordance with 18 CFR § 4.38(b), within 60 days of the Joint Meeting, each interested resource agency, Indian tribe, and members of the public must provide any and all study requests to the City. Although the City of Watervliet is proposing to utilize the TLP for the relicensing process, it is suggested here that all stakeholders generally follow the ILP study request guidelines as set forth by the Commission and outlined below. It is the Licensee's belief that the further defined ILP study request criteria create better study requests, and as such provide more effective relicensing related data, which will better serve all parties throughout the relicensing process.

- Describe the goals and objectives of each study proposal and the information to be obtained;
- If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
- If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
- Describe existing information concerning the subject of the study proposal, and the need for additional information;
- Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
- Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including

- appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
- Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

In anticipation of collaborating with stakeholders while using the TLP, The City is not proposing any additional resource studies for the relicensing at this time. There is further opportunity during the public scoping process for stakeholders including federal and state resource agencies, Indian tribes, and non-governmental organizations to participate in refining the resource issues to be analyzed in the City's license application. If project related impacts are identified during this process, the City will work closely with all of the stakeholders to define, if necessary, study requests for this resource

6 RELEVANT COMPREHENSIVE WATERWAY PLANS

Section 10(a)(2)(A) of the Federal Power Act (FPA), 16 USC § 803(a)(2)(A), requires FERC to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway affected by the project.

FERC Order No. 481-A, issued on April 27, 1988, established that FERC will accord FPA Section 10(a)(2)(A) comprehensive plan status to any federal or state plan that:

- Is a comprehensive study of one or more of the beneficial uses of a waterway or waterways;
- Specifies the standards, the data, and the methodology used; and
- Is filed with the Secretary of the Commission.

Based on FERC's December 2016 revised list of comprehensive plans for New York State, seven of the 40 plans may pertain to the Normanskill Project:

- Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American eel (*Anguilla rostrata*). (Report No. 36). April 2000.
- National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.
- New York Department of Environmental Conservation. 1979. Hudson River Basin water and related land resources: Level B study report and environmental impact statement. Albany, New York. September 1979.
- New York State Office of Parks, Recreation, and Historic Preservation. New York Statewide Comprehensive Outdoor Recreation Plan (SCORP): 2003-2007. Albany, New York. January 2003.
- State of New York Hudson River Regulating District. 1923. General plan for the regulation of the flow of the Hudson River and certain of its tributaries. Albany, New York. June 7, 1923.
- U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. Environment Canada. May 1986.
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Relevant Resource Management Plans

In addition to the qualifying federal and state comprehensive waterway plans listed above, some agencies have developed resource management plans to help guide their actions regarding specific resources of jurisdiction. The resource management plans listed below were identified as being potentially relevant to the Project.

- New York State Department of Environmental Conservation (NYSDEC). 2002. Hudson River Estuary Action Plan 2001.
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http://www.dec.ny.gov/docs/wildlife_pdf/cwcs2005.pdf
- New York State Department of Environmental Conservation (NYSDEC). 2015. New York State Aquatic Invasive Species Management Plan. July, 2015.
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- New York State Office of Park, Recreation, and Historic Preservation (OPRHP). 2014 The New York State Statewide Comprehensive Outdoor Recreation Plan and Generic Environmental Impact Statement 2014 – 2019. March 2014.⁴

⁴ This is most current version of Plan available. FERC Revised List of Comprehensive Plans (June 2014) references the January 2003 version.

7 SUMMARY OF CONTACTS (18 CFR 5.6 (D)(5))

In compliance with the Commission's regulations governing the content of the PAD, The City contacted appropriate state and federal resource agencies and interested public parties, who may be concerned with the Project. The City requested that all parties provide any relevant studies, data, and information on topics such as water quality, fisheries, recreation, wildlife, wetlands, aesthetic, and cultural resources. [Appendix B](#) contains the letter sent to potentially interested stakeholders requesting that information on the Project be provided for incorporation in the PAD, as well as a copy of the responses received. Of the 54 surveys that were distributed to Project stakeholders, seven written responses were received. [Table 7-1](#) summarizes the responses received from stakeholders to the PAD questionnaire.

Table 7-1: Responses Received to PAD Information Request

Organization Contacted	Respondent	Summary of Response
U.S. Fish and Wildlife Service	Stephen Patch	PAD Questionnaire returned; resource issues identified
NYS Department of Environmental Conservation	Angelika Stewart	PAD Questionnaire returned; resource issues identified; data provided
Albany County Soil and Water Conservation District	Susan L. Lewis	Acknowledgement of request and indication of no data pertinent to the Project other than historic aerial photos
Albany County Office of Natural Resource Conservation	Laura DeGaetano	Indication of no primary source data for the PAD
NY Natural Heritage Program	Nicholas Conrad	Provided response to RTE information request
NYS Historic Preservation Office	Linda Mackey (vis CRIS website response)	Indication that they will review the proposed undertaking and provide comments/recommendations if the project is submitted to SHPO for review under Section 106 of the National Historic Preservation Act by FERC
NYS Historic Preservation Office	Daniel Bagrow	PAD Questionnaire returned; resource issues identified

8 LITERATURE CITED AND INFORMATION SOURCES CITED (18 CFR §5.6(C)(2))

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Albany Pine Bush Preserve Commission. 2011. About the Pine Bush. Online:
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<http://www.americanwhitewater.org/content/River/detail/id/10870>. Date accessed: 2/1/17

American Whitewater. 2017. Normans Kill – 3. Normansville to Route 32. Online:
<http://www.americanwhitewater.org/content/River/detail/id/1362>. Date accessed: 2/1/17

Bailey, Robert G. 1995. Descriptions of the Ecoregions of the United States. United States Department of Agriculture: Forest Service. Updated 2008.
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<http://www.dec.ny.gov/chemical/78979.html> Date accessed 2/10/17

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APPENDICES

APPENDIX A – NORMANSKILL PROJECT STAKEHOLDER LIST

(Updated based on responses received from PAD questionnaire.)

**Normanskill Hydroelectric Licensing
FERC Project No. 2955**

Stakeholder Distribution List

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Tracy Brown
Northeast Restoration Coordinator
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City of Rensselaer
62 Washington Street
Rensselaer, NY 12144

Darlene Dziarcak, Town Clerk
Town of Waterford
65 Broad Street
Waterford, NY 12188

Diane Ferrara, Town Clerk
Town of Duanesburg
5853 Western Turnpike
Duanesburg, NY 12056

Paul Gallay
Hudson Riverkeeper
20 Secor Road
Ossining, NY 10562

Neil Gifford
Albany Pine Bush Preserve
Commission
195 New Karner Road, Suite 1
Albany, NY 12205

Emilie Gould
NYSHPO
Peebles Island State Park
PO Box 189
Waterford, NY 12188

Clint Halftown
Heron Clan Federal Representative
Cayuga Nation
2540 SR-89
PO Box 803
Seneca Falls, NY 13148

Lindsay Homenick
Audubon Society of the Capital
Region
No Mailing Address
Electronic Contact Only

Kris Kastberg, Mayor
Village of Scotia
4 N. Ten Broeck Street
Scotia, NY 12302

Bill Krattinger
NYSHPO
Peebles Island State Park
PO Box 189
Waterford, NY 12188

Chief Ron LaFrance
Saint Regis Mohawk Tribe
412 State Route 37
Akwesansne, NY 13655

William Little
Office of General Counsel
NYSDEC
625 Broadway
Albany, NY 12233

Patrick Madden, Mayor
City of Troy
433 River Street
Albany, NY 12180

Diane Marco, Town Clerk
Town of Rotterdam
1100 Sunrise Boulevard
Rotterdam, NY 12306

Michele Martinelli, Town Clerk
Town of Niskayuna
One Niskayuna Circle
Niskayuna, NY 12309

Gary McCarthy, Mayor
City of Schenectady
105 Jay Street Room 111
Schenectady, NY 12305

Leslie Monostory
Izaak Walton League of America
125 Euclid Drive
Fayetteville, NY 13066

Nanci Moquin, Town Clerk
Town of Bethlehem
445 Delaware Ave Room 112
Delmar, NY 12054

Shawn Morse, Mayor
City of Cohoes
97 Mohawk Street
Cohoes, NY 12047

American Whitewater Association
PO Box 1540
Cullowhee, NC 28723

Patricia O'Donnell, Town Clerk
Clifton Park
One Town Hall Plaza
Clifton Park, NY 12065

Stephen Patch
U.S. Fish & Wildlife Service
New York Field Office
3817 Luker Rd.
Cortland, NY 13045

Charles Schumer
U.S. Senate
322 Hart Senate Office Building
Washington D.C. 20510

Kathy Sheehan, Mayor
City of Albany
24 Eagle Street Room 102
Albany, NY 12207

James Slavin
Albany Chapter
Adirondack Mountain Club
PO Box 2116
Albany, NY 12220

Angelika Stewart
NYSDEC
1130 North Westcott Road
Schenectady, NY 12301

Stan Stoklosa
Schenectady Chapter
Adirondack Mountain Club
PO Box 733
Schenectady, NY 12301

Chief Eric Thompson
Saint Regis Mohawk Tribe
412 State Route 37
Akwesasne, NY 13655

Chuck Thorne, City Clerk
City of Schenectady
105 Jay Street Room 107
Schenectady, NY 12305

Andrew Tittler
USFWS
One Gateway Center
Suite 612
Newton, MA 02458

Tim Twoguns
Cayuga Nation
2540 SR-89
PO Box 803
Seneca Falls, NY 13148

Chris VanMaaren
NYSDEC
65561 State Highway 10, Suite 1
Stamford, NY 12167

Georgette Walters
NYSDEC
1130 Westcott Road
Schenectady, NY 12306

John Wiley
U.S. Fish & Wildlife Service
New York Field Office
3817 Luker Rd.
Cortland, NY 13045

Delaware Nation
PO Box 825
Anadarko, OK 73005

Delaware Tribe of Indians
5100 Tuxedo Blvd
Bartlesville, OK 74006

Mohawk Nation Council of Chiefs
PO Box 336
Rooseveltstown, NY 13683
Oneida Nation of New York
5218 Patrick Road
Verona, NY 13478

Onondaga Nation of New York
PO Box 319-B
102 W. Conklin Avenue
Nedrow, NY 13120

Seneca Nation of Indians
12837 Route 438
Cattaraugus Territory
Irving, NY 14081

Tuscarora Nation of New York
2006 Mt. Hope Road
Lewiston, NY 14092

National Marine Fisheries Service
Northeast Regional Office
1 Blackburn Drive
Gloucester, MA 1930

Town Clerk
Town of East Greenbush
225 Columbia Turnpike
Rensselaer, NY 12144

**APPENDIX B – COPY OF INFORMATION REQUEST, RESPONSES RECEIVED AND
OTHER CORRESPONDENCE**



399 Albany Shaker Road
Suite 203
Loudonville, NY 12211
T – 518-407-0050
F – 518-407-0053

January 26, 2017

**Re: Request for Information
Relicensing of the Normanskill Hydroelectric Project FERC No. 2955
City of Watervliet, NY**

Dear Sir/Madam:

The City of Watervliet is preparing to relicense the Normanskill Hydroelectric Project with the Federal Energy Regulatory Commission (FERC). The hydroelectric project is located on the Normans Kill, a tributary of the Hudson River in the Town of Guilderland in Albany County, New York. The FERC license will expire on February 28, 2022. As a result, the Pre-Application Document (PAD) and Notice of Intent (NOI) must be filed no later than February 28, 2017 for the Normanskill Project. At this time, the City of Watervliet is requesting background information on the Normanskill Hydroelectric Project to support development of the PAD.

The 1,250 kW Normanskill Project consists of: a reinforced concrete Ambursen-type dam (about 380-ft long and 40-ft high with an overflow section approximately 306-ft long; crest elevation of 259.0 feet NGVD29) surmounted by 3-ft flashboards; intake structure and sluiceway; a 900-ft long, 7-ft diameter concrete-encased steel buried penstock; a reinforced concrete underground powerhouse containing one tube-type generating unit; an underground control building located on the left (north) bank, which is connected to the powerhouse by a tunnel; a 600-ft long 2.4-kV transmission line; a 2.4/13.2-kV transformer bank; and appurtenant facilities. The Project's 430 acre impoundment, Watervliet Reservoir, is the source of water supply for the City and the Town of Guilderland. Part of the generated power at the site is used to pump water from Watervliet Reservoir to the City's water treatment plant.

Figure 1 provides a regional map of the facility's location, and Figure 2 depicts the major Project Features.

The City of Watervliet is contacting you as a potentially interested party regarding the project in order to solicit background information for use in developing the PAD. The PAD is a document that summarizes all of the background information available on the project. Below is a brief table of contents for the PAD.

1. Process Plan and Schedule
2. Description of the Project Location, Facilities, and Operations
3. Description of Existing Environment and Resource Impacts
 - Geology & Soils
 - Water Quantity & Quality

- Fisheries & Aquatic Resources
- Wetlands, Riparian, Littoral Habitat
- Recreation & Land Use
- Cultural Resources
- Tribal Resources
- Wildlife & Botanical Resources
- Rare, Threatened, & Endangered Species
- Aesthetic Resources
- Socio-Economic Resources
- General Description of Basin

4. A Preliminary List of Issues and Studies

5. Summary of Contacts

On behalf of the City of Watervliet, Gomez and Sullivan Engineers, DPC is preparing a PAD that will provide project stakeholders and FERC with existing, relevant and reasonably available information pertaining to the Project at the outset of the relicensing process. The attached PAD Information Questionnaire will be used to help identify sources of information that are not in the City of Watervliet's possession.

We would appreciate receiving any information your organization may have regarding the environmental, recreational, and historical/archeological resources associated with the project location. To assist the City of Watervliet in obtaining available data as well as assessing potential issues for the relicensing, we ask that you complete the attached questionnaire and electronically provide any information to us by February 10, 2017.

If you have any questions about this request, please feel free to contact me at 518-407-0050 or mstottler@gomezandsullivan. Thank you for your assistance in providing background information to help develop the PAD for the Normanskill Project.

Sincerely,



Michele E. Stottler, P.E.

Senior Water Resources Engineer

Gomez and Sullivan Engineers, DPC

Information about person completing the questionnaire:

Name & Title	
Organization	
Address	
Phone	
Email Address	

1. Do you or your organization know of existing, relevant, and reasonably available information that describes the Project’s existing environment (i.e., information regarding the Normans Kill in or close proximity to the Project)?

Yes (*If yes, please complete 1a through 1e*)
 No (*If no, please go to 2*)

- a. If yes, please indicate the specific resource area(s) that the information relates to:

- | | |
|---|---|
| <input type="checkbox"/> geology and soils | <input type="checkbox"/> recreation and land use |
| <input type="checkbox"/> water resources | <input type="checkbox"/> aesthetic resources |
| <input type="checkbox"/> fish & aquatic resources | <input type="checkbox"/> historical resources |
| <input type="checkbox"/> wildlife & botanical resources | <input type="checkbox"/> socioeconomic resources |
| <input type="checkbox"/> wetlands, riparian, & littoral habitat | <input type="checkbox"/> tribal resources |
| | <input type="checkbox"/> other resource information |

- b. Please briefly describe the information or list available documents (*Additional space in available in section 3*).

- c. Where can the City of Watervliet obtain this information?

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact for the resource area(s) checked above (*Additional space is available in section 3*).

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues pertaining to the identified resource area(s)? *(Additional space is available in section 3)*

Yes *(please list specific issues below)* No

Resource Area	Specific Issue

2. Do you or your organization plan to participate in the Normanskill Hydroelectric Project relicensing proceedings? Yes No

3. We are interested in your comments. If you have comments and/or questions regarding the City of Watervliet's Hydroelectric Project, Pre-Application Document, or relicensing process, please add below: Additional information to previous sections may also be added here.

Comments

Please return this Questionnaire electronically via email to mstottler@gomezandsullivan.com **February 10th, 2017** to allow for any follow-up contact that may be needed prior to the filing date of the PAD.

Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project

Information about person completing the questionnaire:

Name & Title	Stephen Patch; Fish & Wildlife Biologist
Organization	U.S. Fish & Wildlife Service
Address	3817 Luke-Rd. Cortland, NY 13045
Phone	607-753-9334
Email Address	stephen_patch@fws.gov

1. Do you or your organization know of existing, relevant, and reasonably available information that describes the Project's existing environment (i.e., information regarding the Normans Kill in or close proximity to the Project)?

Yes (If yes, please complete 1a through 1e) No (If no, please go to 2)

a. If yes, please indicate the specific resource area(s) that the information relates to:

- | | |
|---|---|
| <input type="checkbox"/> geology and soils | <input type="checkbox"/> recreation and land use |
| <input type="checkbox"/> water resources | <input type="checkbox"/> aesthetic resources |
| <input type="checkbox"/> fish & aquatic resources | <input type="checkbox"/> historical resources |
| <input type="checkbox"/> wildlife & botanical resources | <input type="checkbox"/> socioeconomic resources |
| <input type="checkbox"/> wetlands, riparian, & littoral habitat | <input type="checkbox"/> tribal resources |
| | <input type="checkbox"/> other resource information |

b. Please briefly describe the information or list available documents (*Additional space is available in section 3*).

c. Where can the City of Watervliet obtain this information?

d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact for the resource area(s) checked above (*Additional space is available in section 3*).

Representative Contact Information

Name	
Address	
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues pertaining to the identified resource area(s)? (Additional space is available in section 3)

Yes (please list specific issues below) No

Resource Area	Specific Issue
Fish & Aquatic Resources	Upstream passage for American eel fish protection/downstream passage bypassed reach/base flow release
Wildl. & Botanical Resources	Bald eagle nest

2. Do you or your organization plan to participate in the Normanskill Hydroelectric Project relicensing proceedings? Yes No

3. We are interested in your comments. If you have comments and/or questions regarding the City of Watervliet's Hydroelectric Project, Pre-Application Document, or relicensing process, please add below: Additional information to previous sections may also be added here.

Comments

While reviewing proposed amendment to increase dam height in 2005, many of the issues listed above were discussed. The amendment was never filed with the FERC.

The bypassed reach is about 900', but 4-5 miles of habitat are dewatered when the project is not releasing water.

The 2" trashrack spacing is not acceptable. Both bald eagles and American eels must be addressed.

Please return this Questionnaire electronically via email to mstottler@gomezandsullivan.com February 10th, 2017 to allow for any follow-up contact that may be needed prior to the filing date of the PAD.

Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project

Information about person completing the questionnaire:

Name & Title	Angelika Stewart, Environmental Analyst
Organization	NYS DEC
Address	1130 North Westcott Rd Schenectady, NY 12306
Phone	518-357-2171
Email Address	angelika.stewart@dec.ny.gov

1. Do you or your organization know of existing, relevant, and reasonably available information that describes the Project's existing environment (i.e., information regarding the Normans Kill in or close proximity to the Project)?

Yes (If yes, please complete 1a through 1e) No (If no, please go to 2)

- a. If yes, please indicate the specific resource area(s) that the information relates to:

<input checked="" type="checkbox"/> geology and soils	<input checked="" type="checkbox"/> recreation and land use
<input checked="" type="checkbox"/> water resources	<input type="checkbox"/> aesthetic resources
<input checked="" type="checkbox"/> fish & aquatic resources	<input checked="" type="checkbox"/> historical resources
<input checked="" type="checkbox"/> wildlife & botanical resources	<input type="checkbox"/> socioeconomic resources
<input checked="" type="checkbox"/> wetlands, riparian, & littoral habitat	<input type="checkbox"/> tribal resources
	<input checked="" type="checkbox"/> other resource information

- b. Please briefly describe the information or list available documents (Additional space is available in section 3).

Please refer to attachments.

- c. Where can the City of Watervliet obtain this information?

Please refer to attachments.

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact for the resource area(s) checked above (Additional space is available in section 3).

Representative Contact Information

Name	Georgette Walters, Biologist
Address	65561 State Highway, Suite 1 Stamford NY 12167-9503
Phone	607-652-2637
Email Address	georgette.walters@dec.ny.gov

Name	Paul Novak, Biologist
Address	1130 North Westcott Rd. Schenectady NY 12306
Phone	518-357-2071
Email Address	paul.novak@dec.ny.gov

- e. Based on the specific resources listed in 2a, are you aware of any specific issues pertaining to the identified resource area(s)? (Additional space is available in section 3)

Yes (please list specific issues below) No

Resource Area	Specific Issue
Fish + aquatic	American eel
Wildlife + botanical resources	- Northern long-eared bat habitat - Bald eagle habitat

2. Do you or your organization plan to participate in the Normanskill Hydroelectric Project relicensing proceedings? Yes No

3. We are interested in your comments. If you have comments and/or questions regarding the City of Watervliet's Hydroelectric Project, Pre-Application Document, or relicensing process, please add below: Additional information to previous sections may also be added here.

Comments

Please refer to attachments.

Please return this Questionnaire electronically via email to mstottler@gomezandsullivan.com **February 10th, 2017** to allow for any follow-up contact that may be needed prior to the filing date of the PAD.

Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project

1b. Please briefly describe the information or list available documents.

Geology & Soils –

- Please contact Albany County Soil and Water Conservation District for further information on this topic. Their contact information is the following:

Albany County
SOIL and WATER CONSERVATION DISTRICT
P.O. Box 497, 24 Martin Road | Voorheesville, NY 12186
Phone: (518) 765-SWCD (7923)

Water Resources –

- The portion of the Normanskill that is upstream of the dam is a Class A watercourse. The portion of the Normanskill that is downstream of the dam is a Class B watercourse. Further information is located: <http://www.dec.ny.gov/regs/2485.html> and on the NYSDEC's Environmental Resource Mapper (<http://www.dec.ny.gov/animals/38801.html>).

Fish and Aquatic Resources –

- Please see the attached fisheries studies that have been completed on the Watervliet Reservoir, including: a fish collection dated 4/30/1986, a fish collection dated 5/14-15/1986, lake & pond survey and fish collection dated 6/21 & 22/1977, survey number 413025 (dated 9/12/2013), survey number 409926 (dated 6/5/2009) and survey number 410906 (dated 6/2/2010).
- The Department is very interested in American Eel and their relationship to the Normanskill Creek/Dam and may require future information specific to this species.

Wildlife and Botanical Resources –

- The site appears to contain habitat for northern long-eared bat and bald eagle. The entire Watervliet Reservoir is listed as an 'important animal area'. Please contact either the New York Natural Heritage Program (<http://www.dec.ny.gov/animals/29338.html>) or Department Biologist Paul Novak with any questions.

Wetlands, Riparian & Littoral Habitat –

- The northwestern portion of the Watervliet Reservoir is a mapped NYS regulated Freshwater Wetland V-7 (FWW V-7). For questions on FWW V-7, the riparian &/or littoral habitat, please contact Biologist Georgette Walters. The entire Watervliet Reservoir is a mapped Federal Wetland. Please contact Andy Dangler at the Corps of Engineers, 518-266-6350, for questions regarding the federal wetland.

Recreation and Land Use –

- The Watervliet Reservoir previously had public fishing access from a parking lot located off of Hurst Rd. Beginning in 2001, the parking lot hasn't been maintained and a large pile of topsoil has been placed within the parking lot itself. Public fishing is currently allowed to land owners

with shoreline rights to the Reservoir, which are primarily located off of Stitt Rd. The Department is very interested in providing a public fishing access location with a non-gas powered hand launch somewhere on the Watervliet Reservoir. The Department is also interested in the possibility of creating a trail/trail system as a recreational opportunity for the community.

- There are several active sand and gravel mines located to the west of the Watervliet Reservoir, some within approximately 1,500 feet of the Reservoir. The Town of Guilderland dump is located to the south of the Watervliet Reservoir, approximately 1,500 feet south of the dam. Keenholts Park is located to the south of the Reservoir, adjacent to the Town dump. French's Hollow Fairways, a golf course off of Hurst Rd, is located within approximately 700 feet of the south side of the Reservoir.

Historical Resources –

- The site is located within an archeo-sensitive area. Please contact the New York State Historic Preservation Office website for further information: <https://parks.ny.gov/shpo/online-tools/>.

Other resource information –

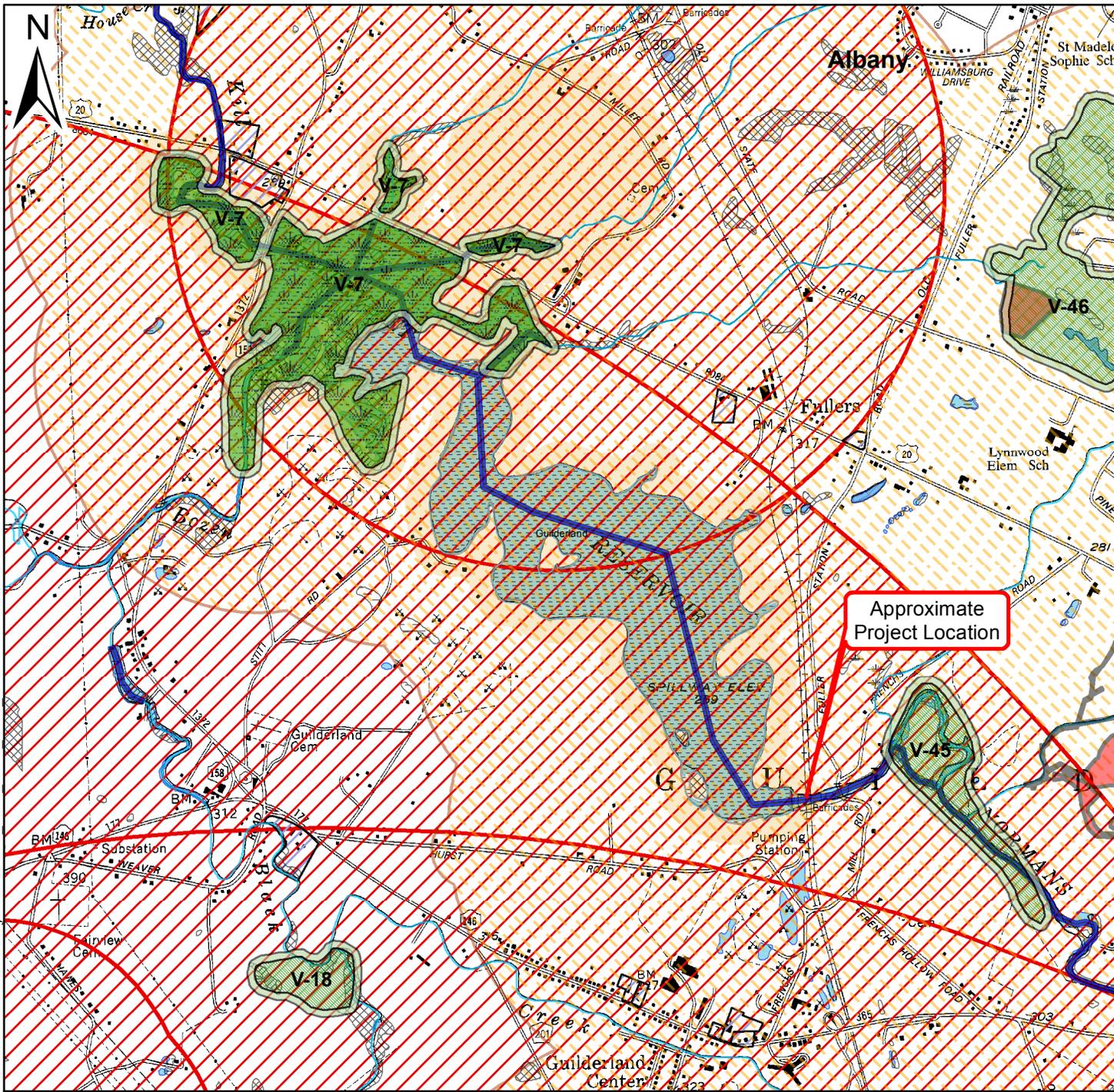
- Google for the following two studies that include information on the Normanskill & Watervliet Reservoir:
 - Normans Kill Riparian Corridor Study prepared for Audubon New York (2007) by the Albany County Department of Economic Development, Conservation & Planning.
 - Watervliet Reservoir Watershed Protection Study prepared by the Capital District Regional Planning Commission.

The Department does not have any information on aesthetic resources, socioeconomic resources or tribal resources.

Questions:

1. Previously there were discussions to raise the reservoir five (5) feet, thus increasing the capacity of the reservoir. Does this project include raising the level of the reservoir/increasing the capacity of the reservoir?
 - a. If no, are there any future plans to raise the reservoir/increase the capacity?

Division of Environmental Permits Projection: NAD 1983 UTM Zone 18N



NYS RESOURCES MAP

NORMANSKILL HYDROELECTRIC PROJECT-FERC No. 2955
Watervliet Reservoir
Town of Guiderland,
Albany County

February 3, 2017

0 1,000 2,000 3,000 4,000 Feet
1 inch equals 2,000 feet

Legend

NYS Freshwater Wetland

- Class 1 Freshwater Wetland
- Class 2 Freshwater Wetland
- Class 3 Freshwater Wetland
- Class 4 Freshwater Wetland
- Regulated Adjacent Area Boundary
- Deed Restrictions
- Protected Streams (C(t) and higher)
- Non-protected Streams (C and D)
- Water Quality Classifications (Polygon)

National Wetlands Inventory

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

Other Resources

- Archaeologically Sensitive Area
- National/State Register Site
- State Historic Site or Historic Park
- Critical Environmental Areas
- T&E Animals
- T&E Fish
- BBA Grassland Birds E&T
- BBA Marsh Birds E&T
- Wetland/Aquatic Community
- Upland/Terrestrial Community

Disclaimer: This map was prepared by Region 4 NYSDEC Division of Environmental Permits using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data. This map may contain information that is considered sensitive and therefore the distribution of this map is strictly prohibited. Additional resources may be present but not depicted on this map.

FISH COLLECTION - POND OR LAKE

Water Watervliet Reservoir (P270) Watershed Mohawk-Hudson Date 5/14-15/68
 Net No. _____ Gear Two 4' trap nets Hours fished 20 hrs. (2:00 PM -10:00 AM)
 Location N.W. Basin Bottom Cl., Md. Water of 59
 Vegetation Emerging Collected by Elliot, Schmidt, McPherson

Mesh str.	Depth	Catch by Species					
		<u>Perca flavescens</u>	<u>Lepomis macrochirus</u>	<u>Lepomis gibbosus</u>	<u>Ictalurus nebulosus</u>	<u>Anguilla rostrata</u>	<u>Cyprinus carpio</u>
1 3/4"	6-8"	<u>Over 8"</u> Total: 4 1# 5 oz. Av. wt. 5.2 oz.	<u>Over 6.5"</u> Total: 28 11# 3 oz. Av. wt. 6.4 oz.	<u>Under 6.5"</u> Total: 2 5 oz. Av. wt. 2.5 oz.	<u>Over 8"</u> Total: 10 10# 15 oz. Av. wt. 1# 2 oz.	Total: 6 15# Av. wt. 2# 8 oz.	Total: 4 16# 4 oz. Av. wt. 4# 1 oz.
				<u>Over 6.5"</u> Total: 1 5 oz. Av. wt. 5 oz.			
		Total wt. 1# 5 oz.	Total wt. 11# 3 oz.	Total wt. 10 oz.	Total wt. 10# 15 oz.	Total wt. 15#	Total wt. 16# 4 oz.
NOTE: Netting check incidental to obtaining 79 <u>Pomoxis nigromaculatus</u> and <u>P. annularis</u> for transfer to Region 3.							
(Cont'd.)							

FISH COLLECTION - POND OR LAKE

Water Watervliet Reservoir (2) Watershed _____ Date _____
 Net No. _____ Gear _____ Hours fished _____
 Location _____ Bottom _____ Water of _____
 Vegetation _____ Collected by _____

Mesh str.	Depth	Catch by Species					
		<u>Catostomus commersoni</u>	<u>Notemigonus crysoleucas</u>				
		Total: 47 61# 12 oz. Av. wt. 1# 5 oz.	Total: 85 28# 10 oz. Av. wt. 5.4 oz.				
		Total wt. 61# 12 oz.	Total wt. 28# 10 oz.				

LAKE AND POND SURVEY

Name of lake or pond Watervliet Reservoir (P270)
 Tributary to 4-H221
 River system Mohawk-Hudson County Albany Quadrangle Voorheesville-Guilderland
 Authority McBride Date 6/23/77 (7 1/2')
 Previous stocking _____

General remarks: Survey in conjunction with the possible opening of Watervliet Reservoir to public fishing. Launched boat off of Rt. 158 at the outlet of the Normans Kill.

Aquatic vegetation present: Water chestnut; Potamogeton; Coontail; Lily pads
 Water chestnut is concentrated in the eastern basin along Rt. 20. Only scattered plants occur in the remainder of the lake.
 These are slumping cliffs of clay, especially along the north shore, that cause localized areas of high turbidity.

DFG-83 (3/72)

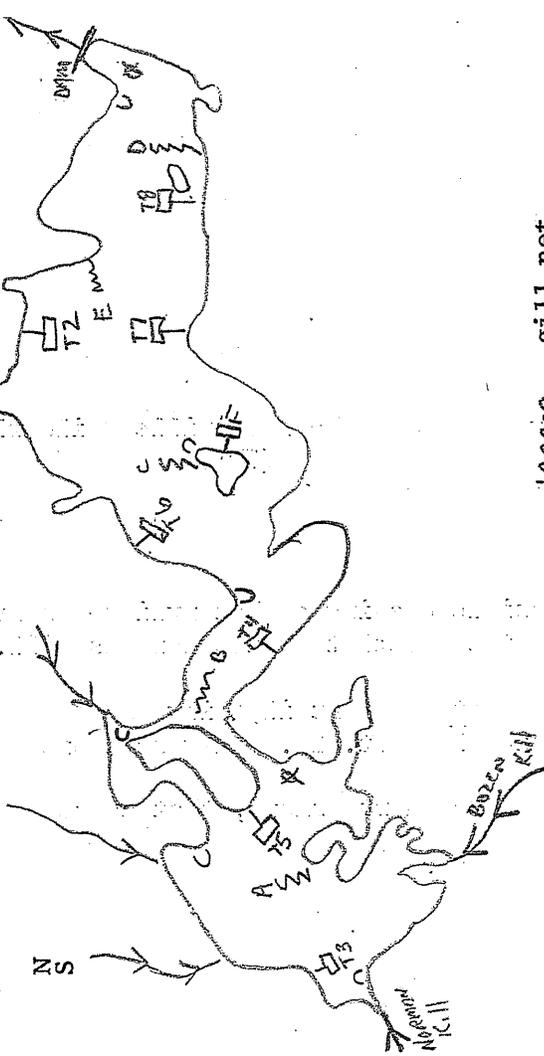
94-14-8 (5/76)
 Formerly FW-78

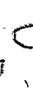
FISH COLLECTION - POND OR LAKE

WATER		WATERSHED				DATE	
Watervliet Res. (P270)		Mohawk-Hudson				6/21 & 22/77	
NET NO.	GEAR	HOURS FISHED		LOCATION			
D. E	150 ft. combination gill net	21(12:30-9:30)		See map sketch			
BOTTOM	WATER °F	VEGETATION		COLLECTED BY			
clay, MO.	72 - S	None		McBride, Linhart, Norman J.			
MESH STR.	DEPTH	CATCH BY SPECIES					
		Micropterus salmoides	Lepomis machrochirus	Lepomis gibbosus	Perca flavescens	Pomoxis annularis	Catostomus commersoni
1 1/2"	D 8'	10.5"	Over 6.5"	Over 6.5"	Over 8.0"	Over 8.0"	Total: 25 27# 7 oz.
	E 6'	11.6"	Total: 5 1# 10.5 oz. Av. Wt. 5.3 oz.	Total: 2 8 oz. Av. Wt. 4 oz.	Total: 28 8# 0 oz. Av. Wt. 4.6 oz.	Total: 2 15.5 oz. Av. Wt. 7.8 oz.	
3 1/2"	17' 16'		Under 6.5"		Under 8.0"	Under 8.0"	Total: 25 27# 7 oz.
			Total: 5 14 oz. Av. Wt. 2.8 oz.	Total: 20 2# 14 oz. Av. Wt. 2.3 oz.	Total: 5 15.5 oz. Av. Wt. 3.1 oz.		
		Total Wt. 1# 3.5 oz.	Total Wt. 2# 8.5 oz.	Total Wt. 8 oz.	Total Wt. 10# 14 oz.	Total Wt. 1# 15 oz.	Total Wt. 27# 7 oz.

OVER

(Outline sketch of lake or pond)



 gill net
 trap net
 bag seine
 water chemistry

(Indicate principal weed beds, type of bottom and points where soundings were taken on sketch; also indicate, by numbers, points where collections were taken)

Area..... 403 acres Elevation..... 259'
 If posted: Owner's name and address..... City of Watervliet
 Bottom: clay, gravel, marl, muck, rock, sand (underline; give % of each type)
 40% 5% 40% 15%
 40% 80% 20%
 Vegetation: scant, fair, abundant, floating, submerged (underline; give % of each type)
 Source: springs in bottom, spring streams, surface water (underline)
 Shore line: wooded, swampy, cultivated
 Color of water: white, light brown, brown, green
 Height of dam if present..... 36 ft.
 Accessibility: road, trail, portage

Cyprinus Notemigonus
 carpio crysoleucas

Total: 1 Total: 3
 7# 3 oz. 15 oz.
 Av. Wt.
 5 oz.

Total Wt. Total Wt.
 7# 3 oz. 15 oz.

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)			WATERSHED Mohawk-Hudson			DATE 6/20-21/77		
NET NO. -		GEAR 230DC Boatshocker (1/2 wave: 8 amps)			HOURS FISHED 2 hrs.		LOCATION Perimeter of lake	
BOTTOM Sd, Md, Mk, Cl		WATER °F 72-S		VEGETATION Water chestnut, lilies, Potamogeton, coontail			COLLECTED BY McBride, Keller, Linhart,	
MESH STR.	DEPTH		CATCH BY SPECIES					Norman
	2'-10'		Micropterus salmoides					
			Size Range #	Size range #				
			3.0-3.9" 3	18.0-18.9 0				
			4.0-4.9" 2	19.0-19.9 0				
			5.0-5.9" 2	20.0-20.9 1				
			6.0-6.9 7					
			7.0-7.9 35	TOTAL: 81				
			8.0-8.9 6					
			9.0-9.9 6					
			10.0-10.9 4					
			11.0-11.9 9					
			12.0-12.9 2					
			13.0-13.9 1					
			14.0-14.9 0					
			15.0-15.9 0					
			16.0-16.9 1					
			17.0-17.9 2					
			Total Wt. 47# 4 oz.					

NOTE: Only gamefish were collected.
Observed several brown bullheads.

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)			WATERSHED Mohawk-Hudson			DATE 6/20-21/77		
NET NO. T1-T4		GEAR 4 trap nets			HOURS FISHED 19 (3PM-10AM)		LOCATION see attached map	
BOTTOM Mk, Cl, M		WATER °F 72-S		VEGETATION abundant submergents and emergents			COLLECTED BY Adriance, Carl, Cornwell	
MESH STR.	DEPTH		CATCH BY SPECIES					
			Micropterus salmoides	Perca flavescens	Lepomis macrochirus	Pomoxis annularis	Pomoxis nigromaculatus	Catostomus commersoni
1 1/2"	#1	#2		Over 8.0"	over 6.5"	Over 6.5"	Over 6.5"	Total: 71
car	at	at	19.7"	Total: 7 1# 10oz. Av. Wt. 3.7 oz.	Total: 70 25# 5 oz. Av. Wt. 5.7 oz.	Total: 3 1# 14 oz. Av. Wt. 10 oz.	Total: 41 13# 2 oz. Av. Wt. 5.1 oz.	86# 0 oz. Av. Wt. 1# 3.4 oz.
and	car	car						
Leader	#3	#4		Under 8.0"	Under 6.5"	Under 6.5"	Under 6.5"	Total Wt.
	5'	8'		Total: 4 15.5 oz. Av. Wt. 3.8 oz.	Total: 23 3# 0 oz. Av. Wt. 2.1 oz.	Total: 3 3.5 oz. Av. Wt. 1.1 oz.	Total: 2 3 oz. Av. Wt. 1.5 oz.	86#
	at	at						
	car	car						
			Total Wt. 4# 1 oz.	Total Wt. 2# 10 oz.	Total Wt. 28# 5 oz.	Total Wt. 2# 1.5 oz.	Total Wt. 13# 5 oz.	Total Wt. 86#

OVER

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)		WATERSHED Mohawk-Hudson		DATE 6/21-22/77
NET NO. T5 - T8	GEAR 4 trap nets	HOURS FISHED (2:30-11:00)	LOCATION See attached map	
BOTTOM Mk, Cl, M	WATER °F 72-S	VEGETATION Abundant submergents and emergents		COLLECTED BY Adriance, Carl, Cornwell

MESH STR.	DEPTH		CATCH BY SPECIES					
			Lepomis macrochirus	Perca flavescens	Pomoxis annularis	Pomoxis nigromaculatus	Catostomus commersoni	Anguilla rostrata
1 1/2" car and Leader	#5	#6	Over 6.5"	Over 8.0"	Over 6.5"	Over 6.5"	Total: 36 42# 12 oz. Av. Wt. 1# 3 oz.	Total: 4 11# 4 oz. Av. Wt. 2# 13 oz.
	10' at car	13' at car	Total: 458 173# 0 oz. Av. Wt. 6.0 oz.	Total: 10 2# 6 oz. Av. Wt. 3.8 oz.	Total: 14 5# 0 oz. Av. Wt. 5.7 oz.	Total: 21 5# 12 oz. Av. Wt. 4.4 oz.		
Leader	#7	#8	Under 6.5"	Under 8.0"	Under 6.5"	Under 6.5"	Total Wt. 42# 12 oz.	Total Wt. 11# 4 oz.
	8' at car	9' at car	Total: 9 14 oz. Av. Wt. 1.5 oz.	Total: 7 12 oz. Av. Wt. 1.7 oz.	Total: 6 9 oz. Av. Wt. 1.5 oz.	Total: 4 8.5 oz. Av. Wt. 2.1 oz.		
			Total Wt. 173# 14 oz.	Total Wt. 3# 2 oz.	Total Wt. 5# 9 oz.	Total Wt. 6# 4.5 oz.		

OVER

Anguilla rostrata	Cyprinus carpio	Notemigonus crysoleucas	Lepomis gibbosus
Total: 4 7# 6 oz. Av. Wt. 1# 13.5 oz.	Total: 1 5# 5 oz.	Total: 21 6# 0 oz. Av. Wt. 4.6 oz.	Under 6.5" Total: 1 2 oz.

Total Wt. 7# 6 oz.	Total Wt. 5# 5 oz.	Total Wt. 6# 0 oz.	Total Wt. 2 oz.
-----------------------	-----------------------	-----------------------	--------------------

Cyprinus carpio	Notemigonus crysoleucas	Lepomis gibbosus
Total: 7 38# 4 oz. Av. Wt. 5# 7.4 oz.	Total: 1 8 oz.	Over 6.5" Total: 1 5 oz.

Under 6.5"
Total: 1
1.5 oz.

Total Wt. 38# 4 oz.	Total Wt. 8 oz.	Total Wt. 6.5 oz.
------------------------	--------------------	----------------------

94-14-8 (5/76)
Formerly FW-78

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

369

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)		WATERSHED Mohawk-Hudson		DATE 6/20-21/77
NET NO. A, B, C	GEAR 150' combination gill net	HOURS FISHED 17 (4PM-9AM)	LOCATION See map sketch	
BOTTOM Mk, Md	WATER °F 72-S	VEGETATION Abundant emergents to none		COLLECTED BY McBride, Linhart, Norman

MESH STR.	DEPTH	CATCH BY SPECIES					
		Micropterus salmoides	Lepomis microchirus	Lepomis gibbosus	Perca flavescens	Pomoxis annularis	Catostomus commersoni
1 1/2'	A B C 5' 10' 8'	14.6	Over 6.5" Total: 1 8 oz.	Under 6.5" Total: 1 2 oz.	Over 8.0" Total: 14 3# 10 oz. Av. Wt. 4.1 oz.	Over 8.0" Total: 4 1# 15.5 oz. Av. Wt. 7.9 oz.	Total: 41 45# 11 oz. Av. Wt. 1# 1.8 oz.
3 1/2'	7', 18', 15'		Under 6.5" Total: 1 2 oz.		Under 8.0" Total: 30 3# 6 oz. Av. Wt. 1.8 oz.	Under 8.0" Total: 6 12.5 oz. Av. Wt. 2.1 oz.	
		Total Wt. 1# 6.5 oz.	Total Wt. 10 oz.	Total Wt. 2 oz.	Total Wt. 7# 0 oz.	Total Wt. 2# 12 oz.	Total Wt. 45# 11 oz.

OVER

Notemigonus
crysoleucas.

Total: 25

8# 3 oz.

Av. Wt.

5.2 oz.

Total Wt.

8# 3 oz.

94-148 (5/76)

Formerly FW-78

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

369

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)		WATERSHED Mohawk-Hudson		DATE 6/20/77
--------------------------------------	--	----------------------------	--	-----------------

NET NO. -	GEAR 230 DC boatshocker (1/2 wave:8 amps)	HOURS FISHED 45 mins.	LOCATION
--------------	--	--------------------------	----------

BOTTOM Sd,Gr,Mk	WATER °F 72°	VEGETATION Water chestnut, Potamogeton;Coontail, Lily Pads	COLLECTED BY McBride, Keller,Linhart
--------------------	-----------------	---	---

MESH STR.	DEPTH	CATCH BY SPECIES					
		Micropterus salmoides	Lepomis macrochirus	Lepomis gibbosus	Pomoxis nigromaculatus	Pomoxis annularis	Perca flavescens
-	2'-10'	Size Range #	Over 6.5"	Over 6.5"	Over 8.0"	Over 8.0"	under 8.0"
		5.0-5.9" 1	Total: 60	Total: 4	Total: 4	Total: 7	Total: 16
		6.0-6.9" 8	21# 14.5 oz.	14.5 oz.	1# 6.5 oz.	2# 9.5 oz.	1# 9.5 oz.
		7.0-7.9" 28	Av. Wt.	Av. Wt.	Av. Wt.	Av. Wt.	Av. Wt.
		8.0-8.9" 1	5.8 oz.	3.6 oz.	5.6 oz.	5.9 oz.	1.6 oz.
		9.0-9.9" 3					
		10.0-10.9" 2	Under 6.5"	Under 6.5"		Under 8.0	
		11.0-11.9" 3	Total:45	Total: 10		Total: 4	
		12.0-12.9" 1	6# 14.5 oz.	1# 10 oz.		13 oz.	
		13.0-13.1" 1	Av. Wt.	Av. Wt.		Av. Wt.	
			2.5 oz.	2.6 oz.		3.3 oz.	
		TOTAL: 48					
		Total Wt.	Total Wt.	Total Wt.	Total Wt.	Total Wt.	Total Wt.
		9# 4 oz.	28# 13 oz.	2# 8.5 oz.	1# 6.5 oz.	3# 8.5 oz.	1# 9.5 oz.

OVER

Notemigonus
crysoleucas

Catostomus
commersoni

Cyprinus
carpio

Total: 4
1# 7 oz.
Av. Wt.
5.8 oz.

Total: 20
18# 2 oz.
Av. Wt.
14.5 oz.

Total: 5
34# 5 oz.
Av. Wt.
6# 14 oz.

NOTE: All fish collected. Numerous eels observed but not collected.

Total Wt.
1# 7 oz.

Total Wt.
18# 2oz.

Total Wt.
34# 5 oz.

Watervliet Reservoir

369

AGE AND GROWTH

(Figure in parenthesis is number of individuals)

	<u>1+</u>	<u>2+</u>	<u>3+</u>	<u>4+</u>	<u>5+</u>	<u>6+</u>	<u>7+</u>	<u>8+</u>	<u>9+</u>
Largemouth Bass	3.9" (7)	7.2" (41)	10.6" (23)	12.3" (7)	14.6" (1)	-	17.3" (2)	19.2" (2)	20.2" (1)
Bluegill	2.4" (2)	4.2" (5)	6.6" (25)	8.1" (7)	8.6" (4)				
Pumpkinseed	-	4.4" (1)	6.2" (5)	7.2" (1)					
Black Crappie	-	6.8" (14)	9.2" (7)	10.0" (4)					
White Crappie	-	6.7" (24)	9.4" (8)	11.9" (4)	13.7" (1)				
Yellow Perch	3.7" (3)	5.2" (11)	6.8" (23)	8.2" (13)	9.4" (6)				

CHEMICAL SURVEY

Name of lake, pond or stream Watervliet Reservoir (P270)
Tributary to 4-H221
River system Mohawk-Hudson County Albany Quadrangle Voorheesville
Authority W. Adriance Date 6-20-77
General Remarks :

FW-75

CHEMICAL SURVEY

Name of lake, pond or stream Watervliet Reservoir (P270)
Tributary to 4-H221
River system Mohawk-Hudson County Albany Quadrangle Voorheesville
Authority W. Adriance Date 6/20/77
General Remarks :

The upper lake basin is almost completely weed choked by water chestnut.

FW-75

CHEMICAL ANALYSIS

LOCATION	Date	Time	DEPTH IN FEET		TEMP. °F.		CO ₂ pp.m.	ALK. P.P.M. CaCO ₃		DISSOLVED OXYGEN		pH	Total Hardness
			Total	Sample	Air	Sample		M. O.	P.	p.p.m.	% sat.		
1000' above dam	6/20/77	1:30pm	34'	S	82	75	5	137	0	9		8.8	154
				5		74							
				10		70							
				12		67							
				14		64							
				15		63							
				20		59							
				25		55							
				30		52							
				B 34		50							

Remarks: (weather, barometer, odor, transparency, etc.)

Weather: clear

CHEMICAL ANALYSIS

LOCATION	Date	Time	DEPTH IN FEET		TEMP. °F.		CO ₂ pp.m.	ALK. P.P.M. CaCO ₃		DISSOLVED OXYGEN		pH	Total Hardness					
			Total	Sample	Air	Sample		M. O.	P.	p.p.m.	% sat.							
lower station (see map)	6/20/77	12:15 pm	15'	S	79 ⁰	72	5	137	0	9		8.2	137					
				1		72												
				2		71½												
				3		71												
				4		70½												
				5		69												
				6		68												
				7		67½												
				8		67												
				10		65½												
				11		64												
				12		63												
				15		62								5	120	0	5	7.4

Remarks: (weather, barometer, odor, transparency, etc.)

weather: clear

secchi disc Reading: 6.5'

FISH COLLECTION - POND OR LAKE

WATER		WATERSHED				DATE	
Watervliet Reservoir (P270)		Mohawk-Hudson				6/22/77	
NET NO.	GEAR	HOURS FISHED		LOCATION			
-	75 ft. Bag Seine	7 hauls		See map			
BOTTOM	WATER °F	VEGETATION			COLLECTED BY		
Sd, Mk, Md, Cl	72°	None			McBride, Linhart, Norman		
MESH STR.	DEPTH	CATCH BY SPECIES					
1/4"	0-10'	Micropterus salmoides	Perca flavescens	Pomoxis nigromaculatus	Pomoxis annularis	Lepomis macrochirus	Lepomis gibbosus
		3.5" 4.1" 7.5" 8.1"	Under 8.0" Total: 6 0.17 lb. Av. Wt. 0.03 lb.	Under 8.0" Total: 3 0.67 lb. Av. Wt. 0.22 lb.	Under 8.0" Total: 1 0.19 lb.	Under 6.5" Total: 6 0.33 lb. Av. Wt. 0.06 lb.	Under 6.5" Total: 2 0.24 lb. Av. Wt. .12 lb.
		23 YOY	15 YOY	unidentifiable crappie YOY numbered 66			
		Total Wt. 0.45 lb.	Total Wt. 0.17 lb.	Total Wt. 0.67 lb.	Total Wt. 0.19 lb.	Total Wt. 0.33 lb.	Total Wt. 0.24 lb.
							OVER

Game fish : non-game fish ratio..... 1:9.7	Fish present (species, abundance)
Trout spawning success..... None	Micropterus salmoides A-
Fertility: 2..... Productive shallows (%)..... 1 (45%)	Lepomis macrochirus A+
Soil type 3	Lepomis gibbosus C-
Invertebrate food 2	Pomoxis annularis C-
Accessible forage area (% bottom) 2 (60%)	Pomoxis nigromaculatus C
Management: Trout or non-trout (check one); set lines, tip-ups, commercial	Perca flavescens C+
bait, spearing (check if applicable).....	Notemigonus crysoleucas C
Salvage netting.....	Catostomus commersoni A
Other management Introduction of norlunge if boating is	Cyprinus carpio C+
allowed.....	Anguilla rostrata C
locking.....	Ictalurus nebulosus (observed) R
	Additional species reported:
	Esox lucius
	Stizostedion vitreum vitreum

FISH COLLECTION - POND OR LAKE

WATER Watervliet Reservoir (P270)		WATERSHED Mohawk-Hudson		DATE 4/30/86
NET NO. -	GEAR 220V DC	HOURS FISHED 2½ (1100-1430)	LOCATION Northern end of lake	
BOTTOM Mud	WATER °F -	VEGETATION Potamogeton crispus & cattails-abundant	COLLECTED BY McBride & Linhart	

MESH STR.	DEPTH	CATCH BY SPECIES			
		Micropterus salmoides			
		Size	#	NOTE: Collection made to collect LmB for stocking other waters. Numerous chain pickerel (<i>Esox niger</i>) observed. Most were 5-12" but larger fish are common. Several fish in three pound category observed. Relative abundance of fish seen are as follows:	
		6"	2	Largemouth bass - C	Carp - C
		7	4	Chain pickerel - A	White sucker - C-
		8	0	Yellow perch - R	Golden shiner - C
		9	2	Pumpkinseed - C-	American eel - C
		10	1	Black crappie - C	
		11	6	White crappie - C-	
		12	15	Brown bullhead - R	
		13	10	Bluegill - C+	
		14	3		
		15	2		
		16	3		
		17	1		
			50		



SURVEY COVER

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

SURVEY NUMBER ¹

409926

PURPOSE ²

8

P/S ³

WATERSHED FILE ⁴

SCALES ? ⁵

N

LAB DATA ? ⁶

N

SURVEY AUTHORITY ⁸

Carlson

⁷

Total Number of Pages ⁸

8

ALIAS ⁹

NAME

NORMANS KILL

FISHERIES INDEX NUMBER ¹⁰

H-221-4

Send to
Rodger Klindt

NYSDEC Region 6 Fisheries Unit
317 Washington St
Watertown, NY 13601-3787

POND NUMBER ¹¹

MAX DEPTH (ft) ¹²

GENERAL SURVEY COMMENTS ¹³

SL**SITE LOCATION**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS ¹

(H-221-4)

SURVEY NUMBER ²

409926

409926 0605 01

DATE (mm/dd/yy) ³

6/5/2009

SITE ⁴

01

TOWN or CITY ⁵

Guiderland

COUNTY ⁶

ALBA

FILE NUMBER ⁷BOF MYLAR ⁹NYTME ¹⁰

590475

NYTMN ¹¹

4724452

RMI ¹²SITE DESCRIPTION ¹³

Route 203 above and at mouth of Vly creek.

409926 0605 02

DATE (mm/dd/yy) ³

6/5/2009

SITE ⁴

02

TOWN or CITY ⁵

Guiderland

COUNTY ⁶

ALBA

FILE NUMBER ⁷BOF MYLAR ⁹NYTME ¹⁰

581691

NYTMN ¹¹

4735125

RMI ¹²SITE DESCRIPTION ¹³

Pine Grove Route 406

BF**BULK FISH**DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit

06-Feb-17

ALIAS

(H-221-4)

SURVEY NUMBER

409926

	DATE (mm/dd/yy)	SITE	REP #	SPECIES CODE	FISH NAME	# OF FISH	C/	LENGTH MIN(mm)	LENGTH MAX(mm)	WEIGHT (g)	STAGE	SEX	MR	MESH
123483	6/5/2009	01	1	385	<i>Common Shiner</i>	5	C							
123484	6/5/2009	01	1	406	<i>Creek Chub</i>	20	C							
123485	6/5/2009	01	1	390	<i>Spottail Shiner</i>	1	C							
123486	6/5/2009	01	1	594	<i>Redbreast Sunfish</i>	1	C							
123487	6/5/2009	01	1	591	<i>Rock Bass</i>	2	C							
123488	6/5/2009	01	1	596	<i>Pumpkinseed</i>	4	C							
123489	6/5/2009	01	1	367	<i>Cutlip Minnow</i>	1	C							
123490	6/5/2009	01	1	403	<i>Longnose Dace</i>	40	C							
123491	6/5/2009	01	1	401	<i>Fathead Minnow</i>	2	C							
123492	6/5/2009	01	1	276	<i>American Eel</i>	30	C							
123493	6/5/2009	01	2	598	<i>Bluegill</i>	1	C							
123494	6/5/2009	01	2	594	<i>Redbreast Sunfish</i>	1	C							
123495	6/5/2009	01	2	596	<i>Pumpkinseed</i>	15	C							
123496	6/5/2009	01	2	603	<i>Black Crappie</i>	1	C							
123497	6/5/2009	01	2	401	<i>Fathead Minnow</i>	4	C							
123498	6/5/2009	01	2	407	<i>Fallfish</i>	1	C							
123499	6/5/2009	01	2	419	<i>White Sucker</i>	30	C							
123500	6/5/2009	01	2	531	<i>Banded Killifish</i>	1	C							
123501	6/5/2009	01	2	617	<i>Yellow Perch</i>	4	C							
123502	6/5/2009	01	2	614	<i>Tessellated Darter</i>	1	C							
123503	6/5/2009	02	1	276	<i>American Eel</i>	2	C							
123504	6/5/2009	02	1	419	<i>White Sucker</i>	1	C							
123505	6/5/2009	02	1	407	<i>Fallfish</i>	1	C							
123506	6/5/2009	02	1	367	<i>Cutlip Minnow</i>	3	C							
123507	6/5/2009	02	1	406	<i>Creek Chub</i>	8	C							
123508	6/5/2009	02	1	385	<i>Common Shiner</i>	1	C							
123509	6/5/2009	02	1	400	<i>Bluntnose Minnow</i>	8	C							

BF**BULK FISH**DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS

(H-221-4)

SURVEY NUMBER

409926

	DATE (mm/dd/yy)	SITE	REP #	SPECIES CODE	FISH NAME	# OF FISH	C/	LENGTH MIN(mm)	LENGTH MAX(mm)	WEIGHT (g)	STAGE	SEX	MR	MESH
123510	6/5/2009	02	1	401	<i>Fathead Minnow</i>	10	C							
123511	6/5/2009	02	1	591	<i>Rock Bass</i>	1	C							
123512	6/5/2009	02	1	596	<i>Pumpkinseed</i>	8	C							
123513	6/5/2009	02	1	614	<i>Tessellated Darter</i>	10	C							



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(H-221-4)

SURVEY NUMBER 2

409926

DATE (mm/dd/yy) 3

6/5/2009

44069
409926 0605
n1

SITE 4
01

REP # 5
1

GEAR CODE 6
6E0103

TIME START (24hr) 7
7:00

TIME STOP (24hr) 8
7:15

TIME FISHED (HOURS) 9
0.18

TARGET 10
A

FISH COLLECTED 11
Y

NET DEPTH (ft)

MIN 12
[]

MAX 13
[]

NET TEMPERATURE RANGE

MIN 14
59.0

MAX 15
[]

UNITS 16
F

ORIENTATION

NET 17
[]

MESH 18
[]

PLACEMENT 19
[]

BIAS 20
[]

AC/DC 21
DC

WAVEFORM 22
[]

PULSE RATE 23
[]

AMPERAGE 24
3.00

VOLTAGE 25
200

UNITS 26
[]

DC WANDS 27
[]

SCAPPERS 28
[]

FLOW 29
[]

FINGERLING EFFICIENCY 30
[]

YEARLING EFFICIENCY 31
[]

OLDER EFFICIENCY 32
[]

REMARKS 33

44070
409926 0605
n1

SITE 4
01

REP # 5
2

GEAR CODE 6
6S0197

TIME START (24hr) 7
11:00

TIME STOP (24hr) 8
11:30

TIME FISHED (HOURS) 9
0.05

TARGET 10
A

FISH COLLECTED 11
Y

NET DEPTH (ft)

MIN 12
[]

MAX 13
[]

NET TEMPERATURE RANGE

MIN 14
60.0

MAX 15
[]

UNITS 16
F

ORIENTATION

NET 17
[]

MESH 18
[]

PLACEMENT 19
[]

BIAS 20
[]

AC/DC 21
[]

WAVEFORM 22
[]

PULSE RATE 23
[]

AMPERAGE 24
[]

VOLTAGE 25
[]

UNITS 26
[]

DC WANDS 27
[]

SCAPPERS 28
[]

FLOW 29
[]

FINGERLING EFFICIENCY 30
[]

YEARLING EFFICIENCY 31
[]

OLDER EFFICIENCY 32
[]

REMARKS 33



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(H-221-4)

SURVEY NUMBER 2

409926

DATE (mm/dd/yy) 3

6/5/2009

44071
409926 0605
02

SITE 4	REP # 5	GEAR CODE 6	TIME START (24hr) 7	TIME STOP (24hr) 8	TIME FISHED (HOURS) 9	TARGET 10	FISH COLLECTED 11
02	1	6E0103	12:00	12:30	0.26	A	Y

NET DEPTH (ft)

MIN 12	MAX 13

NET TEMPERATURE RANGE

MIN 14	MAX 15	UNITS 16
60.0		F

ORIENTATION

NET 17	MESH 18	PLACEMENT 19	BIAS 20

AC/DC 21	WAVEFORM 22	PULSE RATE 23	AMPERAGE 24	VOLTAGE 25	UNITS 26	DC WANDS 27	SCAPPERS 28
DC			3.00	120			

FLOW 29	FINGERLING EFFICIENCY 30	YEARLING EFFICIENCY 31	OLDER EFFICIENCY 32

REMARKS 33



SITE CHARACTERISTICS

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(H-221-4)

SURVEY NUMBER ²
409926

DATE (mm/dd/yy) ³
6/5/2009

SITE ⁴
01

17365
409926 0605 01

TIME (24hr) ⁵
11:00

LENGTH (ft) ⁶

STREAM WIDTH (ft) ⁷
60

CHANNEL WIDTH (ft) ⁸

POOL LENGTH (ft) ⁹

QUALITY ¹⁰

GRADIENT ¹¹

ALTITUDE (ft) ¹²

MAX DEPTH (ft) ¹³
3.5

MEAN DEPTH (ft) ¹⁴
1.0

METHOD ¹⁵

- 1 Derived from discharge
- 2 Mean of thelweg measurements
- 3 Mean of cross sectional transects
- 8 Visual estimate
- 9 Other, see remarks

STREAM CHARACTERISTICS ¹⁶

1	<input type="checkbox"/>	2	<input type="checkbox"/>
BF	Beaver Flow	SA	Salty
DD	Debris Dam	SL	Slow
DY	Dry	SG	Stagnant
DP	Dry-Pools	SW	Swampy
FA	Fast	TD	Tidal
LF	Low flow	TO	Torrent
PW	Pocket Water	WM	Warm
MD	Moderate		

BOTTOM TYPE AND ABUNDANCE ^{17 18}

Bottom	Abun	BO	Boulder	ML	Marl
CO	2	BR	Bedrock	PD	Plant Debris
RB	2	CL	Clay	RB	Rubble
ST	2	CO	Cobble	SD	Sand
		CT	Concrete	ST	Silt
		GR	Gravel	UN	Unknown
		MD	Mud	VG	Vegetation
		MK	Muck	WD	Woody Debris
		0	1-5%	3	51-90%
		1	6-25%	4	>90%
		2	26-50%		

COVER ¹⁹

- 1 0-25%
- 2 26-50%
- 3 >50%

VELOCITY (ft/sec) ²¹

METHOD ²²

- 1 Float method
- 2 Salt slug
- 3 Discharge - cross sectional area measured
- 8 Visual estimate
- 9 Other, see remarks

AFTERNOON AIR WATER TEMPERATURES (CROTS)

AIR TEMP ²⁶

H2O TEMP ²⁷

TEMP UNITS ²⁸

SHELTER ²⁰

- 1 0-20%
- 2 21-40%
- 3 >40%

DISCHARGE (cfs) ²⁴

METHOD ²⁵

- 1 Direct measurement of discharge
- 2 Dye method
- 3 Velocity - float method, cross sectional area measured
- 4 Gauge readings and conversion charts
- 5 Salt brick
- 6 Salt slug
- 7 Velocity - meter, cross sectional area measured
- 8 Visual estimate
- 9 Other, see remarks

CROTS Variables

10 INSECTS ²⁹

SIIMULIDS ³⁰

WATERCRESS ³¹

INSECT FORAGE ³²

ALGAE ON ROCKS ³³

LEAVES PRESENT ³⁴

MINNOWS < 2.5 ³⁵

SHORELINE/BANK DESCRIPTION ³⁶

AL	Alders	MW	Meadow
AG	Agriculture	PA	Pasture
BG	Bog	RD	Road
BH	Bulkhead	SB	Scrub
CF	Coniferous	SN	Stony
DF	Deciduous	SU	Suburban
IN	Industrial	SW	Swamp
LW	Lawn	UR	Urban
MF	Mixed Forest		

VEGETATION DESCRIPTION ³⁷

REMARKS ³⁸



SITE CHARACTERISTICS

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(H-221-4)

SURVEY NUMBER ²

409926

DATE (mm/dd/yy) ³

6/5/2009

SITE ⁴

02

17366

409926 0605 02

TIME (24hr) ⁵

7:00

LENGTH (ft) ⁶

STREAM WIDTH (ft) ⁷

15

CHANNEL WIDTH (ft) ⁸

POOL LENGTH (ft) ⁹

QUALITY ¹⁰

GRADIENT ¹¹

ALTITUDE (ft) ¹²

MAX DEPTH (ft) ¹³

5.0

MEAN DEPTH (ft) ¹⁴

1.0

METHOD ¹⁵

- 1 Derived from discharge
- 2 Mean of thelwag measurements
- 3 Mean of cross sectional transects
- 8 Visual estimate
- 9 Other, see remarks

STREAM CHARACTERISTICS ¹⁶

1

2

- | | |
|-----------------|-------------|
| BF Beaver Flow | SA Salty |
| DD Debris Dam | SL Slow |
| DY Dry | SG Stagnant |
| DP Dry-Pools | SW Swampy |
| FA Fast | TD Tidal |
| LF Low flow | TO Torrent |
| PW Pocket Water | WM Warm |
| MD Moderate | |

BOTTOM TYPE AND ABUNDANCE ^{17 18}

Bottom	Abun	BO Boulder	ML Marl
		BR Bedrock	PD Plant Debris
		CL Clay	RB Rubble
		CO Cobble	SD Sand
		CT Concrete	ST Silt
		GR Gravel	UN Unknown
		MD Mud	VG Vegetation
		MK Muck	WD Woody Debris
	0 1-5%	3 51-90%	
	1 6-25%	4 >90%	
	2 26-50%		

COVER ¹⁹

- 1 0-25%
- 2 26-50%
- 3 >50%

VELOCITY (ft/sec) ²¹

METHOD ²²

- 1 Float method
- 2 Salt slug
- 3 Discharge - cross sectional area measured
- 8 Visual estimate
- 9 Other, see remarks

AFTERNOON AIR WATER TEMPERATURES (CROTS)

AIR TEMP ²⁶

H2O TEMP ²⁷

TEMP UNITS ²⁸

SHELTER ²⁰

- 1 0-20%
- 2 21-40%
- 3 >40%

DISCHARGE (cfs) ²⁴

METHOD ²⁵

- 1 Direct measurement of discharge
- 2 Dye method
- 3 Velocity - float method, cross sectional area measured
- 4 Gauge readings and conversion charts
- 5 Salt brick
- 6 Salt slug
- 7 Velocity - meter, cross sectional area measured
- 8 Visual estimate
- 9 Other, see remarks

CROTS Variables

10 INSECTS ²⁹

SIIMULIDS ³⁰

WATERCRESS ³¹

INSECT FORAGE ³²

ALGAE ON ROCKS ³³

LEAVES PRESENT ³⁴

MINNOWS < 2.5 ³⁵

SHORELINE/BANK DESCRIPTION ³⁶

AL Alders	MW Meadow
AG Agriculture	PA Pasture
BG Bog	RD Road
BH Bulkhead	SB Scrub
CF Coniferous	SN Stony
DF Deciduous	SU Suburban
IN Industrial	SW Swamp
LW Lawn	UR Urban
MF Mixed Forest	

VEGETATION DESCRIPTION ³⁷

REMARKS ³⁸



SURVEY COVER

DATA VERIFICATION REPORT

NYSDEC Bureau of Fisheries Biological Survey Unit

06-Feb-17

SURVEY NUMBER ¹

410906

PURPOSE ²

8

P/S ³

WATERSHED FILE ⁴

SCALES ? ⁵

N

LAB DATA ? ⁶

N

SURVEY AUTHORITY ⁸

Carlson

⁷

Total Number of Pages ⁷ 5

ALIAS ⁹

NAME

NORMANS KILL

FISHERIES INDEX NUMBER ¹⁰

H-221-4

Send to
Rodger Klindt

NYSDEC Region 6 Fisheries Unit
317 Washington St
Watertown, NY 13601-3787

POND NUMBER ¹¹

MAX DEPTH (ft) ¹²

GENERAL SURVEY COMMENTS ¹³



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(H-221-4)

SURVEY NUMBER 2
410906

DATE (mm/dd/yy) 3
6/22/2010

47693
410906 0622
01

SITE 4: 01 REP # 5: 1 GEAR CODE 6: 6E0103 TIME START (24hr) 7: 11:00 TIME STOP (24hr) 8: 11:40 TIME FISHED (HOURS) 9: 0.48 TARGET 10: A FISH COLLECTED 11: Y

NET DEPTH (ft)

MIN 12: MAX 13:

NET TEMPERATURE RANGE

MIN 14: 71.0 MAX 15: UNITS 16: F

ORIENTATION

NET 17: MESH 18: PLACEMENT 19: BIAS 20:

AC/DC 21: DC WAVEFORM 22: PULSE RATE 23: AMPERAGE 24: 3.00 VOLTAGE 25: 250 UNITS 26: DC WANDS 27: SCAPPERS 28:

FLOW 29: FINGERLING EFFICIENCY 30: YEARLING EFFICIENCY 31: OLDER EFFICIENCY 32:

REMARKS 33

47694
410906 0622
01

SITE 4: 01 REP # 5: 2 GEAR CODE 6: 57 TIME START (24hr) 7: 11:00 TIME STOP (24hr) 8: 11:00 TIME FISHED (HOURS) 9: 0.6 TARGET 10: A FISH COLLECTED 11: Y

NET DEPTH (ft)

MIN 12: MAX 13:

NET TEMPERATURE RANGE

MIN 14: MAX 15: UNITS 16:

ORIENTATION

NET 17: MESH 18: PLACEMENT 19: BIAS 20:

AC/DC 21: DC WAVEFORM 22: PULSE RATE 23: AMPERAGE 24: 0.30 VOLTAGE 25: 320 UNITS 26: DC WANDS 27: SCAPPERS 28:

FLOW 29: FINGERLING EFFICIENCY 30: YEARLING EFFICIENCY 31: OLDER EFFICIENCY 32:

REMARKS 33



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(H-221-4)

SURVEY NUMBER 2
410906

DATE (mm/dd/yy) 3
6/22/2010

47695
410906 0622
n1

SITE 4	REP # 5	GEAR CODE 6	TIME START (24hr) 7	TIME STOP (24hr) 8	TIME FISHED (HOURS) 9	TARGET 10	FISH COLLECTED 11
01	3	6S0197	12:00	12:10	0.05	A	Y

NET DEPTH (ft)

MIN 12
MAX 13

NET TEMPERATURE RANGE

MIN 14
MAX 15
UNITS 16

ORIENTATION

NET 17
MESH 18
PLACEMENT 19
BIAS 20

AC/DC 21
WAVEFORM 22
PULSE RATE 23
AMPERAGE 24
VOLTAGE 25
UNITS 26
DC WANDS 27
SCAPPERS 28

FLOW 29
FINGERLING EFFICIENCY 30
YEARLING EFFICIENCY 31
OLDER EFFICIENCY 32

REMARKS 33

47696
410906 0622
n1

SITE 4	REP # 5	GEAR CODE 6	TIME START (24hr) 7	TIME STOP (24hr) 8	TIME FISHED (HOURS) 9	TARGET 10	FISH COLLECTED 11
01	4	6S0197	12:15	12:20	0.05	A	Y

NET DEPTH (ft)

MIN 12
MAX 13

NET TEMPERATURE RANGE

MIN 14
MAX 15
UNITS 16

ORIENTATION

NET 17
MESH 18
PLACEMENT 19
BIAS 20

AC/DC 21
WAVEFORM 22
PULSE RATE 23
AMPERAGE 24
VOLTAGE 25
UNITS 26
DC WANDS 27
SCAPPERS 28

FLOW 29
FINGERLING EFFICIENCY 30
YEARLING EFFICIENCY 31
OLDER EFFICIENCY 32

REMARKS 33



SITE LOCATION

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(H-221-4)

SURVEY NUMBER ²

410906

410906 0622 01

DATE (mm/dd/yy) ³

6/22/2010

SITE ⁴

01

TOWN or CITY ⁵

Bethlehem

COUNTY ⁶

ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰

600709

NYTMN ¹¹

4719833

RMI ¹²

SITE DESCRIPTION ¹³

Below Rte 9W gorge at tidewater riffle.

BF**BULK FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS

(H-221-4)

SURVEY NUMBER

410906

	DATE (mm/dd/yy)	SITE	REP #	SPECIES CODE	FISH NAME	# OF FISH	C/	LENGTH MIN(mm)	LENGTH MAX(mm)	WEIGHT (g)	STAGE	SEX	MR	MESH
132531	6/22/2010	01	1	367	<i>Cutlip Minnow</i>	1	C							
132532	6/22/2010	01	1	600	<i>Smallmouth Bass</i>	1	C				YY			
132533	6/22/2010	01	1	276	<i>American Eel</i>	200	C							
132534	6/22/2010	01	1	403	<i>Longnose Dace</i>	25	C							
132535	6/22/2010	01	1	419	<i>White Sucker</i>	3	C							
132536	6/22/2010	01	1	377	<i>Golden Shiner</i>	1	C							
132537	6/22/2010	01	1	614	<i>Tessellated Darter</i>	3	C							
132538	6/22/2010	01	2	367	<i>Cutlip Minnow</i>	2	C							
132539	6/22/2010	01	2	276	<i>American Eel</i>	240	C							
132540	6/22/2010	01	2	406	<i>Creek Chub</i>	1	C							
132541	6/22/2010	01	2	403	<i>Longnose Dace</i>	4	C							
132542	6/22/2010	01	3	575	<i>White Perch</i>	1	C							
132543	6/22/2010	01	4	614	<i>Tessellated Darter</i>	1	C							
132544	6/22/2010	01	4	575	<i>White Perch</i>	6	C							
132545	6/22/2010	01	4	596	<i>Pumpkinseed</i>	1	C							



SURVEY COVER

DATA VERIFICATION REPORT

NYSDEC Bureau of Fisheries Biological Survey Unit

06-Feb-17

SURVEY NUMBER 1

413025

PURPOSE 2

15

P/S 3

WATERSHED FILE 4

SCALES ? 5

N

LAB DATA ? 6

N

SURVEY AUTHORITY 8

Zielinski

7

Total Number of Pages 16

ALIAS 9

NAME

NORMANS KILL

FISHERIES INDEX NUMBER 10

H-221-4

Send to

Chris VanMaaren

NYSDEC Region 4 Fisheries Unit

Rt 10, Jefferson Rd., HC01

Stamford, NY 12167-9503

POND NUMBER 11

MAX DEPTH (ft) 12

GENERAL SURVEY COMMENTS 13

This survey was conducted to evaluate the special 10 inch size regulation for Black Bass on the Normanskill between the Watervliet reservoir and the first impassable barrier above the Hudson River. As access was difficult for launch and retrieval of region 4's small electrofishing boat and navigability was questionable, angling was chosen as the method for sampling the bass population. Kayaks were used at site 1-4. Anglers at site 5 employed wading from shore. On all SL forms, the site location is the starting point. On all GP forms, the scappers box has a number of anglers and the time fished is the total time in mans hours of all anglers at that site.



SITE LOCATION

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(h-221-4)

SURVEY NUMBER ²

413025

413025 0912 02

DATE (mm/dd/yy) ³
9/12/2013

SITE ⁴
02

TOWN or CITY ⁵
New Scotland

COUNTY ⁶
ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰
589633

NYTMN ¹¹
4725720

RMI ¹²

SITE DESCRIPTION ¹³

Route 155 to Johnston Rd.

413025 0912 03

DATE (mm/dd/yy) ³
9/12/2013

SITE ⁴
03

TOWN or CITY ⁵
New Scotland

COUNTY ⁶
ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰
590448

NYTMN ¹¹
4724430

RMI ¹²

SITE DESCRIPTION ¹³

Johnston Rd to Krumkill Road.

413025 1004 01

DATE (mm/dd/yy) ³
10/4/2013

SITE ⁴
01

TOWN or CITY ⁵
Guilderland

COUNTY ⁶
ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰
585213

NYTMN ¹¹
4729251

RMI ¹²

SITE DESCRIPTION ¹³

Watervliet Dam to Rt 146.



SITE LOCATION

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(h-221-4)

SURVEY NUMBER ²

413025

413025 1004 04

DATE (mm/dd/yy) ³

10/4/2013

SITE ⁴

04

TOWN or CITY ⁵

Albany

COUNTY ⁶

ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰

594500

NYTMN ¹¹

4722462

RMI ¹²

SITE DESCRIPTION ¹³

0.5 miles upstream and 0.5 miles downstream of New Scotland Road.

413025 1004 05

DATE (mm/dd/yy) ³

10/4/2013

SITE ⁴

05

TOWN or CITY ⁵

Albany

COUNTY ⁶

ALBA

FILE NUMBER ⁷

BOF MYLAR ⁹

NYTME ¹⁰

598374

NYTMN ¹¹

4720930

RMI ¹²

SITE DESCRIPTION ¹³

1 mile upstream and downstream to the waterfall with start at parking lot.

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER
413025

DATE (mm/dd/yy)
9/12/2013

SITE
02

REP
1

413025 0912 02 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
87	407	FALLFISH	254															
88	407	FALLFISH	254															
89	407	FALLFISH	279															
90	407	FALLFISH	305															
91	600	SMALLMOUTH BASS	152															
92	600	SMALLMOUTH BASS	216															
93	600	SMALLMOUTH BASS	248															

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Uni
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER

413025

DATE (mm/dd/yy)

9/12/2013

SITE

03

REP

1

413025 0912 03 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS			B	
											I	II	III	I	II	III		IV
94	407	FALLFISH	254															
95	407	FALLFISH	254															
96	407	FALLFISH	267															
97	407	FALLFISH	279															
98	407	FALLFISH	279															
99	407	FALLFISH	279															
100	407	FALLFISH	337															
101	600	SMALLMOUTH BASS	140															
102	600	SMALLMOUTH BASS	165															
103	600	SMALLMOUTH BASS	203															
104	600	SMALLMOUTH BASS	229															
105	600	SMALLMOUTH BASS	229															
106	600	SMALLMOUTH BASS	241															
107	600	SMALLMOUTH BASS	248															
108	600	SMALLMOUTH BASS	267															
109	600	SMALLMOUTH BASS	343															
110	591	ROCK BASS	152															

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Uni
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER

413025

DATE (mm/dd/yy)

10/4/2013

SITE

01

REP

1

413025 1004 01 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
1	377	GOLDEN SHINER	202															
2	385	COMMON SHINER	137															
3	407	FALLFISH	237															
4	407	FALLFISH	170															
5	407	FALLFISH	182															
6	407	FALLFISH	275															
7	407	FALLFISH	272															
8	407	FALLFISH	167															
9	407	FALLFISH	228															
10	407	FALLFISH	191															
11	591	ROCK BASS	173															
12	591	ROCK BASS	142															
13	591	ROCK BASS	161															
14	591	ROCK BASS	191															
15	591	ROCK BASS	178															
16	591	ROCK BASS	216															
17	591	ROCK BASS	171															
18	591	ROCK BASS	178															
19	591	ROCK BASS	197															
20	594	REDBREAST SUNFISH	159															
21	594	REDBREAST SUNFISH	156															
22	594	REDBREAST SUNFISH	151															
23	594	REDBREAST SUNFISH	173															
24	594	REDBREAST SUNFISH	167															

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Uni
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER

413025

DATE (mm/dd/yy)

10/4/2013

SITE

01

REP

1

413025 1004 01 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
25	594	REDBREAST SUNFISH	154															
26	594	REDBREAST SUNFISH	168															
27	594	REDBREAST SUNFISH	171															
28	594	REDBREAST SUNFISH	152															
29	594	REDBREAST SUNFISH	156															
30	594	REDBREAST SUNFISH	161															
31	594	REDBREAST SUNFISH	155															
32	594	REDBREAST SUNFISH	165															
33	596	PUMPKINSEED	157															
34	596	PUMPKINSEED	144															
35	598	BLUEGILL	117															
36	598	BLUEGILL	119															
37	598	BLUEGILL	152															
38	598	BLUEGILL	128															
39	598	BLUEGILL	137															
40	598	BLUEGILL	147															
41	598	BLUEGILL	149															
42	598	BLUEGILL	123															
43	598	BLUEGILL	138															
44	598	BLUEGILL	125															
45	598	BLUEGILL	209															
46	598	BLUEGILL	149															
47	598	BLUEGILL	152															
48	598	BLUEGILL	104															

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER

413025

DATE (mm/dd/yy)

10/4/2013

SITE

01

REP

1

413025 1004 01 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
49	598	BLUEGILL	160															
50	598	BLUEGILL	157															
51	598	BLUEGILL	203															
52	600	SMALLMOUTH BASS	369															
53	600	SMALLMOUTH BASS	311															
54	600	SMALLMOUTH BASS	248															
55	600	SMALLMOUTH BASS	227															
56	600	SMALLMOUTH BASS	221															
57	600	SMALLMOUTH BASS	209															
58	600	SMALLMOUTH BASS	185															
59	600	SMALLMOUTH BASS	182															
60	600	SMALLMOUTH BASS	164															
61	600	SMALLMOUTH BASS	162															
62	600	SMALLMOUTH BASS	153															
63	600	SMALLMOUTH BASS	148															
64	600	SMALLMOUTH BASS	142															
65	600	SMALLMOUTH BASS	141															
66	600	SMALLMOUTH BASS	141															
67	600	SMALLMOUTH BASS	139															
68	600	SMALLMOUTH BASS	138															
69	600	SMALLMOUTH BASS	124															
70	600	SMALLMOUTH BASS	84															
71	600	SMALLMOUTH BASS	84															
72	600	SMALLMOUTH BASS	140															



INDIVIDUAL FISH

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER 413025	DATE (mm/dd/yy) 10/4/2013	SITE 01	REP 1
--------------------------------	-------------------------------------	-------------------	-----------------

413025 1004 01 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
73	600	SMALLMOUTH BASS	140															
74	600	SMALLMOUTH BASS	191															
75	600	SMALLMOUTH BASS	165															
76	600	SMALLMOUTH BASS	279															
77	600	SMALLMOUTH BASS	165															
78	600	SMALLMOUTH BASS	279															
79	600	SMALLMOUTH BASS	165															
80	600	SMALLMOUTH BASS	279															
81	600	SMALLMOUTH BASS	165															
82	601	LARGEMOUTH BASS	223															
83	601	LARGEMOUTH BASS	228															
84	603	BLACK CRAPPIE	193															
85	603	BLACK CRAPPIE	160															
86	603	BLACK CRAPPIE	167															

IF**INDIVIDUAL FISH**

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER

413025

DATE (mm/dd/yy)

10/4/2013

SITE

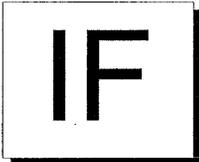
04

REP

1

413025 1004 04 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
111	407	FALLFISH	279															
112	407	FALLFISH	254															
113	407	FALLFISH	179															
114	594	REDBREAST SUNFISH	152															
115	594	REDBREAST SUNFISH	140															
116	594	REDBREAST SUNFISH	140															
117	594	REDBREAST SUNFISH	127															
118	594	REDBREAST SUNFISH	133															
119	591	ROCK BASS	126															
120	600	SMALLMOUTH BASS	127															
121	600	SMALLMOUTH BASS	298															
122	600	SMALLMOUTH BASS	292															
123	600	SMALLMOUTH BASS	318															
124	600	SMALLMOUTH BASS	267															



INDIVIDUAL FISH

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS

(h-221-4)

SURVEY NUMBER
413025

DATE (mm/dd/yy)
10/4/2013

SITE
05

REP
1

413025 1004 05 1

FISH NUMBER	SPECIES CODE	SPECIES	LENGTH (mm)	WEIGHT (g)	WILD	STAGE	SEX	MESH	MARK/CLIP/TAG APPLIED	MARK/CLIP/TAG PRESENT	ADULT			TRANS				
											I	II	III	I	II	III	IV	B
125	600	SMALLMOUTH BASS	265															
126	600	SMALLMOUTH BASS	230															

C

WATER CHEMISTRY

DATA VERIFICATION REPORT
 NYSDEC Bureau of Fisheries Biological Survey Unit
 06-Feb-17

 ALIAS ¹ _____ (h-221-4)

 SURVEY NUMBER ²
 413025

 DATE (mm/dd/yy) ³
 10/4/2013

 SITE ⁴
 05 413025 1004 05

37943

 TIME (24hr) ⁶
 9:00

 AIR TEMP ⁷

 TEMP UNITS ⁸
 F

 COLOR ⁹
 LB

 TURBIDITY ¹⁰
 MOD

 SECCHI DEPTH (ft) ¹¹

 BOTTOM DEPTH (ft) ¹²

 SURFACE CONDITIONS ¹³

 WEATHER ¹⁴
 CLDY

 RAIN ¹⁵
 48
 N

 DO METH

 PH METH

 TOTAL ALK METH

¹⁶
 COND METH
 METER

 AEP METH

 ANC METH

 PTCO METH

DEPTH**TEMP****DO****PH****ALKALINITY****COND****AIR EQ PH****ANC****PTCO**

74004

0.0

58.5

830

REMARKS: A significant rain event occurred one hr later which increased turbidity.



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(h-221-4)

SURVEY NUMBER 2
413025

DATE (mm/dd/yy) 3
10/4/2013

56582
413025 1004
n1

SITE 4
01

REP # 5
1

GEAR CODE 6
73

TIME START (24hr) 7
10:30

TIME STOP (24hr) 8
17:20

TIME FISHED (HOURS) 9
13.66

TARGET 10
B

FISH COLLECTED 11
Y

NET DEPTH (ft)

MIN 12
[]

MAX 13
[]

NET TEMPERATURE RANGE

MIN 14
[]

MAX 15
[]

UNITS 16
[]

ORIENTATION

NET 17
[]

MESH 18
[]

PLACEMENT 19
[]

BIAS 20
[]

AC/DC 21
[]

WAVEFORM 22
[]

PULSE RATE 23
[]

AMPERAGE 24
[]

VOLTAGE 25
[]

UNITS 26
[]

DC WANDS 27
[]

SCAPPERS 28
[]

FLOW 29
[]

FINGERLING EFFICIENCY 30
[]

YEARLING EFFICIENCY 31
[]

OLDER EFFICIENCY 32
[]

REMARKS 33

56585
413025 1004
n4

SITE 4
04

REP # 5
1

GEAR CODE 6
73

TIME START (24hr) 7
7:30

TIME STOP (24hr) 8
15:30

TIME FISHED (HOURS) 9
18

TARGET 10
B

FISH COLLECTED 11
Y

NET DEPTH (ft)

MIN 12
[]

MAX 13
[]

NET TEMPERATURE RANGE

MIN 14
[]

MAX 15
[]

UNITS 16
[]

ORIENTATION

NET 17
[]

MESH 18
[]

PLACEMENT 19
[]

BIAS 20
[]

AC/DC 21
[]

WAVEFORM 22
[]

PULSE RATE 23
[]

AMPERAGE 24
[]

VOLTAGE 25
[]

UNITS 26
[]

DC WANDS 27
[]

SCAPPERS 28
3

FLOW 29
[]

FINGERLING EFFICIENCY 30
[]

YEARLING EFFICIENCY 31
[]

OLDER EFFICIENCY 32
[]

REMARKS 33



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS ¹

(h-221-4)

SURVEY NUMBER ²

413025

DATE (mm/dd/yy) ³

10/4/2013

56586
413025 1004
05

SITE ⁴

05

REP # ⁵

1

GEAR CODE ⁶

73

TIME START (24hr) ⁷

8:45

TIME STOP (24hr) ⁸

15:45

TIME FISHED (HOURS) ⁹

9

TARGET ¹⁰

B

FISH COLLECTED ¹¹

Y

NET DEPTH (ft)

MIN ¹²

MAX ¹³

NET TEMPERATURE RANGE

MIN ¹⁴

MAX ¹⁵

UNITS ¹⁶

ORIENTATION

NET ¹⁷

MESH ¹⁸

PLACEMENT ¹⁹

BIAS ²⁰

AC/DC ²¹

WAVEFORM ²²

PULSE RATE ²³

AMPERAGE ²⁴

VOLTAGE ²⁵

UNITS ²⁶

DC WANDS ²⁷

SCAPPERS ²⁸

3

FLOW ²⁹

FINGERLING EFFICIENCY ³⁰

YEARLING EFFICIENCY ³¹

OLDER EFFICIENCY ³²

REMARKS ³³

Scappers = number of anglers and time fished = total man Hrs for all anglers.



GEAR PERFORMANCE

DATA VERIFICATION REPORT
NYSDEC Bureau of Fisheries Biological Survey Unit
06-Feb-17

ALIAS 1

(h-221-4)

SURVEY NUMBER 2

413025

DATE (mm/dd/yy) 3

9/12/2013

56583
413025 0912 02
SITE 4 02 REP # 5 1 GEAR CODE 6 73 TIME START (24hr) 7 8:00 TIME STOP (24hr) 8 13:00 TIME FISHED (HOURS) 9 5 TARGET 10 B FISH COLLECTED 11 Y

NET DEPTH (ft)

MIN 12 MAX 13

NET TEMPERATURE RANGE

MIN 14 MAX 15 UNITS 16

ORIENTATION

NET 17 MESH 18 PLACEMENT 19 BIAS 20

AC/DC 21 WAVEFORM 22 PULSE RATE 23 AMPERAGE 24 VOLTAGE 25 UNITS 26 DC WANDS 27 SCAPPERS 28 2

FLOW 29 FINGERLING EFFICIENCY 30 YEARLING EFFICIENCY 31 OLDER EFFICIENCY 32

REMARKS 33

Scappers = number of anglers and time fished = total man hrs for all anglers

56584
413025 0912 03
SITE 4 03 REP # 5 1 GEAR CODE 6 73 TIME START (24hr) 7 8:00 TIME STOP (24hr) 8 13:00 TIME FISHED (HOURS) 9 5 TARGET 10 B FISH COLLECTED 11 Y

NET DEPTH (ft)

MIN 12 MAX 13

NET TEMPERATURE RANGE

MIN 14 MAX 15 UNITS 16

ORIENTATION

NET 17 MESH 18 PLACEMENT 19 BIAS 20

AC/DC 21 WAVEFORM 22 PULSE RATE 23 AMPERAGE 24 VOLTAGE 25 UNITS 26 DC WANDS 27 SCAPPERS 28 2

FLOW 29 FINGERLING EFFICIENCY 30 YEARLING EFFICIENCY 31 OLDER EFFICIENCY 32

REMARKS 33

Scappers = number of anglers and time fished = total man hrs for all anglers

From: DeGaetano, Laura [<mailto:Laura.DeGaetano@albanycountyny.gov>]

Sent: Tuesday, January 31, 2017 12:21 PM

To: Michele Stottler <mstottler@gomezandsullivan.com>

Subject: RE: Normanskill Hydroelectric Project (FERC No. 2955) Information Request Letter

I don't have any information for which the County is the primary data source. We do use much of the referenced data that is available through the NYS GIS Clearinghouse through various agencies. <https://gis.ny.gov/>

Laura DeGaetano
Sr. Natural Resource Planner
Albany County Office of Natural Resource Conservation
112 State Street, Room 800
Albany, NY 12207
tel 518-447-5670
fax 518-447-5662

<http://www.albanycounty.com>

From: Susan Lewis - ACSWCD [<mailto:acswcd@gmail.com>]
Sent: Friday, February 03, 2017 4:11 PM
To: Michele Stottler <mstottler@gomezandsullivan.com>
Subject: Normanskill Hydroelectric Project

Good Afternoon,

The Albany County Soil and Water recently received a request for information for the above mentioned project. I am unsure if this was meant for us or for another agency as it was addressed to "Albany County" at our 24 Martin Road address (shared address with Cornell Cooperative Extension). I do not believe that the district has any data that would be of benefit to your project. We do have historic aerial photos that are available for review at our office during normal business hours. Those may be of some interest.

Thank you,
Susan

Susan L. Lewis
Adm. Manager & Tech. Asst.
Albany County Soil and Water Conservation District
24 Martin Road
Voorheesville, NY 12186
518-765-7923

www.albanycounty.com/swcd

Like "Albany County Soil and Water Conservation District" on Facebook
NewFollow us on Twitter : www.twitter.com/AlbanySWCD

View and/or Address a Response

Project 17PR01046: Watervliet Project Pre-Application Document Information Request (FD2IR6S9AYMN)

 [View Project](#)

Please accept the following information below as the consolidated response from NYS SHPO for the above referenced submission.

Review Responses		
Reviewer	Review Type	Response
Linda Mackey	Survey and Evaluation	If the project is submitted to the State Historic Preservation Office for review under Section 106 of the National Historic Preservation Act by FERC, then we will review the proposed undertaking and provide comments/recommendations. You may search the project area for aboveground historic resources using the SEARCH tools in CRIS. Aboveground properties that have been documented are shown as color-coded squares on the map. Please contact linda.mackey@parks.ny.gov for questions. Thank you.
Daniel Bagrow	Archaeology	Please see the completed questionnaire attached to this response.

Information Requests						
Process	Status	Reviewer	Review Type	Request Type	Request Entity	Request Description
No Request Records						

Attachments					
Attachment	Reviewer	Review Type	Type	Name	Description
	Daniel Bagrow	Archaeology	Document	SHPO response to submission .001	Archaeological resources questionnaire

Information about person completing the questionnaire:

Name & Title	Daniel Bagrow, Scientist (Archaeology)
Organization	New York state Office of Parks, Recreation and Historic Preservation
Address	Peebles Island State Park PO Box 189 Waterford, NY 12188
Phone	518-268-2160
Email Address	dan.bagrow@parks.ny.gov

1. Do you or your organization know of existing, relevant, and reasonably available information that describes the Project's existing environment (i.e., information regarding the Normans Kill in or close proximity to the Project)?

Yes (*If yes, please complete 1a through 1e*) No (*If no, please go to 2*)

- a. If yes, please indicate the specific resource area(s) that the information relates to:

<input type="checkbox"/> geology and soils	<input type="checkbox"/> recreation and land use
<input type="checkbox"/> water resources	<input type="checkbox"/> aesthetic resources
<input type="checkbox"/> fish & aquatic resources	<input checked="" type="checkbox"/> historical resources
<input type="checkbox"/> wildlife & botanical resources	<input type="checkbox"/> socioeconomic resources
<input type="checkbox"/> wetlands, riparian, & littoral habitat	<input type="checkbox"/> tribal resources
	<input type="checkbox"/> other resource information

- b. Please briefly describe the information or list available documents (*Additional space in available in section 3*).

Two archaeological surveys
Numerous archaeological site forms.

- c. Where can the City of Watervliet obtain this information?

The information can be provided electronically upon request. Please email Dan Bagrow for more information.

- d. Please indicate whether there is a specific representative you wish to designate for a potential follow-up contact for the resource area(s) checked above (*Additional space is available in section 3*).

Representative Contact Information

Name	Daniel Bagrow
Address	same as above
Phone	
Email Address	

Name	
Address	
Phone	
Email Address	

- e. Based on the specific resources listed in 2a, are you aware of any specific issues pertaining to the identified resource area(s)? *(Additional space is available in section 3)*

Yes *(please list specific issues below)* No

Resource Area	Specific Issue
Project area	The reservoir is surrounded by numerous archaeological sites and is considered archaeologically sensitive.

2. Do you or your organization plan to participate in the Normanskill Hydroelectric Project relicensing proceedings? Yes No

If the project is submitted to the State Historic Preservation Office for review under Section 106 of the National Historic Preservation Act by FERC then we will review the proposed undertaking and provide comments/recommendations.

3. We are interested in your comments. If you have comments and/or questions regarding the City of Watervliet's Hydroelectric Project, Pre-Application Document, or relicensing process, please add below: Additional information to previous sections may also be added here.

Comments

Please return this Questionnaire electronically via email to mstottler@gomezandsullivan.com **as soon as possible** to allow for any follow-up contact that may be needed prior to the filing date of the PAD.

Not responding within 30 days indicates that you are not aware of any existing, relevant, and reasonably available information that describes the existing Project environment or known potential impacts of the Project

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

February 17, 2017

Michele E. Stotter
Gomez and Sullivan Engineers, DPC
P.O. Box 2179
Henniker, NH 13242

Re: Relicensing of Normanskill Hydroelectric Project
County: Albany Town/City: Guilderland

Dear Ms. Stotter:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project area.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur within the project area and its vicinity.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to 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 sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 4 Office, Division of Environmental Permits, at dep.r4@dec.ny.gov, 518-357-2456.

Sincerely,



Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program



The following state-listed animals have been documented in the project area or in its vicinity.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing.

For information about any permit considerations for the project, please contact the Permits staff at the NYSDEC Region 4 Office at dep.r4@dec.ny.gov, 518-357-2456. For information about potential impacts of your project on these species, and how to avoid, minimize, or mitigate any impacts, contact the Region 4 Wildlife staff at 518-357-2355.

The following species has been documented as nesting within the project area, near the reservoir.

<i>COMMON NAME</i>	<i>SCIENTIFIC NAME</i>	<i>NY STATE LISTING</i>	<i>FEDERAL LISTING</i>
Bald Eagle <i>Nesting</i>	<i>Haliaeetus leucocephalus</i>	Threatened	11643

The following species has been documented within four miles of the project area. Individual animals may travel five miles from documented locations. The main impact of concern for bats is the removal of potential roost trees.

<i>COMMON NAME</i>	<i>SCIENTIFIC NAME</i>	<i>NY STATE LISTING</i>	<i>FEDERAL LISTING</i>
Northern Long-eared Bat <i>Hibernaculum</i>	<i>Myotis septentrionalis</i>	Threatened	Threatened 14128

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage’s Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.

From: Patch, Stephen [mailto:stephen_patch@fws.gov]

Sent: Monday, January 30, 2017 10:26 AM

To: Michele Stottler <mstottler@gomezandsullivan.com>

Subject: Re: Normanskill Hydroelectric Project (FERC No. 2955) Information Request Letter

Yes

On Mon, Jan 30, 2017 at 10:25 AM, Michele Stottler <mstottler@gomezandsullivan.com> wrote:

Steve,

Thank you for your quick response and your comments. The City and I look forward to working with you to address the issues you raised. The City would like to use the Traditional Licensing Process (TLP). Would the USFWS be supportive of using the TLP?

Michele

From: Stewart, Angelika R (DEC) [<mailto:Angelika.Stewart@dec.ny.gov>]
Sent: Wednesday, February 15, 2017 12:05 PM
To: Michele Stottler <mstottler@gomezandsullivan.com>
Cc: Baker, Nancy M (DEC) <nancy.baker@dec.ny.gov>; Walters, Georgette M (DEC) <georgette.walters@dec.ny.gov>; VanMaaren, Chris C (DEC) <chris.vanmaaren@dec.ny.gov>; Binder, Jonathan A (DEC) <jonathan.binder@dec.ny.gov>
Subject: RE: FERC No. 2955-relicensing of the Normanskill Hydroelectric

Hello Michele,

Thank you for your response. NYSDEC consents to the Traditional Licensing Process.

Please let me know if you have any questions. Thank you.

Angelika Stewart
Environmental Analyst
518-357-2171
angelika.stewart@dec.ny.gov

From: Michele Stottler [<mailto:mstottler@gomezandsullivan.com>]
Sent: Friday, February 10, 2017 10:22 AM
To: Stewart, Angelika R (DEC) <Angelika.Stewart@dec.ny.gov>
Cc: Baker, Nancy M (DEC) <nancy.baker@dec.ny.gov>; Walters, Georgette M (DEC) <georgette.walters@dec.ny.gov>; VanMaaren, Chris C (DEC) <chris.vanmaaren@dec.ny.gov>
Subject: RE: FERC No. 2955-relicensing of the Normanskill Hydroelectric

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Angelika,

Thank you for your comprehensive response and the information you supplied. To address a few of your comments on the questionnaire. At this time the City does not intend to raise the dam five feet as previously proposed in 2005 and is open to discussing public access to the reservoir.

Would DEC be in favor of using the Traditional Licensing Process instead of the Integrated Licensing Process for relicensing? We've found that the TLP is more collaborative between the Licensee and stakeholders in addressing the issues and less deadline and paper driven. Steve Patch from USFWS has given his support to use the TLP. I would be glad to talk to you or Nancy about it in more detail if you like.

Michele



APPENDIX C – NORMANSKILL PROJECT CURRENT LICENSE REQUIREMENTS

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 FERC ¶62,414

City of Watervliet, New York) Project No. 2955-001

ORDER ISSUING LICENSE (MINOR)

(Issued March 5, 1982)

The City of Watervliet, New York (Applicant), has filed an application for a license under Part I of the Federal Power Act (Act) to reconstruct, operate, and maintain the Normanskill Project No. 2955. 1/ The project would be located on the Normans Kill, a tributary to the Hudson River, in the Town of Guilderland, Albany County, New York and would affect the interests of interstate or foreign commerce.

Notice of the application has been published and comments have been received from interested Federal, State, and local agencies. No petitions to intervene have been received, and none of the agencies objected to issuance of the license. No significant concerns were raised by the commenting agencies.

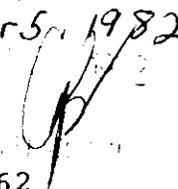
The Proposal

Applicant proposes, at its existing water supply dam and reservoir, the addition of an intake structure, a buried penstock, an underground powerhouse containing a generating unit having a rated capacity of 850 kW, a control building, a short transmission line, and appurtenances. Applicant would continue to operate the facility primarily to provide a municipal water supply. Water surplus to the municipal supply would be used to generate energy for Applicant's use. Surplus energy would be sold to Niagara Mohawk Power Corporation.

Safety and Adequacy

Staff inspected the project and found the existing project structures to be in good condition and adequately maintained.

1/ Authority to act on this matter is delegated to the Director, Office of Electric Power Regulation, under §375.308 of the Commission's regulations, 45 Fed. Reg. 21216 (1980), amending 44 Fed. Reg. 46449 (1979) and 18 C.F.R. 3.5(g) (1979).

Mar 5, 1982

DC-A-62

8203080262

The proposed powerhouse and modifications to the existing dam will result in safe structures if constructed in accordance with sound engineering practice. The project would fully use the flow and fall of the Normans Kill and will be best adapted to the comprehensive development of the basin. ^{2/} The project is economically feasible based on the current rate established by the New York Public Service Commission of 60 mills/kWh.

It is concluded that the project, under the conditions of this license, will be safe, adequate, economically feasible, and be best adapted to a comprehensive plan for development of the Hudson River basin for beneficial public uses.

Environmental Considerations

The impact of redevelopment would be minor with no critical or unique habitat being adversely affected. No threatened or endangered plant or animal species have been reported in Normans Kill, nor are there any sites listed on the National Register of Historic Places within or near the project area.

New York State Department of Environmental Conservation (DEC) recommended that the Applicant be required to implement a monitoring program to determine any impacts of project operation on the wetlands associated with the project reservoir and the need to modify the proposed mode of operation (letter dated October 15, 1981). This requirement is included in the Article 24 Wetlands Permits issued by DEC. Staff believes that the wetland area is adequately protected by state regulations; therefore, a license condition is not necessary.

DEC also recommended that Applicant be required to release from the project additional flows that might be determined at some future date to be in excess of water supply demand. Article 9 of the Standard L-Form reserves the Commission sufficient authority to prescribe additional flow releases from the project to protect and enhance downstream resources, should the need arise.

^{2/} The proposed project will produce an average of 4 million kWh annually and will utilize a renewable resource that will save the equivalent of approximately 6,400 barrels of oil or 1,850 tons of coal per year.

The redevelopment would result in minor, short-term increases in noise, dust, and exhaust emissions from construction activities, and erosion and sedimentation from disturbance of land surfaces. Less than 0.25 acre of terrestrial vegetation would be removed, and approximately 4,860 cubic yards of material would be removed from the riverbed. No long-term impacts on fish and wildlife resources would result. **Operation of the proposed project would not disrupt historic flow patterns or reservoir levels.** 3/

In accordance with standard Commission practice, 4/ Article 19 of this license also requires cultural resources protection measures.

On the basis of the record, including agency comments and our staff's independent analysis, it is found that issuance of a license for this project, as conditioned, is not a major Federal action significantly affecting the quality of the human environment.

License Term

The proposed reconstruction of this project using an existing dam is similar to relicensing an existing licensed project at which a moderate amount of new development is proposed; therefore, consistent with the Commission's policy, a 40-year license term is reasonable in this instance. 5/

It is ordered:

(A) This license is issued to the City of Watervliet, New York (Licensee), under Part I of the Federal Power Act (Act), for a period of 40 years, effective the first day of the month in which this order is issued, for the reconstruction, operation, and maintenance of the Normanskill Project No. 2955, located in Albany County, New York, on the Normans Kill, and affecting the interests of interstate or foreign commerce. This license is subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the Act.

3/ The New York State Department of Environmental Conservation has issued a water quality certificate for the project, in accordance with Section 401 of the Federal Water Pollution Control Act.

4/ See S.D. Warren, Project No. 2897, Order Denying Rehearing (issued Feb. 19, 1980).

5/ Montana Power Company, Order Issuing New License (Major), Project No. 2301 (issued October 5, 1976).

-4-

(B) The Normanskill Project No. 2955 consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, constituting the project area and enclosed by the project boundary. The project area and boundary are shown and described by certain exhibits that form part of the application for license and that are designated and described as:

<u>Exhibit</u>	<u>FERC No. 2955-</u>	<u>Showing</u>
K (Sheet 1)	1	Project Lands and Boundaries
K (Sheet 2)	2	Project Lands and Boundaries

(2) Project works consisting of:

(a) an existing reinforced concrete Ambursen-type dam about 380 feet long and 40 feet high with an overflow section approximately 306 feet long having a crest elevation of 259.0 U.S.G.S. datum and surmounted by 3-foot flashboards; (b) a reservoir having a surface area of 430 acres and a usable storage capacity of 1,290 acre-feet at normal maximum pool elevation 262.0 U.S.G.S. datum; (c) a new intake structure and a sluiceway; (d) a new 900-foot long, 7-foot diameter concreteencased steel penstock buried in the river bed; (e) a new reinforced-concrete underground powerhouse containing a tube-type generating unit having a rated capacity of 850 kW at a net head of 61 feet and hydraulic capacity of 200 cfs; (f) a new underground control building located on the left (north) bank and connected to the powerhouse by a tunnel; (g) a new 600-foot long 2.4-kV transmission line; (h) a new 2.4/13.2-kV transformer bank; and (i) appurtenant facilities.

The location, nature, and character of these project works are generally shown and described by the exhibits cited above and more specifically shown and described by certain other exhibits that also form a part of the application for license and that are designated and described as:

<u>Exhibit</u>	<u>FERC No. 2955-</u>	<u>Showing</u>
L (Figure 1)	3	Proposed Intake at Dam
L (Figure 1A)	4	Cross Sections at Existing Dam
L (Figure 2)	5	Proposed Intake Section
L (Figure 3)	6	Plan-Powerhouse
L (Figure 4)	7	Powerhouse & Access
L (Figure 5)	8	Powerhouse & Access
L (Figure 6)	9	Control/Pump Station
L (Figure 7)	10	Control Schematic
L (Figure 8)	11	Electrical Schematic
L (Figure 9)	12	N.M.P.C. Distribution System

(3) All of the structures, fixtures, equipment, or facilities used or useful in the operation or maintenance of the project and located within the project boundary, all portable property that may be employed in connection with the project, located within or outside the project boundary, as approved by the Commission, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) Exhibits K and L, designated in ordering paragraph (B) above, are approved and made a part of the license.

(D) Pursuant to Section 10(i) of the Act, it is in the public interest to waive the following Sections of Part I of the Act, and they are excluded from the license:

Section 4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the Act that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is also subject to Articles 1 through 18 set forth in Form L-15 (revised October 1975), entitled "Terms and Conditions of License for Unconstructed Minor Project Affecting the Interests or Foreign Commerce," attached to and made a part of this license. The license is also subject to the following additional articles:

Article 19: Prior to commencement of any construction or development of any project works or other facilities at the project, the Licensee shall consult and cooperate with the State Historic Preservation Officer (SHPO) to determine the need for, and extent of, any archeological or historic resource surveys and any mitigative measures that may be necessary. The Licensee shall provide funds in a reasonable amount for such activity. If any previously unrecorded archeological or historic sites are discovered during the course of construction, 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 archeological or historic resources. If the Licensee and the SHPO cannot agree on the amount of money to be expended on archeological or historic work related to the project, the Commission reserves the right to require the Licensee to conduct, at its own expense, any such work found necessary.

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Article 20: The Licensee shall pay the United States the following annual charge, effective the first day of the month in which this license is issued:

For the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,130 horsepower.

Article 21: The Licensee shall commence construction of the project within one year from the effective date of this license and, in good faith and with due diligence, shall prosecute and complete construction of the project works within four years from the effective date of this license.

Article 22: The Licensee shall file with the Commission's Regional Engineer and the Director, Office of Electric Power Regulation, one copy each of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures, at least 60 days prior to start of construction. The Director, Office of Electric Power Regulation may require changes in the plans and specifications to assure a safe and adequate project.

Article 23: The Licensee shall review and approve the design and construction procedures for contractor-designed cofferdams and deep excavations prior to the start of construction. The Licensee shall file with the Commission's Regional Engineer and Director, Office of Electric Power Regulation, one copy of the approved construction drawings and specifications, and a copy of the letter of approval.

Article 24: Within 60 days from the date of commencement of operation of the project, the Licensee shall file "as-built" Exhibit drawings to show the project as finally constructed.

Article 25 . (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain other types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy

violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, cancelling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The types of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the uses and occupancies for which it grants permission are maintained in good repair and comply with applicable State and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary State and Federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly

describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary State and Federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary Federal and State water quality certificates or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary Federal and State approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must file a letter to the Director, Office of Electric Power Regulation, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any Federal or State agency official consulted, and any Federal or State approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraphs (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with Federal and State fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

-9-

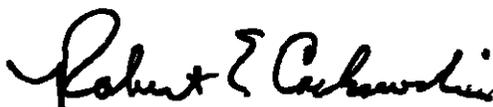
(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G or K drawings would be filed for approval for other purposes.

(F) This order is final unless a petition appealing it to the Commission is filed within 30 days from the date of its issuance, as provided in §1.7(d) of the Commission's regulations, 18 C.F.R. 1.7(d) (1980), as amended, 44 Fed. Reg. 46449(1980). The filing of a petition appealing this order to the Commission or an application for rehearing as provided in Section 313(a) of the Act, does not operate as a stay of the effective date of this license or of any other date specified in this order, except as specifically ordered by the Commission.

Failure of the Licensee to file a petition appealing this order to the Commission shall constitute acceptance of this license. In acknowledgement of acceptance of this license, the license shall be signed for the Licensee and returned to the Commission within 60 days from the date of issuance of this order.



Robert E. Cackowski
Acting Director, Office of
Electric Power Regulation

Project No. 2955

IN TESTIMONY of its acknowledgment of acceptance of all of the terms and conditions of this Order, The City of Watervliet, New York, this ____ day of _____, 1982, has caused its corporate name to be signed hereto by _____, its Mayor, and its corporate seal to be affixed hereto and attested by _____, its _____ Secretary, pursuant to a resolution of its Board of Directors duly adopted on the ____ day of _____, 19__, a certified copy of the record of which is attached hereto.

By _____
Mayor

Attest:

Form E-15
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR UNCONSTRUCTED
MINOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project works shall be constructed in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes

made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Upon the completion of the project, or at such other time as the Commission may direct, the Licensee shall submit to the Commission for approval revised exhibits insofar as necessary to show any divergence from or variations in the project area and project boundary as finally located or in the project works as actually constructed when compared with the area and boundary shown and the works described in the license or in the exhibits approved by the Commission, together with a statement in writing setting forth the reasons which in the opinion of the Licensee necessitated or justified variation in or divergence from the approved exhibits. Such revised exhibits shall, if and when approved by the Commission, be made a part of the license under the provisions of Article 2 hereof.

Article 4. The construction, operation, and maintenance of the project and any work incidental to additions or alterations shall be subject to the inspection and supervision of the Regional Engineer, Federal Power Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of the project and for any subsequent alterations to the project. Construction of the project works or any feature or alteration thereof shall not be initiated until the program of inspection for the project works or any such feature thereof has been approved by said representative. The Licensee shall also furnish to said representative such further information as he may require concerning the construction, operation, and maintenance of the project, and of any alteration thereof, and shall notify him of the date upon which work will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall allow said representative and other

officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction, maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights of occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative.

The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 7. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 8. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 9. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 10. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 11. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such structures and facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 12. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall

permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 13. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 14. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 15. The Licensee shall consult with the appropriate State and Federal agencies and, within one year of the date of issuance of this license, shall submit for Commission approval a plan for clearing the reservoir area. Further, the Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, stumps, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition,

all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. Upon approval of the clearing plan all clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 16. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 17. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 18. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

Document Content(s)

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OCT 21 1985

7
Hydro License

Project No. P-2955-000
City of Watervliet, New York

J. Leo O'Brien
Mayor
City Hall
Watervliet, NY. 12189

Gentlemen:

Enclosed is the order designated Instrument No. 3 in the
above-entitled matter.

Quentin A. Edson
Quentin A. Edson
Director, Office of
Hydropower Licensing

*Copy sent
Jim Becha
10-24-85*

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

City of Watervliet, New York

)

Project No. 2955-003

ORDER APPROVING "AS-BUILT" EXHIBIT
(Issued October 21, 1985)

On August 19, 1985, the City of Watervliet, New York, (Licensee) filed an application for approval of an "as-built" exhibit for the Normanskill Project No. 2955 for which a license was issued on March 5, 1982. 1/

The license for the Normanskill Project authorized the installation of an 850-kW turbine-generator unit. Through a competitive bid process, a turbine-generator rated at 1,250 kW was selected and installed. Ordering paragraph (B)(2)(a) of the license which describes the project works and Article 20 which specifies total horsepower for the purpose of assessing annual charges, are revised herein to reflect changes indicated in the "as-built" exhibit.

The "as-built" exhibit conforms to the Commission's regulations and is approved herein.

The approval of an "as-built" exhibit is an administrative action involving no change in the operation of the project or environmental impacts. For these reasons, approval of the "as-built" exhibit does not constitute a major Federal action significantly affecting the quality of the human environment.

The Director of the Office of Hydropower Licensing or the Director's designee, under 18 C.F.R. § 375.314, orders:

(A) Exhibit A, consisting of 3 typewritten pages, filed August 19, 1985, entitled "Project Description" is approved and made a part of the license for the Normanskill Project No. 2955.

1/ 18 FERC ¶ 62,414

(B) The description of the project contained in ordering paragraph (B)(2)(a) of the license is amended to read:

(a) an existing reinforced concrete Ambursen-type dam about 380 feet long and 40 feet high with an overflow section approximately 306 feet long having a crest elevation of 259.0 feet U.S.G.S. datum and surmounted by 3-foot flashboards; (b) a reservoir having a surface area of 430 acres and a usable storage capacity of 1,290 acre-feet at normal maximum pool elevation 262.0 feet U.S.G.S. datum; (c) an intake structure and a sluiceway; (d) a 900-foot long, 7-foot diameter concrete encased steel penstock buried in the river bed; (e) a reinforced-concrete underground powerhouse containing a tube-type generating unit having a rated capacity of 1,250 kW at a net head of 61 feet and hydraulic capacity of 200 cfs; (f) an underground control building located on the left (north) bank and connected to the powerhouse by a tunnel; (g) a 600-foot long 2.4-kV transmission line; (h) a 2.4/13.2-kV transformer bank; and (i) appurtenant facilities.

(C) Article 20 is revised to read:

Article 20. (1) The Licensee shall pay the United States, for the period from March 1, 1982, to September 30, 1985, for the purpose of reimbursing the United States for the cost of administration of Part I of the Act, an annual charge for the Normanskill Project as determined by the Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for the Normanskill Project for that purpose is 1,130 horsepower.

(2) The Licensee shall pay the United States, effective as of October 1, 1985, for the purpose of reimbursing the United States for the cost of administration of Part I of the Act, a reasonable annual charge as determined by the Commission in accordance with the provisions of its regulations in effect from time to time. The authorized installed capacity for the purpose is 1,660 horsepower.

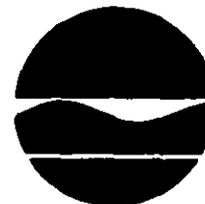
(D) This order is final unless appealed to the Commission by any party within 30 days from the issuance date of this order under 18 C.F.R. 385.1902 (1985).

Edward A. Abrams for

Fred E. Springer
Director, Division of
Project Management

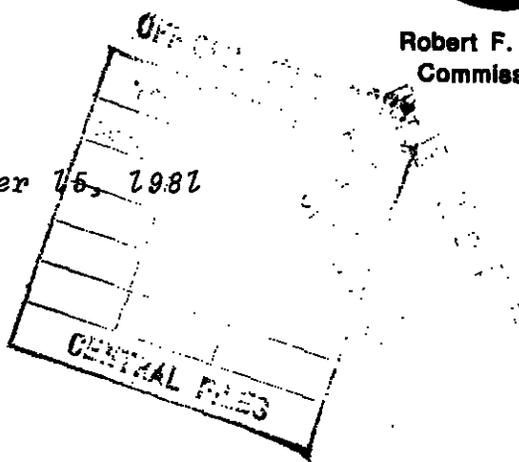
**APPENDIX D – NORMANSKILL PROJECT NYS WATER QUALITY
CERTIFICATION**

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-0001
Division of Regulatory Affairs, Room 514



Robert F. Flacke
Commissioner

October 15, 1981



Kenneth Plumb, Secretary
Federal Energy Regulatory Commission
825 North Capitol-NE
Washington, D.C. 20426

RE: City of Watervliet Hydroelectric
Development Project at Watervliet
Reservoir on the Normanskill,
Town of Guilderland, Albany Co.,
NY. FERC #2955; DEC #401-99-0150.

Dear Secretary Plumb:

The New York State Department of Environmental Conservation (DEC)* has reviewed the referenced hydroelectric redevelopment pursuant to the requirements of NYS Environmental Conservation Law (ECL), Article 70 (Uniform Procedures Act), Article 8 (Environmental Quality Review Act), Article 15, Title 15 (Protection of Waters), Article 24 (Freshwater Wetlands), and to the requirements of Section 401 of the Clean Water Act of 1977 (PL 95-217).

The DEC as the accepted lead agency in NYS also coordinated its review with the NYS State Public Service Commission, the NYS Office of Parks and Recreation (Central Planning Office and Historic Preservation Officer), the U.S. Fish & Wildlife Service and the Corps of Engineers.

The DEC finds that development of the applicant's proposed project, in accordance with the applicable permits, 401 certification, and the following recommendations will minimize to the maximum extent practicable the adverse environmental conflicts that are expected to occur during the construction and operation of the station.

- *Division of Fish and Wildlife
- *Division of Water Resources
- *Division of Regulatory Affairs
- *Division of Lands and Forests

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Kenneth Plumb, Secretary

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1. The DEC Division of Fish & Wildlife has identified an area near the northwest corner of the reservoir that is tentatively designated as a freshwater wetland subject to NYS regulation.

An Article 24 ECL permit condition accordingly will be issued for this project. However the DEC is not assured that proposed project related changes to the current reservoir release program will not adversely affect the wetland. It is recommended, therefore, that the Commission require applicant, upon activation of the facility, to implement an approved DEC monitoring program and to determine the significance of any related impacts the wetland and the need to modify the proposed mode of operation.

2. The DEC recognizes that the proposed mode of operation, which is intended to utilize surplus waters (spillage), will not change the average flows currently released from the Watervliet Reservoir. The DEC notes however that the proposal to maintain the historic operating regime also does not take into consideration the potential or opportunity for enhancement of the downstream resource (Normanskill).

The DEC therefore reserves the right to require the applicant to pass through the turbines or as spillage any additional flows that might be determined at some future date to be in excess of water supply demand. Such flows shall be discharged for the benefit of the resource in a manner that will maintain a uniform minimum downstream flow condition.

Please do not hesitate to contact Mr. Murdock MacKenzie at (518) 457-7418 if you or your staff require additional information. The opportunity for review is appreciated.

Very truly yours,

Barry Merges for Louis Conera

Louis M. Conera, Jr., Director
Division of Regulatory Affairs

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