DRAFT LICENSE APPLICATION

J. BRODIE SMITH HYDROELECTRIC PROJECT
FERC NO. 2287

Submitted by:

Central Rivers Power NH Smith, LLC
Manchester, New Hampshire

Prepared by:

Kleinschmidt

March 2022

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

INITIAL STATEMENT

Before The
United States of America
Federal Energy Regulatory Commission

Central Rivers Power NH Smith, LLC **J. Brodie Smith Project (P-2287)**

Draft Application For License
For Major Project – Existing Dam
Initial Statement
(Pursuant to 18 CFR 4.51)

1. CRP NH Smith, LLC (CRP), licensee for the J. Brodie Smith Hydroelectric Project (FERC No. 2287) (Project), applies to the Federal Energy Regulatory Commission (hereinafter FERC or Commission) for a new license for the J. Brodie Smith Hydroelectric Project, as described in the attached exhibits. The Project is currently licensed by Order with an effective date of August 1, 1994 and expires on July 31, 2024.

2. The location of the Project is:

   State or territory: New Hampshire
   County: Coos
   Township or nearby towns: City of Berlin
   Stream or other body of water: Androscoggin River

3. The exact name, business address, and telephone number of the applicant are:

   CRP NH Smith, LLC
   670 N. Commercial Street, Suite 204
   Manchester, NH 03101
   (978) 935-6039

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

   Kevin Webb
   Manager, Licensing
   CRP NH Smith, LLC
   670 N. Commercial Street, Suite 204
   Manchester, NH 03101
   (978) 935-6039

Curt Mooney
Manager, Regulatory Compliance
Central Rivers Power NH, LLC
59 Ayers Island Road
Bristol, New Hampshire 03222
(603) 744-0846

4. CRP NH Smith, LLC is a domestic corporation and is not claiming preference under section 7(a) of the Federal Power Act.

5. (i) The statutory or regulatory requirements of the State of New Hampshire, in which the Project is located, which would, assuming jurisdiction and applicability, affect the Project with respect to bed and banks, and to the appropriation, diversion and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act are:

   a. Water Quality Certification (WQC) from the State of New Hampshire pursuant Section 401 (a)(1) of Public Law 92-500 as amended by Public Law 95-217 (Clean Water Act of 1977), 33 U.S.C. Section 1341.

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

   a. The Licensee will apply to the New Hampshire Department of Environmental Services (NHDES) for a Water Quality Certification no later than 60 days after FERC issues the notice of acceptance and ready for environmental analysis.

6. All existing Project facilities are owned by CRP NH Smith, LLC. The existing project consists of a U-shaped dam, an impoundment with a surface area of approximately 8 acres, a spillway, a power canal, a penstock with surge tank, a powerhouse containing one generating unit, a transmission line and appurtenant facilities. The Smith Project has a total authorized installed capacity of 15 MW.

7. The Project does not occupy any lands of the United States.

8. Project is an existing constructed project; no additional construction is proposed.

THE FOLLOWING INFORMATION IS PROVIDED PURSUANT TO 18 CFR §5.18(A) AND §4.32(A) OF THE COMMISSION'S REGULATIONS:

1. CRP NH Smith, LLC possesses all proprietary rights necessary to construct, operate or maintain the Project.

2. The name and mailing address of:

   a. Every county in which any part of the Project and any federal facilities that would be used by the project are located:

   Coos County, New Hampshire
   P.O. Box 10
   West Stewartstown, NH 03597

   There are no federal facilities used by the Smith Project.

   b. Every city, town, or similar local political subdivision in which any part of the project and any federal facilities that would be used by the project are located, or that is within 15 miles of the project dam and has a population of 5,000 or more people.

   The Smith Project is located in the City of Berlin in Coos County, New Hampshire.

   City of Berlin
   164 Main Street
   Berlin, NH 03570

   Town of Gorham
   20 Park Street
   Gorham, NH 03581

   c. Every irrigation district, drainage district, or similar special purpose political subdivision in which any part of the project is located and in which any federal facility that is used by the project is located or that owns, operates, and maintains or uses any project facility.

   There are no irrigation districts, drainage districts, or similar special purpose political subdivisions in which any part of the project is located or affected.

Coos County Conservation District
4 Mayberry Lane
Lancaster, NH 03584

d. Every other political subdivision in the general area of the Project that there is reason to believe would likely be interested in, or affected by, this notification:

There are no other political districts or subdivisions that are likely to be interested in or affected by the notification. The following economic development and planning organizations are likely to be interested in the notification.

Coos Economic Development Corporation
149 Main Street
P.O. Box 205
Lancaster, New Hampshire, 03584

North Country Council
Regional Planning Commission and Economic Development District
161 Main Street,
Littleton NH 03561

Berlin Industrial Development & Park Authority
City Hall
168 Main Street
Berlin, NH 03570

e. All Indian tribes that may be affected by the Project

There are no federally recognized Native American tribes in New Hampshire. GLHA is not aware that the Project affects any Native American tribe.

To be included in Final Application

Subscription

This Application for New License for the J. Brodie Smith Hydroelectric Project, FERC No. 2287 is executed in the State of New Hampshire, County of Coos, by [_____]

who, being duly sworn, deposes and says that the contents of this application are true to the best of their knowledge or belief. The undersigned has signed this Application this _ day of July, 2022.

Central Rivers Power

By _____

VERIFICATION

Subscribed and sworn to before me, a Notary Public of the State of New Hampshire, this ____ day of July, 2022.

_____
(Notary Public)

(My Commission Expires _____)/seal

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT A

PROJECT DESCRIPTION

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1.0 INTRODUCTION

Central Rivers Power NH, LLC (CRP) is proposing to relicense with the Federal Energy Regulatory Commission (FERC or the Commission) the 15-megawatt (MW) J. Brodie Smith Hydroelectric Project (Project) (FERC Project No. 2287). The Project is located on the Androscoggin River in northern New Hampshire within the City of Berlin, Coos County. Figure 1.1 provides the general location of the Project facilities. The Smith Project is one of eight hydroelectric projects within an 11-mile reach of the Androscoggin River between Berlin and Shelburne, New Hampshire (FERC 1993). There are four hydroelectric projects within 1.5 miles upstream of the Smith Project; CRP's Gorham Project is approximately 6.5 miles downstream of the Smith Project.

The Project consists of a U-shaped dam, an impoundment with a surface area of approximately 8 acres, a spillway, a power canal, a penstock with surge tank, a powerhouse containing one generating unit, a primary transmission line, and appurtenant facilities. A map of the Project boundary is provided in Exhibit G. There are no federal lands or facilities within the Project boundary. CRP is not proposing to add capacity or make any physical modifications to the Project under the new license.

Figure 1.1 J. Brodie Smith Project Location

2.0 DESCRIPTION OF PROJECT

The single-development Project consists of an impoundment, dam, two wastegates, a power canal, a canal bypass channel with a bascule gate, a 1,650-foot long penstock, a single unit powerhouse, transmission line, and appurtenant facilities. Table 4.1 provides a detailed description of the J. Brodie Smith Project facilities.

2.1 Project Features

2.1.1 Project Impoundment

The Project impoundment has a surface area of 8 acres, with a normal maximum headwater elevation of 1,009.7 feet (USGS). The water depth in the impoundment is approximately 10 feet (FEMA 2013). The Project impoundment extends approximately 1,200 feet upstream of the Project dam. As the Project is operated as run-of-river, the Project impoundment has no useable storage capacity. Due to the absence of useable storage associated with no impoundment fluctuation, the Project is entirely dependent upon Androscoggin River inflows for generation.

2.1.2 Project Dam

From left to right (looking downstream), the concrete gravity dam consists of a low spillway section with pin-supported wooden flashboards (Spillway Section), a higher spillway section with pin-supported wooden flashboards (Dam Section), a spillway section with hinged metal flashboards supported by wooden struts (Maximum Dam Section), a waste gate structure (Main Dam), and another section with hinged metal flashboards (West Spillway) (Photo 2.1).

2.1.3 Spillway Section

The spillway section is approximately 140 feet long with a crest elevation at El. 1006.7 feet with 3-foot-high pin-supported flashboards.

2.1.4 Dam Section

The dam section is approximately 115 feet long with a crest elevation at El. 1006.7 feet with 3-foot-high pin-supported flashboards.

2.1.5 Maximum Dam Section

The maximum dam section is approximately 110 feet long. The height of the maximum dam section ranges from approximately 3 feet high adjacent to the dam section to 13 feet high adjacent to the waste gate structure. The crest of the maximum dam section is at El. 1002.96 feet and is topped by 6.74-foot-high hinged flashboards. A walkway spans the length of the maximum dam section, for access to the flashboards in the event they need to be operated. The top the walkway is at approximately El. 1020.0 feet.

2.1.6 Main Dam (Waste Gate Structure)

Located adjacent to the west end of the maximum dam section, this structure consists of a concrete gravity section with an ogee-shaped base slab and three concrete piers. The maximum height of the structure is 40 feet, and it is 70 feet in length (including the piers). Two 25-foot- wide, 17-foot higher steel roller-type waste gates span between the piers. The sill elevation of the gates is at El. 993.0. The gates are set to open up to 120 inches (El. 1003.0), but this can be overridden, and the gates are capable of being opened to El 1017.0± feet. The east waste gate is locally controlled and there is a square hole in the gate used for passage of the minimum flow requirements. The west gate is operated remotely by Customized Energy Solutions (CES) located in Philadelphia, Pennsylvania, with local override capability. There is also a portable generator used for emergency power source to operate the waste gates.

2.1.7 West Spillway Section

The west spillway section is approximately 60 feet long with a crest elevation at El. 1002.96 feet. The height of the west spillway section ranges from approximately 14 feet high adjacent to the waste gate structure to 4 feet adjacent to the right abutment. The spillway is topped with 6.74-foot-high hinged flashboards. A walkway spans the length of the west spillway section, for access to the flashboards in the event they need to be operated. The top of the walkway is at approximately El. 1020.0 feet.

Photo 2.1 J. Brodie Smith Project Dam

2.1.8.1 Canal

Upstream of the Mason Street Bridge, the Androscoggin River divides into two channels. The left channel is spanned by the concrete gravity dam described above. The right channel flows under the bridge into a canal (approximately 500 feet long and 100 feet wide). At the downstream end of the canal there is an intake structure and a concrete gravity structure containing a bascule gate section and a stanchion stoplog section, separated by a center pier. Upstream of the canal and present dam, is the remnants of an original rock-filled dam, which is used as a temporary gravel and earthen cofferdam during annual dewatering, inspection, and maintenance of the canal and other project features.

The canal is impounded by reinforced concrete and stone masonry walls on the left and right sides. The right canal wall is approximately 500 feet long and the left canal wall is approximately 420 feet long. The top of both the canal walls is at El. 1016.0 feet. 14-inch high flashboard can be installed on the crest of the west (right) canal wall to prevent overtopping during high river flows (>25,000 cfs).

Six-inch-deep steel pipe sleeves are permanently installed in the wall and the flashboards and pins are stored at the maintenance building on School Street located approximately 2 blocks away.

Photo 2.2 J. Brodie Smith Power Canal

2.1.8.2 Canal Intake

Located adjacent to the west (right) abutment of the bascule and stanchion section, the canal intake is concrete structure approximately 42 feet high and 35 feet long. The canal intake has a trashrack with a trash rake and a 20-foot-wide by 20-foot-high steel head gate. The head gate can be closed under flow. There is also a bypass pipe used to slowly re-water the penstock following outages. A room in the basement of the intake houses the float mechanism for the bascule gate.

2.1.8.3 Bascule and Stanchion Sections

The total length of the bascule gate-stanchion structure, including abutments, is about 68 feet. The bascule gate is 25 feet long. The top of the gate is typically at El. 1010.2 feet. The gate is set to lower as water levels rise in the canal, down to El 1001.7 feet, if necessary. The bascule gate is operated by a hydraulic mechanism controlled by a pond level float. The stanchion section is 30 feet long. The concrete sill of the stanchion section is at El. 1000.0 feet, while the top of the stanchion stoplogs is at approximately El. 1016.0 feet. The gate structures control bypass flows to the sluiceway, which leads to the river. The sluiceway is a natural, rock-lined channel with a concrete training wall on the right side. The wall extends approximately 200 feet downstream to a foot bridge over the sluiceway. From the bridge, the sluiceway is a natural channel extending about another 200 feet to the river. A concrete walkway spans the stanchion and bascule structure, with a low chord elevation of El. 1013.0 feet and the top of walkway at El. 1016.0 feet.

2.1.9 Penstock

Attached to the intake is a short section of 20-foot-diameter concrete penstock, which transitions into an 18-foot-diameter, 1,650-foot-long welded steel penstock. At the powerhouse, the penstock reduces to a 16-foot-diameter pipe. The penstock is above-ground and supported by ring-girders (approximately every 50 feet) and two thrust blocks. There are three expansion joints, one located in each section of penstock between thrust blocks. The approximate 200-foot-long section of penstock, located between the surge tank and the powerhouse, is encased in concrete.

Photo 2.3 J. Brodie Smith Penstock

2.1.10 Surge Tank

A 70-foot-diameter surge tank is located approximately 200 feet upstream of the powerhouse (at the top of the hill before the penstock descends to the powerhouse). The surge tank is a differential-type surge tank constructed of welded steel with a sloped and vented steel roof. There is a 16-foot diameter, 37-foot-high interior riser connected to the steel penstock. The base of the tank is at El. 988.0 feet and the top of the outer cylinder is at El 1028.0 feet. The tank foundation is a 22-foot-high concrete ring foundation which encases the penstock, supports the tank floor, and houses the tank aeration compressor.

Photo 2.4 J. Brodie Smith Surge Tank

Located at the southern portion of the project downstream of the Mason Street Bridge, the powerhouse is supplied from the 18-foot-diameter penstock. It is a steel and brick superstructure and concrete substructure. The powerhouse is a brick structure supported by steel framing that is 65 feet long, 53 feet wide, and 38 feet high. The powerhouse is equipped with one 20,500-hp turbine connected to a 15,000-kW generator at a gross head of 88 feet and a discharge of 2,560 cfs. The maximum capacity of the turbine is approximately 3000 cfs and minimum capacity is 850 cfs. The powerhouse was constructed between August 1945 and May 1948.

Photo 2.5 J. Brodie Smith Powerhouse

The tailrace is channel ranges between 80 and 125 feet wide and is approximately 400 feet long, extending from the powerhouse discharge to the confluence with the bypass reach.

2.1.13 Project Bypass Reach

Operation of the Project results in the diversion of water from an approximately 0.5-mile-long, 100-foot-wide bypassed reach, consisting primarily of boulders and ledge outcrops. Under the existing license, CRP provides a year-round minimum flow of 20 cfs or inflow, whichever is less, into the bypassed reach for the protection of water quality, aquatic habitat, and fishery resources. The 20 cfs minimum flow is provided through a 15-inch orifice in one of the two waste gates.

2.1.14 Appurtenant Facilities and Equipment

The Project has a 115-kV, 1,500-foot-long primary transmission line and appurtenant facilities. A single-line diagram for the Project is provided in Appendix A.

3.0 PROPOSED PROJECT FACILITIES

The Licensee is proposing no structural changes to the Project. No new facilities are proposed to be added to the Project at this time.

4.0 PROJECT LANDS

The Project is located within the Androscoggin River Valley in the City of Berlin, Coos County, New Hampshire. The Project boundary generally includes the impoundment, dam, powerhouse, and tailrace, and extends from the dam downstream approximately 2,500 feet and upstream approximately 1,200 feet (see Figure 1.1). A map of the Project boundary is provided in Exhibit G.

4.1 Lands of the United States

The Project does not occupy any facilities or lands of the United States.

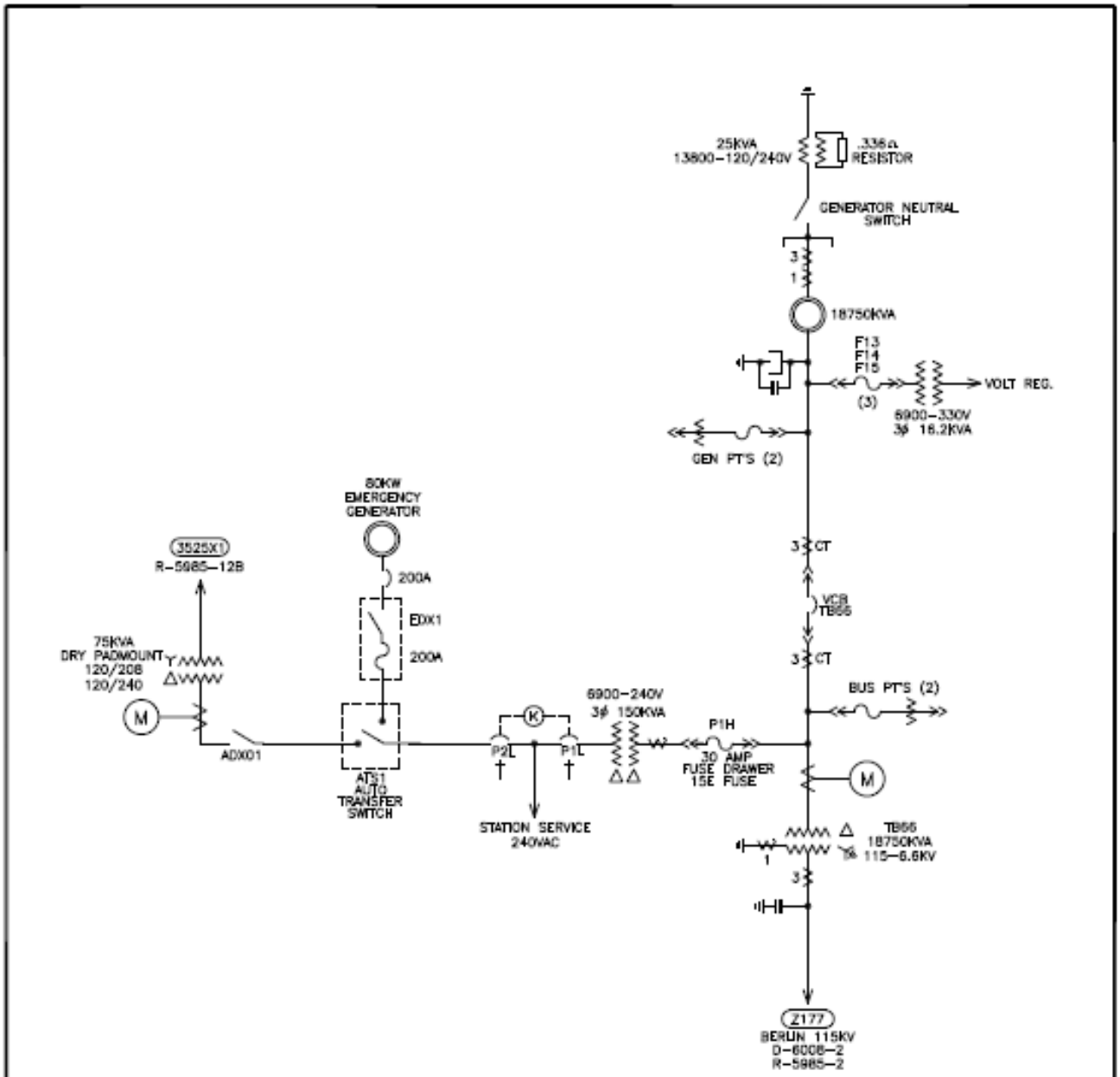
Table 4.1 Specifications for the J. Brodie Smith Hydroelectric Project

Description	Number or Fact
General Information	
FERC Number	P-2287
License Issued	8/1/1994
License Expiration Date	7/31/2024
Licensed Capacity	15,000 kW
Project Location	Androscoggin River in Coos County, New Hampshire
Dam	
Elevation Spillway Crest	1) 1002.96 feet (USGS) 2) 1006.7 feet (USGS)
Dam Height	24 feet
Spillway Section	140 feet long; crest elevation 1006.7 feet; 3-foot flashboards
Dam Section	115 feet long; crest elevation 1006.7 feet; 3-foot flashboards
Maximum Dam Section	110 feet long; crest elevation 1002.96 feet; 6.74-foot flashboards
Main Dam (Waste Gate Structure)	70 feet long (including piers);
West Spillway Section	60 feet long; crest elevation 1002.96 feet; 6.74-foot flashboards
Conveyance Structures	
Canal Structure	Approximately 500 feet long by 100 feet wide
Canal Intake	42 feet high by 35 feet long
Penstock	20-foot-diameter; 1650 feet long; reduces to 16-foot-diameter at powerhouse

Description	Number or Fact
Surge Tank	70-foot diameter; 40-foot high
Impoundment	
Normal Impoundment Elevation	1,009.7 feet (USGS)
Length of Impoundment	approximately 1,200 feet upstream
Surface Area of Impoundment	8 acres
Useable Storage of Impoundment	N/A – Run-of-River operations
Powerhouse	
Date of Construction	1948
Powerhouse Dimensions	65 feet long, 53 feet wide, and 38 feet high
Turbine / Generators	1 – Baldwin (American Hydro 2006), vertical Francis type; 20,500 hp; 15 MW 1 – GE, 18,750 kVA
Bypassed Reach	
	0.5 miles long; approximately 100 feet wide
Project Generation	
Total Hydraulic Capacity	3,000 cfs maximum; 850 cfs minimum
Average Annual Generation	94,869 MWH
Transformers and Transmission Lines	
Number	1
Transmission Voltage	115-kV
Distance from Powerhouse to Transformer	1,500 feet

APPENDIX A

SINGLE LINE DIAGRAM



† –P1L & P2L INTERLOCKED SO THAT ONLY ONE CAN BE IN CLOSED POSITION AT A TIME.

LAST REVISION DETAIL
UPDATE SUBSTATION ADDRESS.
UPDATE CONNECTING PRINTS

EVERSOURCE ENERGY	NORTHERN
NEW HAMPSHIRE	

SMITH HYDRO
99 GLEN AVENUE, BERLIN, NH
752–1833

DRN.	CHKD.	APPR.		
WNT	KR	CEC	7/10/17	D–7794

/d/021002/038129063

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT B

PROJECT OPERATION

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1.0 EXISTING PROJECT OPERATION

1.1 Project Operations Under Low, Normal and High Flow Conditions

The Project is operated as run-of-river with the impoundment maintained between El 1009.6 feet and El 1009.8 feet. Article 402 of the existing license requires the Licensee to release a minimum flow of 20 cfs or inflow to the bypass reach, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River. Minimum bypass flows are provided through a 15-inch-square orifice in one of the two waste gates.

At river flows below approximately 850 cfs, generation is discontinued and all inflow is passed through the waste gates or via spill.

Under flood conditions, flows more than the plant capacity (3,000 cfs) are first handled by the waste gates. Once partially opened locally, the west waste gate can be operated from remotely by Customized Energy Solutions (CES) located in Philadelphia, Pennsylvania, as needed to pass up to 7,000 cfs. If additional discharge is required, the east waste gate is full opened locally and the west gate is operated remotely to respond to inflow changes. The gates are set to open up to 120 inches (El 1003.0 feet), but can be overridden to open as high as El. 1017.0 feet. The waste gates can handle up to 14,000 cfs (more than normal spring flows). For flows more than 12,000 cfs (14,000 cfs max.), the hinged flashboards in the west spillway section would be lowered. In conjunction with lowering this section of hinged flashboards, the waste gates would be adjusted (lowered) to maintain normal pool levels. If the reservoir were to keep rising, the waste gates would be re-opened and the eastern section of hinged flashboards (Maximum Dam Section) would be lowered.

During this process, the bascule gate next to the intake structure is automatically adjusted by a float actuator to maintain a target pool elevation of 1010.2 (6 inches above normal pool). This gate is sized for the plant design flow of 3,000 cfs to keep the water level the same as when the plant is operating.

The flashboard pins on the spillway section and dam section are designed to fail and release the wooden flashboards at an elevation greater than 1-foot above the boards.

Under extreme high flow conditions, CRP could pull the stanchion gates from the canal wasteway. However, this is not known to have ever occurred.

If there was sufficient advance notice of a flood surge, CRP would attempt to pull the reservoir down to remove the pin-supported flashboards before the flood arrived. CRP is normally aware of impending flood conditions approximately 8 hours before occurring at the Project because of the flood control provided by the Errol Dam, 35 miles upstream, and other upstream storage projects. CRP monitors the headwater at both the Errol and Pontook Projects upstream and is in close contact with the dam operators upstream and downstream of the Project.

The generating unit is normally operated remotely by Customized Energy Solutions (CES) located in Philadelphia, Pennsylvania, although the unit is also capable of local operation. Manual operations and maintenance of the J. Brodie Smith Project are performed by the Upper Hydro Group, which is also responsible for CRPNH's Gorham Project (FERC No. 2288) and Canaan Project (FERC No. 7528) located in northern New Hampshire. Daily logs of pond level, flow, and outages are maintained electronically for the Project.

1.2 Maintenance Operations and Impoundment Drawdowns

During both scheduled and unscheduled maintenance and unit shutdown events, CRP will continue to pass inflow downstream via waste gates and/or via spillage, as necessary. If planned maintenance activities will require impoundment drawdown below normal levels or an interruption in run-of-river operations, CRP will first consult with the applicable state and federal agencies. Drawdowns are occasionally conducted for maintenance at the Project, which typically only occur once-per year for 2-3 days. CRP provides notification to agencies regarding timing, extent, and duration of such drawdowns.

1.3 Proposed Operating Mode

CRP proposes to continue to operate the project as is currently in a run-of-river mode and continue the provision of a 20 cfs continuous minimum discharge into the bypass reach, during the term of the new project license.

2.0 DEPENDABLE CAPACITY AND AVERAGE ANNUAL ENERGY PRODUCTION

2.1 Average Annual Energy Production And Plant Factor

The Project has an average annual energy production of approximately 94,869 megawatt-hours (MWh) per year and an annual plant factor of approximately 79.2 percent based on the capacity of 15.0 megawatts (MW). Table 2.1 provides monthly and annual generation for 2019 through 2021.

The average annual plant factor is determined using the following equation:

$$\frac{94{,}869 \text{ MWh/year}}{15.0 \text{ MW} \times 8{,}760 \text{ hrs/yr}} = 72.2\ \%$$

Table 2.1 Monthly and Annual Generation (MWH) at the J. Brodie Smith Project (January 2019 – December 2021)

	January	February	March	April	May	June	July	August	September	October	November	December	Total
2019	13,406	11,939	8,281	11,674	12,603	9,161	8,091	4,762	2,594	7,312	8,058	8,594	106,476
2020	11,683	11,981	11,872	12,537	12,110	6,622	11,271	5,355	1,94	8,057	6,577	11,204	111,208
2021	12,941	9,341	8,395	8,460	6,304	2,650	3,038	2,659	1,472	1,807	3,671	6,186	66,924
Average	12,677	11,087	9,516	10,890	10,339	6,144	7,467	4,259	2,002	5,725	6,102	8,661	94,869

2.2 Dependable Capacity

Dependable capacity is generally defined as the amount of load a hydroelectric plant can carry under adverse hydrologic conditions during a period of peak demand, for example during the hot, low flow conditions typical of August in the Project area. The dependable capacity ratings (seasonal claimed capacity) as identified in the ISO New England 2021 Capacity, Energy, Loads, and Transmission (CELT) Report are 16.314 MW for the winter and 7.744 MW for the summer.

2.3 Estimated Hydraulic Capacity

The maximum hydraulic capacity of the project is 3,000 cfs and the minimum is 850 cfs.

2.4 Minimum Flows

Article 402 of the existing license requires the Licensee to release a minimum flow of 20 cfs or inflow to the bypass reach, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River. Minimum bypass flows through a 15-inch-square orifice in one of the two waste gates located immediately to the west of the existing flashboard opening. This enables CRPNH to provide the required minimum flow even if the pond were to suddenly drop.

2.5 Flow Data

River flow data for the J. Brodie Smith Project was generated from USGS gage No. 01054000 (Androscoggin River near Gorham, New Hampshire) for the period January 1988 through December 2020; the USGS gage is approximately 2.5 river miles downstream of the J. Brodie Smith Project. Data from the USGS gage were pro-rated by a factor of 0.982 to account for the difference in drainage area between the J. Brodie Smith Project and the gage.

The daily minimum, maximum and average river flows of the Androscoggin River at the J. Brodie Smith Project are estimated to be 766 cfs; 19,550 cfs; and 2.756 cfs, respectively (Table 2.2). The maximum monthly flow typically occurs in April, and the minimum monthly flow is typically in September (Table 2.3). The peak flow (19,619 cfs) occurred on April 1, 1998, and the minimum flow (766 cfs) occurred September 4, 2015. Annual and monthly flow duration curves for the J. Brodie Smith Project are presented in Appendix A.

Table 2.2 New River Flow Statistics Based on USGS StreamStats Data Collection Report for the Station at Androscoggin River near Gorham, New Hampshire (01054000)

Fact	Number
Station Identification	
USGS Station Number	01054000
Station Name	Androscoggin River near Gorham, New Hampshire
Descriptive Information	
Station Type	Streamgage, continuous record
Latitude (degrees NAD83)	44°26'09"
Longitude (degrees NAD83)	71°11'25"
Hydrologic unit code	01040001
County	Coos County
Physical Characteristics	
Contributing Drainage Area	1,361 square miles
Drainage Area	1,361 square miles
Record Stream Flows (prorated from USGS Gage (factor of 0.982))	
Minimum	766 cfs (September 04, 2015)
Maximum	20,505 cfs (April 30, 1923)
General Flow Statistics (prorated from USGS Gage (factor of 0.982))	
Minimum daily flow	766 cfs
Maximum daily flow	19,550 cfs
Average daily streamflow	2.756 cfs

Table 2.3 Daily Flow Statistics Based on the Period of Record 1991-2020 at the USGS Gage at 01054000 and Prorated to the J. Brodie Smith Project

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min	1,228	1,248	1,238	1,248	1,356	1,120	927	1,071	766	1,002	1,120	1,140
Max	6,189	6,828	13,950	19,550	15,915	12,575	10,119	9,824	9,559	14,736	9,824	9,618
Average	2,595	2,720	3,010	4,667	4,045	2,812	2,269	1,923	1,807	2,249	2,507	2,484

2.6 Tailwater Rating Curve

A tailwater rating curve has not been developed for the project because it is operated in a run-of-river mode with relatively stable impoundment and tailwater elevations.

2.7 Area Capacity Curve

The J. Brodie Smith Project is operated as run-of-river and has no useable storage capacity. Therefore, there is no area capacity or rule curve for the project.

2.8 Powerplant Capability versus Head

As a run-of-river facility, the J. Brodie Smith Project operates under relatively constant head conditions, and the generating capability does not vary significantly under normal operating conditions. Therefore, a capacity vs. head curve has never been developed for the project as the normal, maximum, and minimum head for the project are 88 feet, 88 fee, and 87.5 feet, respectively.

2.9 Utilization of Project Power

CRP transmits all power generated at the J. Brodie Smith Project into the regional grid which is sold at market rates.

3.0 PLANS FOR FUTURE DEVELOPMENT

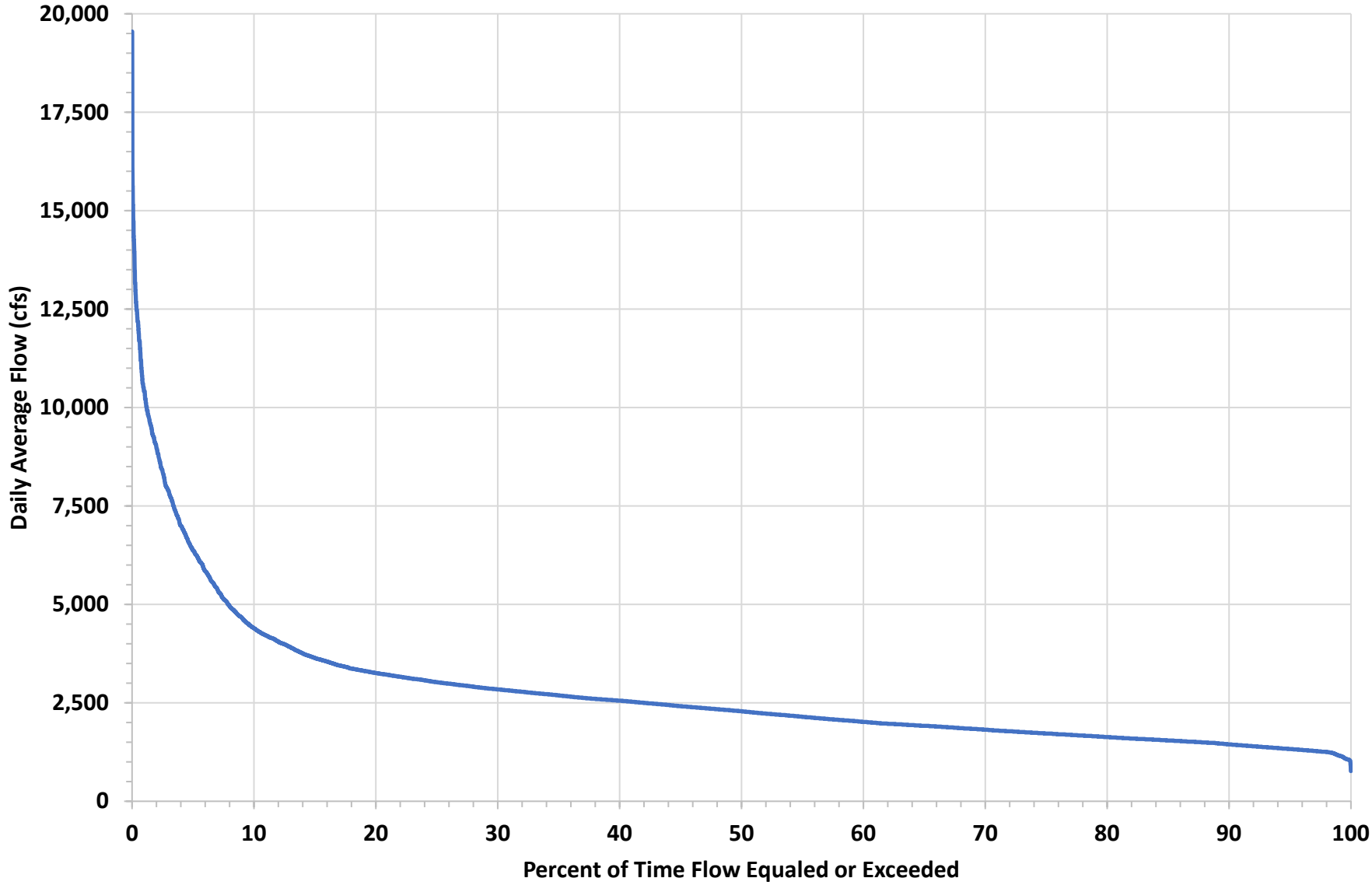
CRP has no plans to alter project operations at this time nor does CRP have any other future development plans at the Project.

APPENDIX A

FLOW DURATION CURVES

Smith Hydroelectric Project - Annual Flow Duration Curve

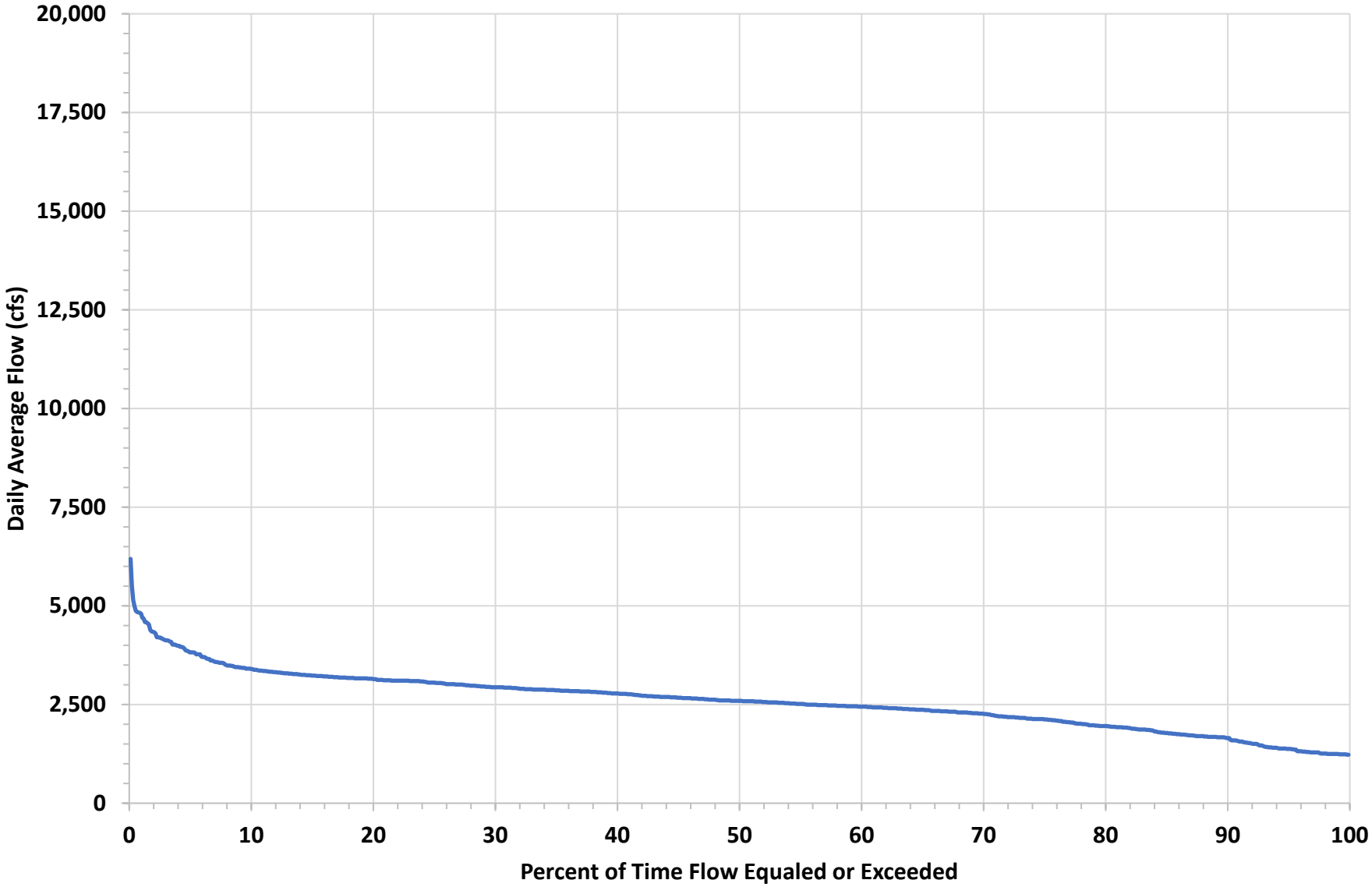
Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH
Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - January Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - February Flow Duration Curve

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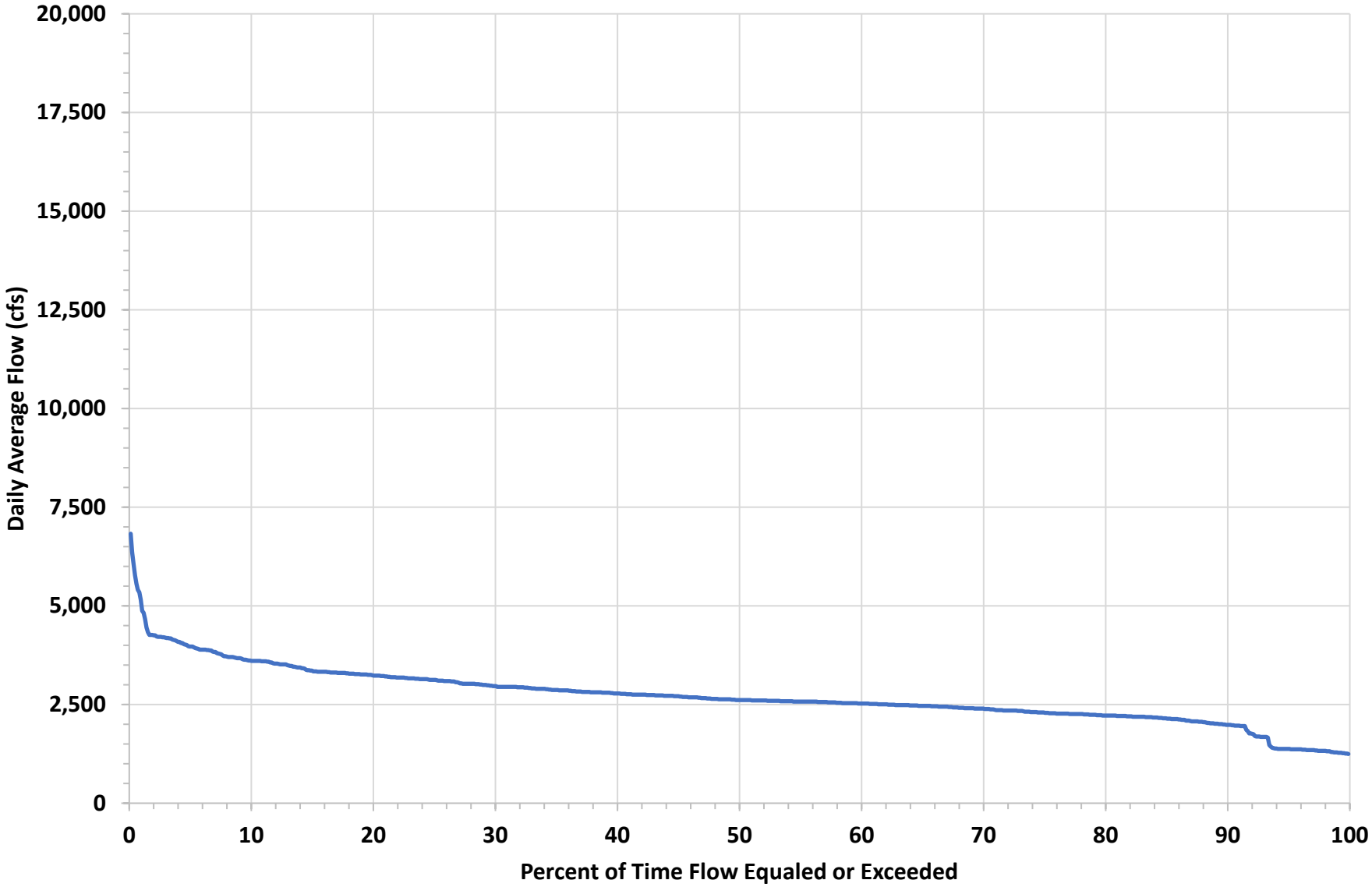
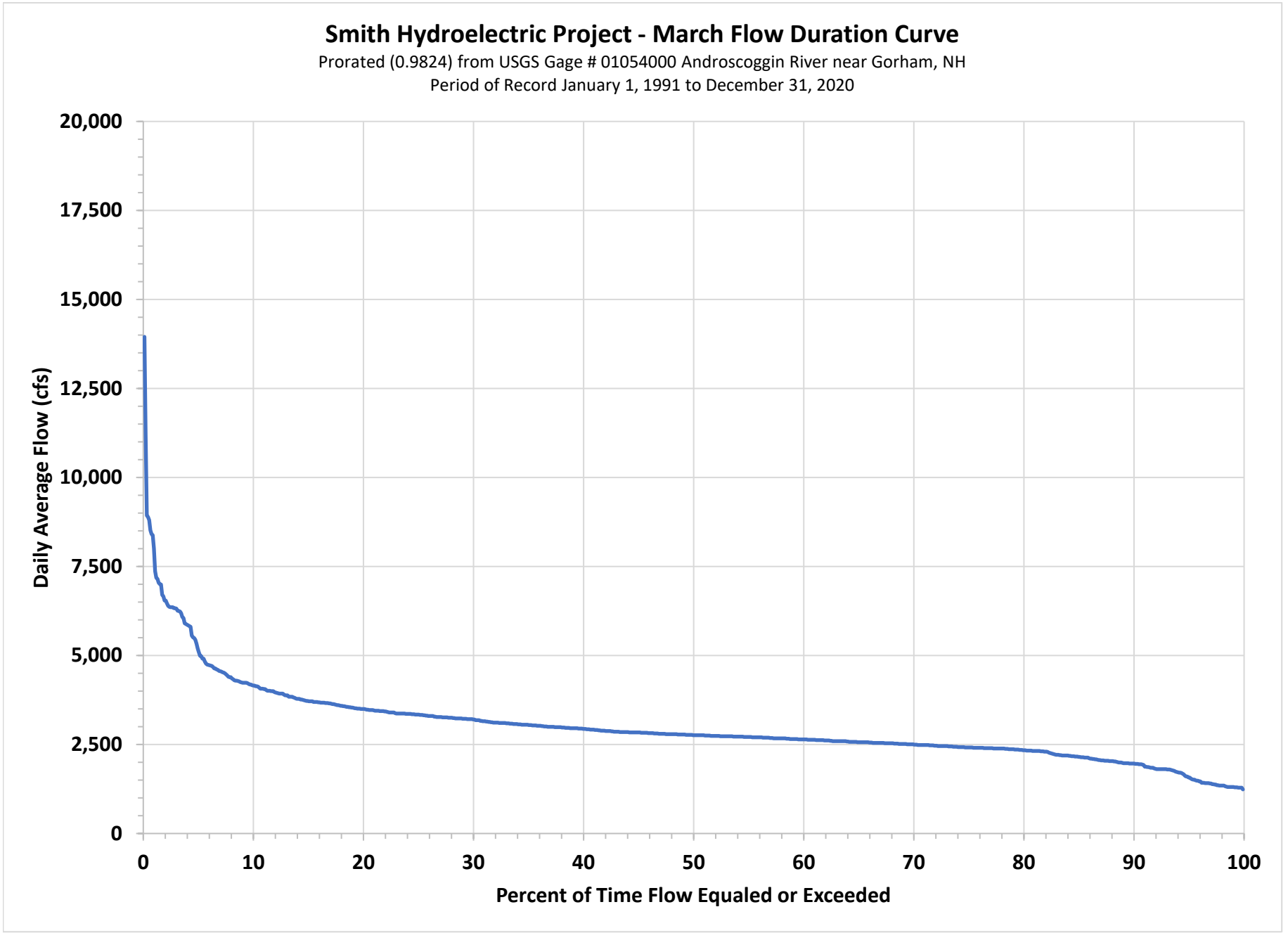
Period of Record January 1, 1991 to December 31, 2020

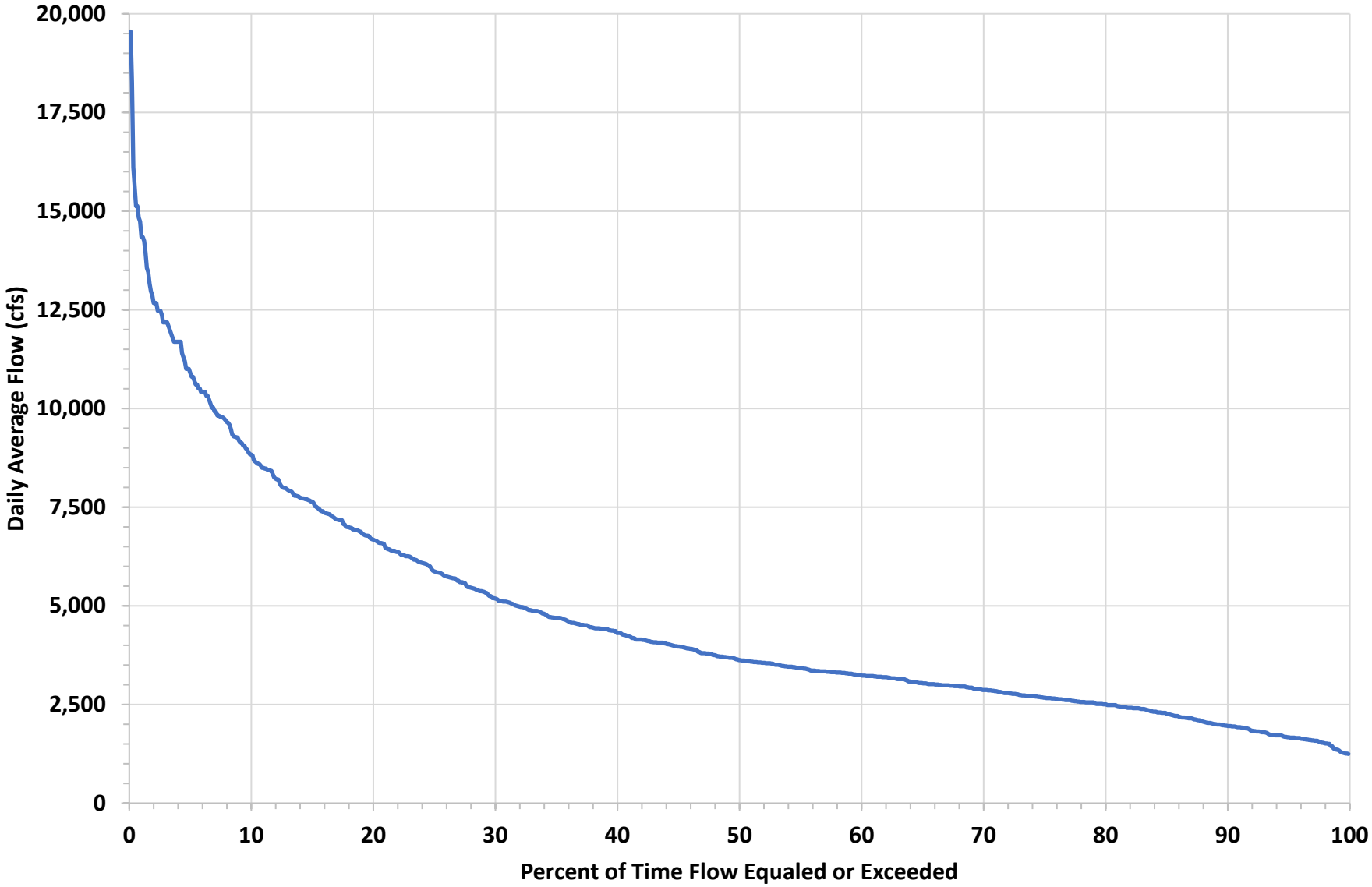



Smith Hydroelectric Project - March Flow Duration Curve
Prorated (0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH
Period of Record January 1, 1991 to December 31, 2020
Daily Average Flow (cfs)
20,000
17,500
15,000
12,500
10,000
7,500
5,000
2,500
0
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Flow Equaled or Exceeded

Smith Hydroelectric Project - April Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - May Flow Duration Curve

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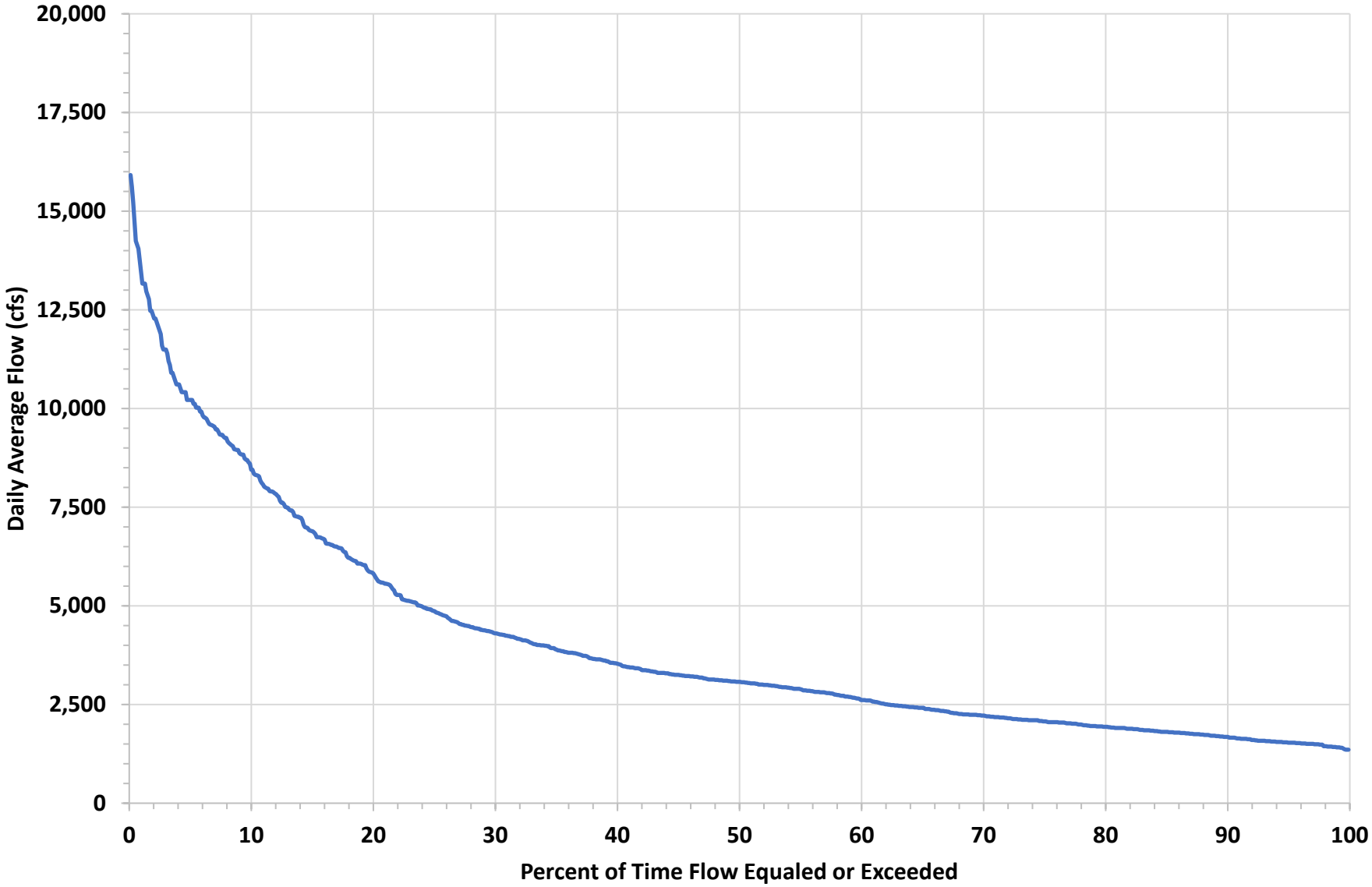
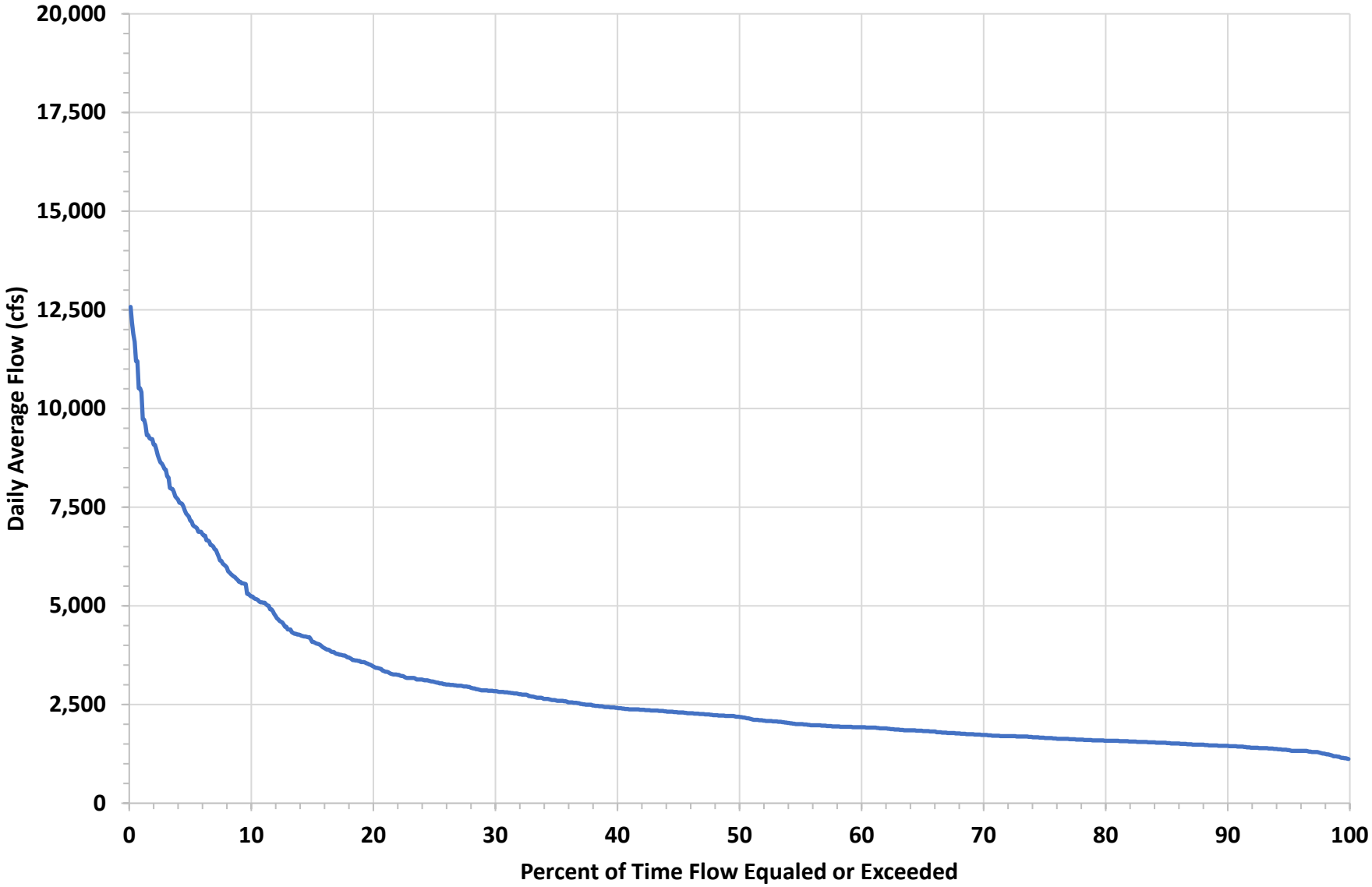
Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - June Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

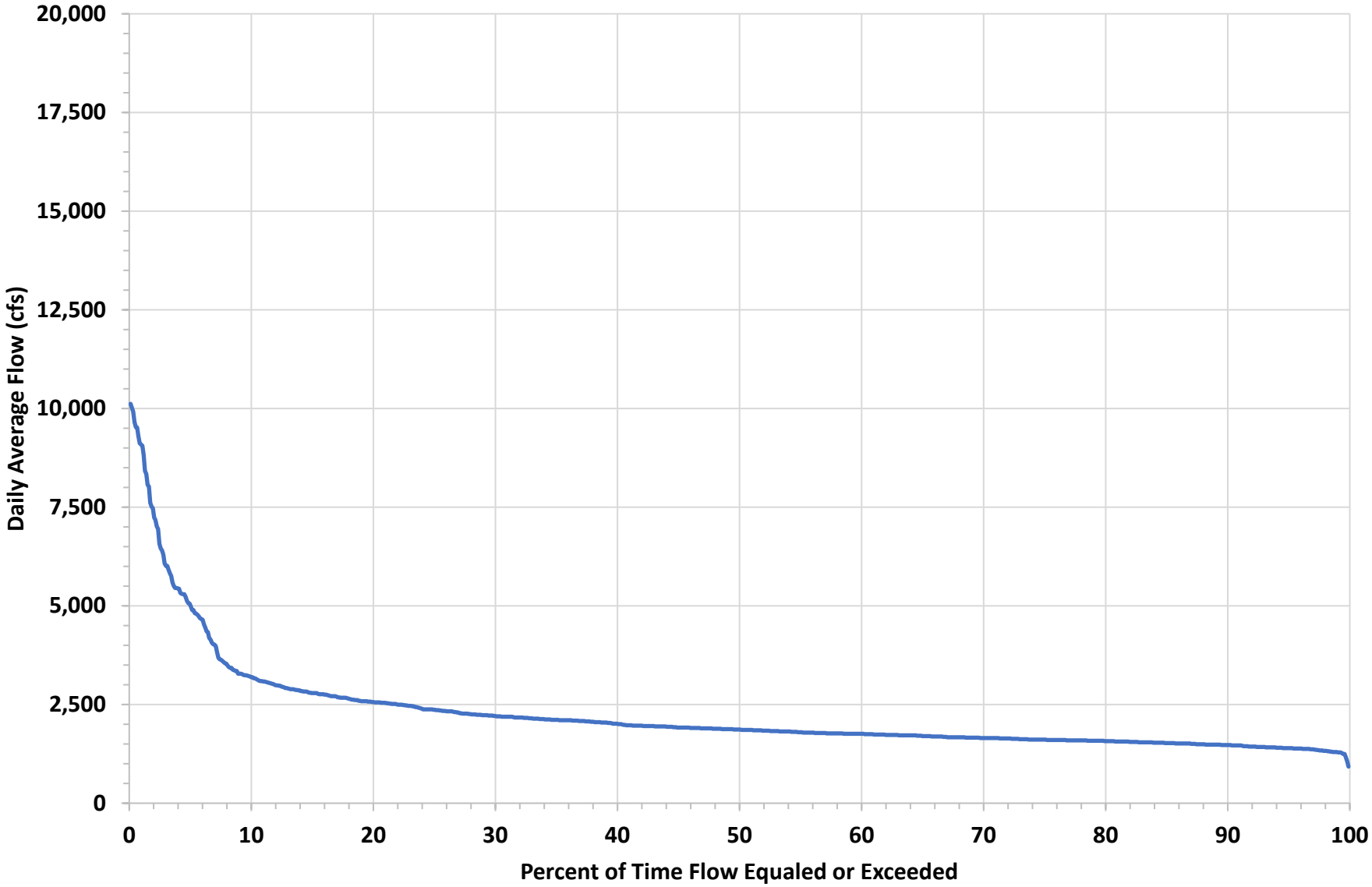
Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - July Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

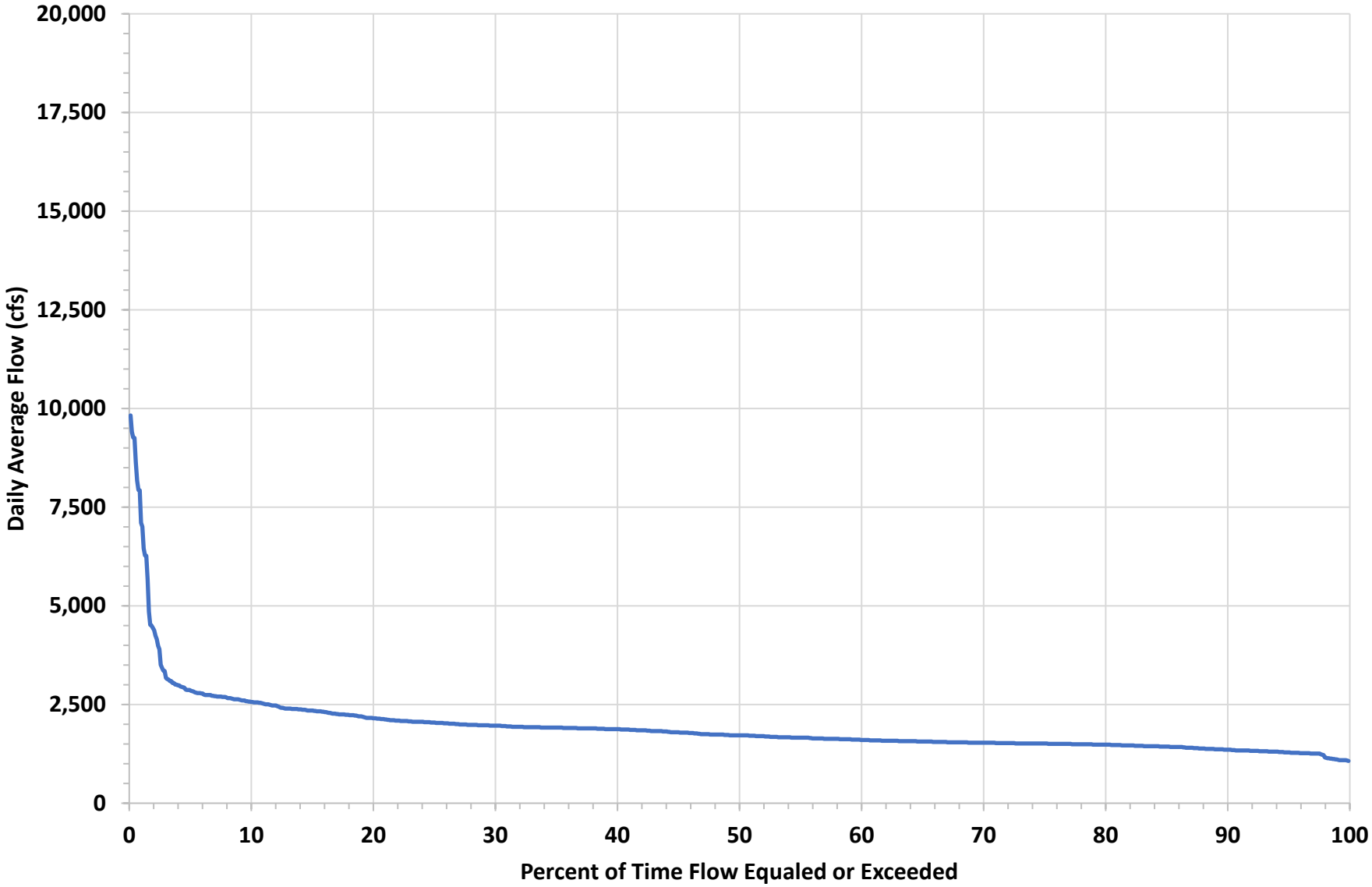
Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - August Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

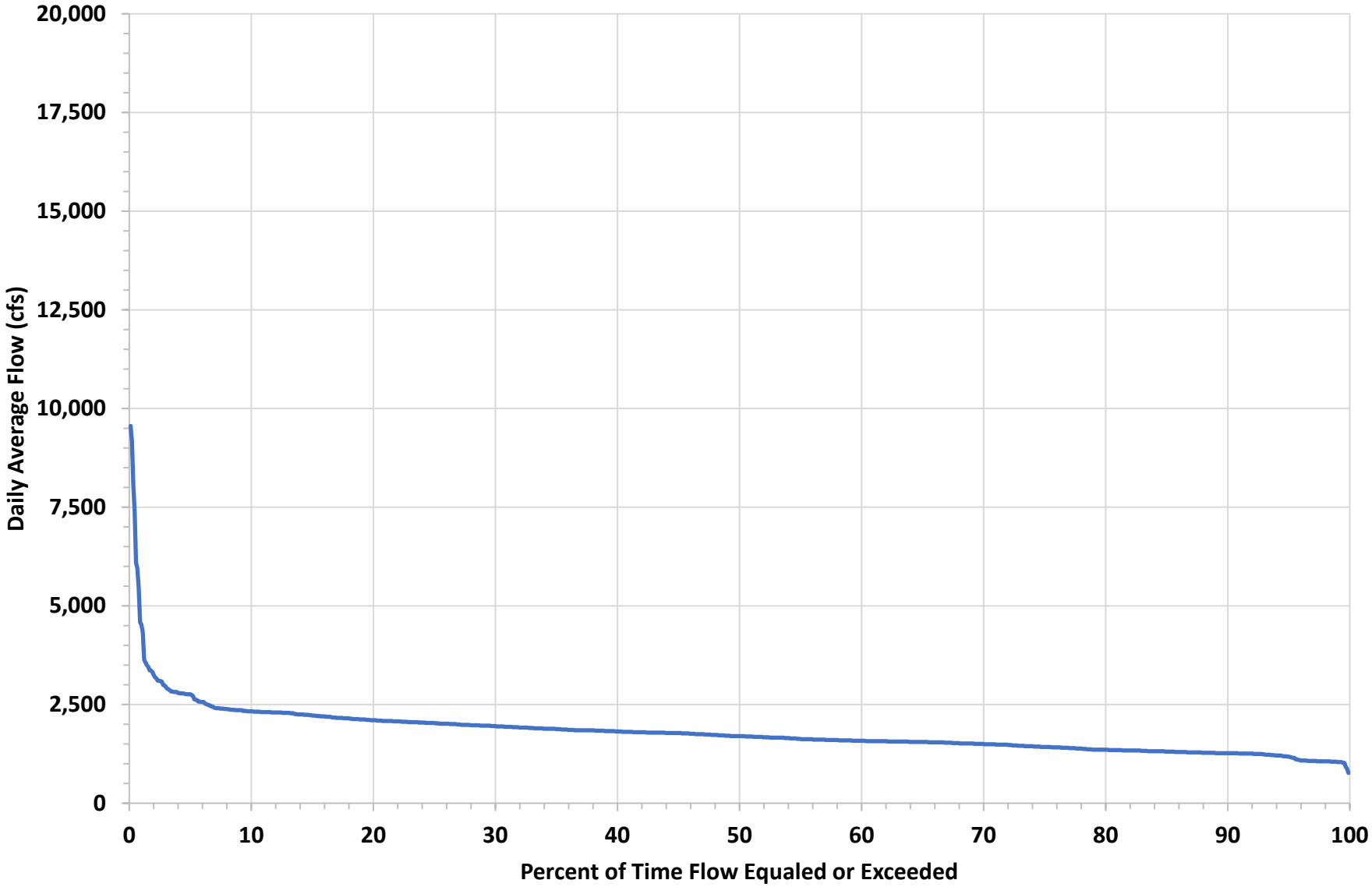
Period of Record January 1, 1991 to December 31, 2020

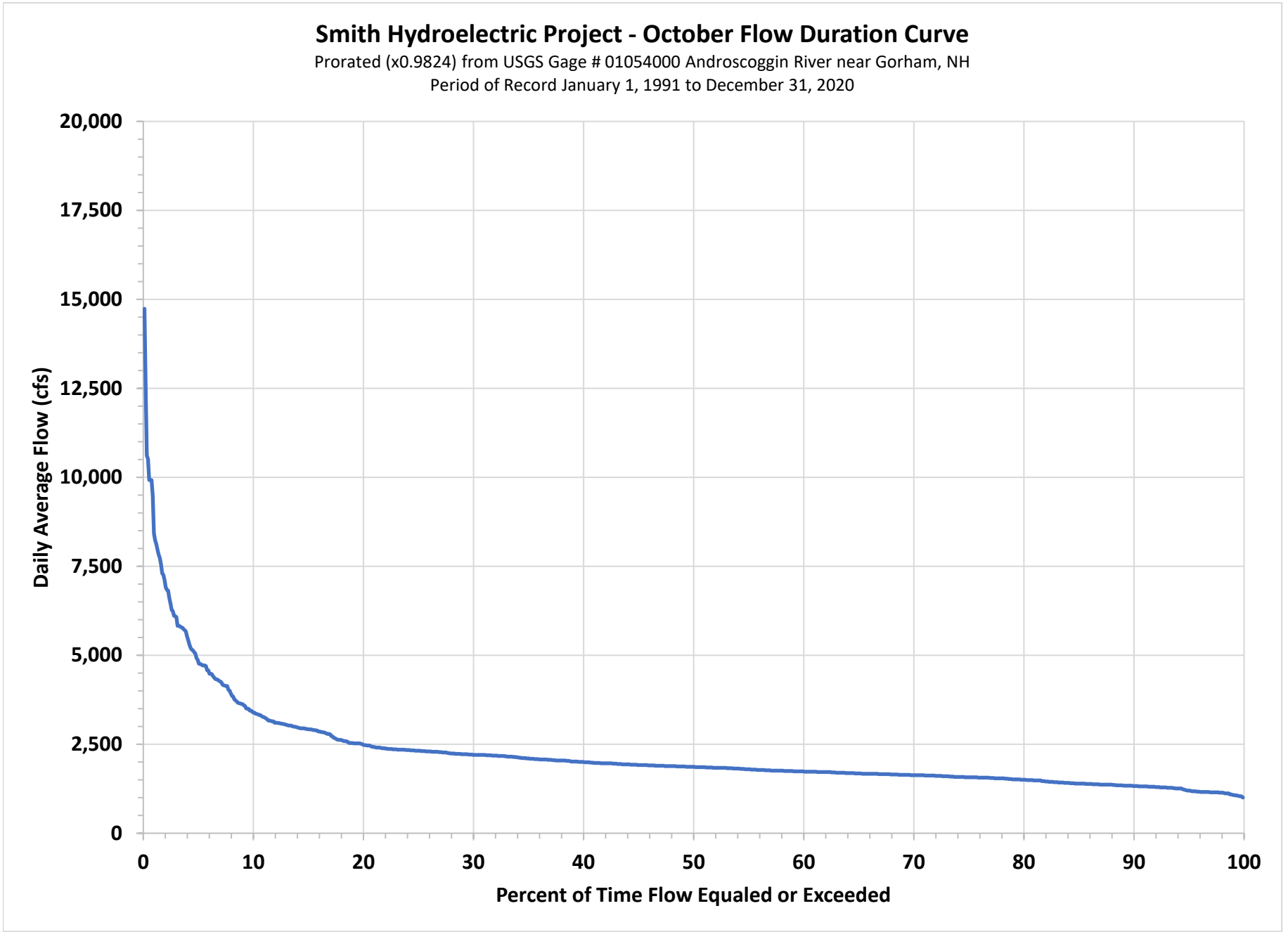


Smith Hydroelectric Project - September Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

Period of Record January 1, 1991 to December 31, 2020

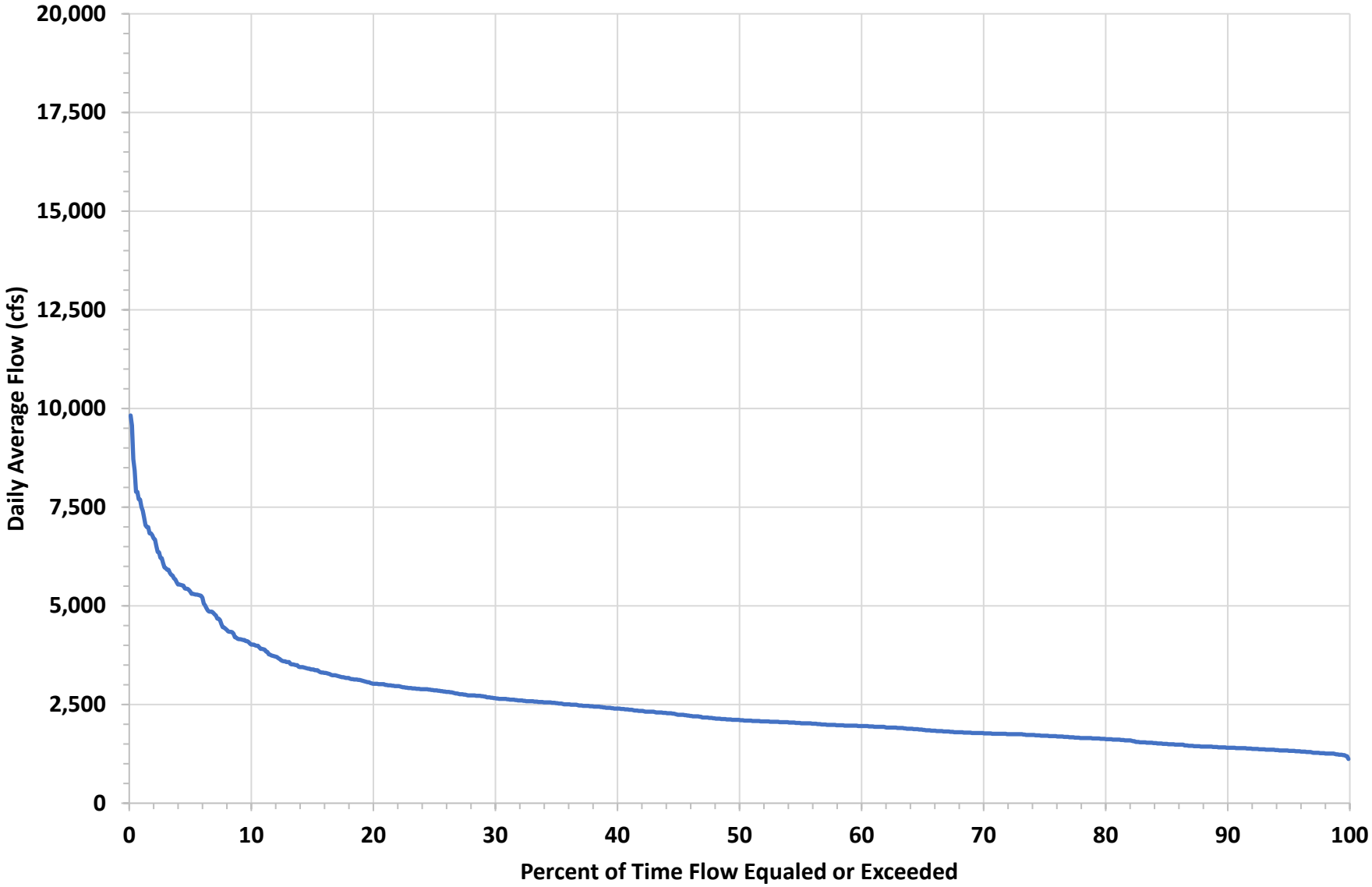



Smith Hydroelectric Project - October Flow Duration Curve
Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH
Period of Record January 1, 1991 to December 31, 2020
Daily Average Flow (cfs)
20,000
17,500
15,000
12,500
10,000
7,500
5,000
2,500
0
0
10
20
30
40
50
60
70
80
90
100
Percent of Time Flow Equaled or Exceeded

Smith Hydroelectric Project - November Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

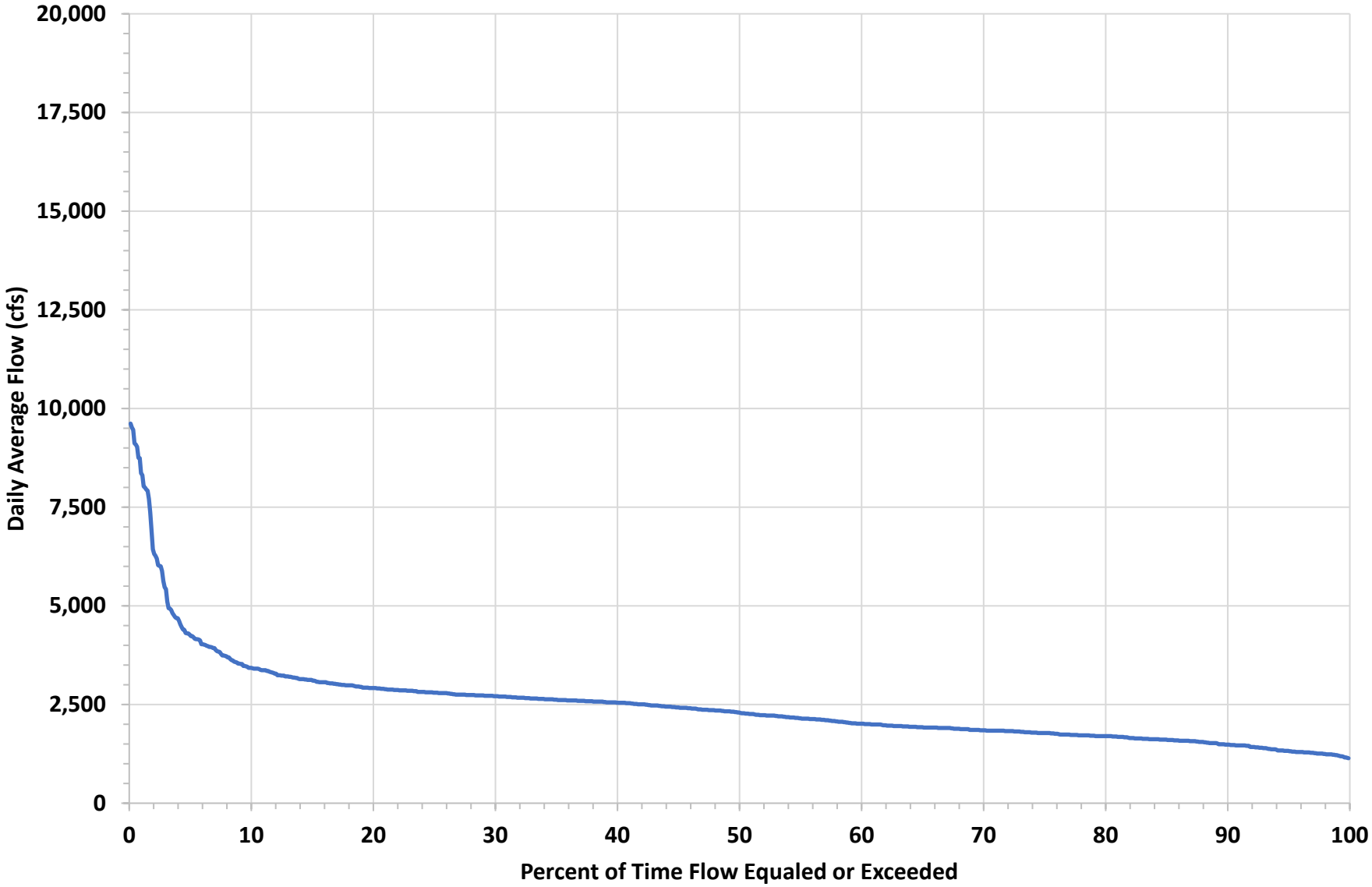
Period of Record January 1, 1991 to December 31, 2020



Smith Hydroelectric Project - December Flow Duration Curve

Prorated (x0.9824) from USGS Gage # 01054000 Androscoggin River near Gorham, NH

Period of Record January 1, 1991 to December 31, 2020



J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT C

CONSTRUCTION HISTORY

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1.0 CONSTRUCTION HISTORY

1.1 Original Construction

Construction of the J. Brodie Smith Project began in 1946 at the site of the former Glen Manufacturing Company, which included a main dam immediately upstream of the Mason Street bridge. The new hydroelectric plant required a new concrete dam that used the alignment of the older Glen canal to serve as the forebay for a new intake gatehouse which controlled the flow of water into a penstock. Downstream of the dam and intake canal, construction of the new powerhouse began in August 1946 while demolition of the Glen Manufacturing Company dam occurred to facilitate construction of the new concrete dam.

The powerhouse superstructure was completed in July 1947, with generating equipment installation being completed in the spring of 1948 and the facility began operations later that year.

1.2 Modification or Additions to the Existing Project

The dam, power canal, intake gates, penstock, surge tank, and powerhouse all are in the original locations and no substantial components of any of the parts of the Project have been altered or removed. There are no new structures being proposed in this application.

2.0 PROJECT SCHEDULE OF NEW DEVELOPMENT

CRP is not proposing any new development (e.g., additional generating units) at the Project in the application for a new license.

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT D

STATEMENT OF COSTS AND FINANCING

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1.0 ORIGINAL COST OF EXISTING UNLICENSED FACILITIES

This section is not applicable to the J. Brodie Smith Hydroelectric Project because CRP NH Smith LLC is not applying for an initial (original) license.

2.0 ESTIMATED AMOUNT PAYABLE UPON TAKEOVER PURSUANT TO SECTION 14 OF THE FEDERAL POWER ACT

Under Section 14(a) of the Federal Power Act (FPA), the federal government may take over any project licensed by the Federal Energy Regulatory Commission (FERC or Commission) upon the expiration of the original license. The Commission may also issue a new license in accordance with Section 15(a) of the FPA. If such a takeover were to occur upon expiration of the current license, the Licensee would have to be reimbursed for the net investment, not to exceed fair value, of the property taken, plus severance damages. To date, no agency or interested party has recommended a federal takeover of the J. Brodie Smith Project pursuant to Section 14 of the FPA.

2.1 Fair Value

The fair value of the Project depends on prevailing power values and license conditions, both of which are currently subject to change. The best approximation of fair value is likely to be the cost to construct and operate a comparable power generating facility. Because of the high capital costs involved with constructing new facilities and the increase in fuel costs associated with operating such new facilities (assuming a fossil-fueled replacement), the fair value would be considerably higher than the net investment amount. If a takeover of the J. Brodie Smith Project were to be proposed, the Licensee would calculate fair value based on then-current conditions.

2.2 Net Investment

The net book investment for the J. Brodie Smith Project is approximately $[*To be included in Final License Application*] as of the end of 2021. Table 2-1 provides original costs, accumulated depreciation, and net investment.

Table 2.1 Data Used to Determine Net Investment in the Gorham Project[1]

	Original Cost ($)	Accumulated Depreciation	Net Investment
Production Plant	[*To be included in Final License Application*]		
Relicensing Costs to Date	$300,000	N/A	$300,000
Total including Relicense Costs	[*To be included in Final License Application*]		

[1] The J. Brodie Smith Hydroelectric Project was purchased as part of the Public Service of New Hampshire (PSNH) portfolio of assets; individual assets were not assigned individual costs at the time of purchase. The costs herein are prorated from the total portfolio costs and are approximations.

2.3 Severance Damages

Severance damages are determined either by the cost of replacing (retiring) equipment that is "dependent for its usefulness upon the continuance of the License" (Section 14, FPA), or the cost of obtaining an amount of power equivalent to that generated by the Project from the least expensive alternative source, plus the capital cost of constructing any facilities that would be needed to transmit the power to the grid, minus the cost savings that would be realized by not operating the Project. These values would be calculated based on power values and license conditions at the time of Project takeover.

3.0 ESTIMATED COST OF NEW DEVELOPMENT

3.1 Land and Water Rights

The Licensee is proposing no expansion of its land or water rights as a consequence of this license application.

3.2 Cost of New Facilities

The Licensee is not proposing any capacity-related developments at the J. Brodie Smith Project at this time.

4.0 ESTIMATED AVERAGE ANNUAL COST OF THE PROJECT

This section describes the approximate annual costs of the Project. The estimated average annual operation and maintenance cost of the Project over the period $[*To be included in Final License Application*]. This estimate includes costs associated with existing project operations and maintenance[1], as well as local property and real estate taxes, but excludes income taxes, depreciation, and costs of financing.

4.1 Capital Costs

Actual capital costs are based on a combination of funding mechanisms that includes stock issues, debt issues, revolving credit lines, and cash from operations.

4.2 Taxes

Property taxes for 2021 were approximately $[*To be included in Final License Application*]. Income taxes for the Project are incorporated into costs of the CRP's consolidated business and are not separated out for the Project.

4.3 Depreciation and Amortization

The annualized composite rate of depreciation for the Project is approximately [*To be included in Final License Application*]%.

4.4 Operation and Maintenance Expenses

The estimated annual operation and maintenance expense at the Project for 2021 was approximately $[*To be included in Final License Application*] including corporate support costs.

4.5 Costs of Proposed Environmental Measures

CRP is proposing no modifications of the existing Project facilities. CRP proposes to continue the existing licensed mode of project operations. CRP proposes the following PMEs to benefit resources in the J. Brodie Smith Project area:

[1] Including major maintenance costs

- Continue to provide minimum flows to the bypass reaches of the Androscoggin River for the protection and enhancement of aquatic resources.
- Continue to operate the Project as a run-of-river facility, which is protective of environmental resources.
- Implement an updated Operations Compliance Plan for the project.
- Continue providing recreational use of the existing Smith Peninsula Park; Details of future recreation management will be developed following completion of the Recreation Use and Facility Assessment in 2022.
- Continued implementation of the existing Cultural Resources Management Plan (CRMP) for continued protection of historic resources.

5.0 ESTIMATED ANNUAL VALUE OF PROJECT POWER

Power generated by the J. Brodie Smith Project is sold to the regional grid at prevailing market rates. The Licensee estimates gross annual energy production of approximately 104,132 megawatt-hours (MWh). The average market clearing price for energy can be estimated based on the ISO New England website.

6.0 SOURCES AND EXTENT OF FINANCING

The Licensee's current financing needs are generated from internal funds. The Licensee is likely to finance major enhancements through earnings retention, equity contributions, and loans made by the corporate parent or some combination of those mechanisms.

7.0 COSTS TO DEVELOP THE LICENSE APPLICATION

Relicensing costs to date are approximately $300,000.

8.0 INCREASE OR DECREASE IN PROJECT GENERATION

No changes to Project operations are proposed. Therefore, there are no anticipated changes to the Project's average annual generation.

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT E

ENVIRONMENTAL REPORT

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LIST OF ACRONYMS

APE	Area of potential effect
ºC	Degrees Celsius
Commission	Federal Energy Regulatory Commission
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CZMA	Coastal Zone Management Act
DLA	Draft. License Application
DO	Dissolved Oxygen
EFH	Essential Fish Habitat
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
FPA	Federal Power Act
ft/s	Feet per second
IPaC	Information for Planning and Conservation
Licensee	CRP NH Smith, LLC or CRP
Magnuson-Stevens Act	Magnuson Fishery Conservation and Management Act
MBI	Midwest Biodiversity Institute
mg/L	Milligrams per liter
MW	Megawatt
NGOs	Non-governmental organizations
NHB	New Hampshire Natural Heritage Bureau
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA Fisheries	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	New River Conservancy
NRHP	National Register of Historic Places
PAD	Pre-Application Document
PME	Protection, mitigation and enhancement
Project	J. Brodie Smith Hydroelectric Project
rpm	Revolutions per minute
RTE	Rare, Threatened and Endangered
USDA	U.S. Department of Agriculture
USFWS	U.S. Department of the Interior Fish and Wildlife Service
USGS	U.S. Geological Survey
WQC	Water Quality Certification

1.0 INTRODUCTION

1.1 Application

Central Rivers Power NH, LLC (CRP or Licensee), is the licensee for the 15-megawatt (MW) J. Brodie Smith Hydroelectric Project (Project) (FERC Project No. 2287). The Project is located on the Androscoggin River in northern New Hampshire within the City of Berlin, Coos County. (Figure 2.1). There are no lands of the United States within the J. Brodie Smith Project boundary. The J. Brodie Smith Project is one of eight hydroelectric projects within an 11-mile reach of the Androscoggin River between Berlin and Shelburne, New Hampshire (FERC 1993). There are four hydroelectric projects within 1.5 miles upstream of the J. Brodie Smith Project; CRP's Gorham Project is approximately 6.5 miles downstream of the J. Brodie Smith Project.

The Federal Energy Regulatory Commission (FERC) issued licenses under the Federal Power Act (FPA) for the Project in 1994. The license for the Project expires on July 31, 2024. CRP is pursuing a new license for the Project under FERC's Integrated Licensing Process (ILP).

The purpose of this Environmental Exhibit is to: (1) describe the existing and proposed project facilities, lands, and waters; (2) describe existing and proposed project operations and maintenance; and (3) provide an analysis of the effects of the proposed relicensing on environmental resources identified during scoping, potentially affected by the relicensing, including the effects of any proposed protection, mitigation, and enhancement (PME) measures for each resource area.

1.2 Purpose of Action and Need for Power

FERC must decide to issue a license for the continued operation of the J. Brodie Smith Project and what conditions, if any, should be included. In addition to power and developmental purposes, FERC must give equal consideration to energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Issuing a license for the Project would allow CRP to generate electricity for the term of a new license. The Project is operated to produce hydroelectric power which is sold to the ISO New England administered market.

1.3 Statutory and Regulatory Requirements

1.3.1 Federal Power Act

Issuance of a new license for the J. Brodie Smith Project is subject to requirements under the FPA and other federal statutes. Requirements applicable to this DLA are summarized below.

1.3.1.1 Section 18 Fishway Prescriptions

Under Section 18 of the FPA, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have the authority to prescribe fishways at federally regulated hydropower projects. As described in Section 3.4, Fish and Aquatic Resources, the J. Brodie Smith Project area is a considerable distance upstream of the natural range of migratory fish species. No upstream or downstream fish passage facilities exist at the Project.

1.3.1.2 Section 4(e) Conditions

Section 4(e) of the FPA requires that any license issued by FERC for a hydroelectric project within a federal reservation shall be subject to and contain such conditions as the Secretary of the responsible federal land management agency deems necessary for the adequate protection and use of the reservation. The J. Brodie Smith Project does not encompass any federal lands; therefore, these conditions do not apply.

1.3.1.3 Section 10(j) Recommendations

Under Section 10(j) of the FPA, FERC must consider recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the J. Brodie Smith Project prior to issuing a new license. FERC will include these conditions in any new license unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law.

1.3.2 Section 401 of the Clean Water Act

Section 401 of the Clean Water Act (CWA) requires CRP to obtain certification from the appropriate state pollution control agency verifying compliance with the CWA or to obtain a waiver of certification. The New Hampshire Department of Environmental Services (NHDES) is the agency responsible for water quality certifications for the J. Brodie Smith

Project. CRP will request water quality certification (WQC) from the NHDES in accordance with 18 CFR §5.23(b) within 60 days of FERC's issuance of notice of acceptance of the FLA and REA.

1.3.3 Endangered Species Act

The Endangered Species Act (ESA) (19 United States Code [USC] § 1536(c)), as amended, provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the USFWS and the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. Section 7 of the ESA requires federal agencies, in consultation with the USFWS or NOAA to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. On September 19, 2019, FERC granted CRP designation as the FERC's non-federal representative for carrying out consultation pursuant to Section 7 of the ESA. No federally listed species are known to occur within the J. Brodie Smith Project area. See additional discussion in Section 3.7, Threatened, Endangered, and Special Status Species.

1.3.4 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the NMFS to describe and identify essential fish habitat (EFH) in federal fishery management plans for commercial species. The Magnuson-Stevens Act requires federal agencies to consult with NMFS when any activity is proposed to be permitted, funded, or undertaken by a federal agency may have adverse effects on designated EFH. The upper Androscoggin River does not have any commercially-managed fish species; therefore, EFH is not designated.

1.3.5 Coastal Zone Management Act

Under Section 307 (c)(3)(A) of the Coastal Zone Management Act (CZMA), FERC cannot issue a license for a hydroelectric project within or affecting a states' coastal zone unless the state's CZMA agency concurs with the applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification. On January 18, 2022,

CRP requested confirmation from the New Hampshire Coastal Program (NHCP) that the J. Brodie Smith Project is not included within the jurisdiction of the NHCP. NHCP confirmed that the Project is outside the New Hampshire coastal zone and the relicensing of the J. Brodie Smith Project by FERC is not subject to CZMA Federal consistency review by the New Hampshire Coastal Program (Appendix A).

1.3.6 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to consider the effect of its undertakings on historic properties. Historic properties are any prehistoric or historic districts, sites, buildings, structures, Traditional Cultural Properties (TCPs), and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 of the NHPA is implemented through the Advisory Council on Historic Preservation (Council regulations "Protection of Historic Properties" (36 CFR Part 800). On September 19, 2019, FERC granted CRP designation as the FERC's non-federal representative for carrying out consultation with the State Historic Preservation Officer, as required by section 106, National Historic Preservation Act, and the implementing regulations of the Advisory Council on Historic Preservation at 36 CFR 800.2.

1.3.7 Wild and Scenic Rivers and Wilderness Acts

Section 7(a) of the Wild and Scenic Rivers Act requires federal agencies to decide whether the operation of a hydroelectric project under a new license would unreasonably diminish the scenic, recreational, or fish and wildlife values present in the designated area. The Wilderness Act of 1964 established a National Wilderness Preservation System. The Androscoggin River within the J. Brodie Smith vicinity is not a nationally designated wild and scenic river or wilderness area.

1.4 Public Review and Consultation

The Commission requires that applicants consult with appropriate resource agencies, tribes, and other entities before filing an application for a new license. Pursuant to 18 CFR § 5.18(b)(5)(G), a distribution list of names and addresses of every federal, state, and interstate resource agency, Native American tribe, and member of the public with which the Licensee consulted in preparation of this Environmental Document is provided in

Appendix A. The following subsections summarize the key relicensing consultation conducted as part of the ILP for the J. Brodie Smith Project.

1.4.1 Scoping

On July 26, 2019, CRP filed Notice of Intent (NOI) and a Pre-application Document (PAD) with FERC to initiate the ILP and consultation with federal and state agencies, tribes, non-governmental organizations (NGOs) and other interested parties (i.e., those on the distribution list, Appendix A). On September 18, 2019, FERC issued notice that the PAD and NOI had been filed, the commencement of the pre-filing process, and requested comments and study requests. FERC issued Scoping Document 1 (SD1) on September 18, 2019, and Scoping Document 2 (SD2) on January 20, 2020. On October 22 and 23, 2019, FERC held agency and public scoping meetings for the J. Brodie Smith Project. Comments on the PAD and study requests were due on November 23, 2019.

1.4.2 Relicensing Studies

On January 7, 2020, CRP filed a Proposed Study Plan (PSP) with FERC and provided notification of the filing to agencies and stakeholders. On February 6, 2020, pursuant to 18 CFR 5.11(e), GLHA held a PSP meeting to clarify the intent and contents of the PSP and identify any outstanding issues with respect to the PSP. Comments on the PSP were due to FERC within 90 days of filing the PSP, on or before April 6, 2020.

On May 6, 2020, CRP filed a Revised Study Plan (RSP), and provided notification of the filing to agencies and stakeholders. On May 29, 2020, FERC issued the Study Plan Determination (SPD) approving six studies RSP. CRP successfully completed five studies, and one study – the recreation study – is ongoing. The results of these studies were provided in the Initial Study Report (ISR) or will be provided in the Updated Study Report (USR) (Table 1.1).

Table 1.1 List of Studies and Study Status

Study Report	Status
Water Quality and Bypass Reach Aquatic Habitat Study	Complete, water quality results in ISR, bypass reach aquatic habitat results will be provided in USR
Botanical Resources Study	Complete, results in ISR
Historic Architectural Survey	Complete, results in ISR
Freshwater Mussel Survey	Complete, results in ISR

Study Report	Status
Desktop Impingement and Entrainment Study	Complete, results in ISR
Recreation Use and Facility Assessment Study	Ongoing through 2022

In accordance with 18 CFR § 5.15(c), CRP filed the ISR on June 7, 2021, and provided notification to agencies and stakeholders. CRP held the ISR meeting on June 22, 2021, and filed an ISR meeting summary with the FERC on July 7, 2021. Comments on the ISR were filed by FERC, the USFWS, and NHDES.

1.5 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act was originally enacted in 1940 (16 U.S.C 668-668d) to protect eagles from human-induced alterations and human interactions. As defined in 50 C.F.R, Part 22, permits are required for the "taking" (meaning to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb), possession, and transportation with the United States of bald eagles and golden eagles and their parts, nests, and eggs. Although bald eagles have been observed at the Project, the Licensee knows of no eagle nests within the Project boundary, and eagles were not raised as a resource issue of concern during consultation.

1.6 Federal Lands

There are no federal lands within the Project boundary.

1.7 References

Federal Energy Regulatory Commission (FERC). 1993. Final Environmental Impact Statement. Relicensing Seven Existing Projects in the Upper Androscoggin River Basin (FERC 2422-004, 2287-003, 2326-002, 2327-002, 2322-001, 2288-004, 2300-002).

USEPA 2021. United States Environmental Protection Agency (USEPA). 2021. 2020 Clean Water Act Section 401 Certification Rule. [Online] https://www.epa.gov/cwa-401/2020-clean-water-act-section-401-certification-rule-0. Accessed February 15, 2022.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 No Action Alternative

The No-Action Alternative is to continue to operate and maintain the J. Brodie Smith Project under the terms and conditions of the current license. No new PME measures would be implemented and the current facilities, Project boundary, and operations would be maintained. The No-Action Alternative represents the baseline to which energy production and environmental conditions are compared to other alternatives. Because the Licensee is proposing no changes to the operation of the Project and facilities, the effects of the No-Action alternative are essentially identical to the effects of the proposed relicensing for each individual resource issue described in the Section 4.0, with the exception of proposed PME measures.

2.1.1 Existing Project Facilities

The J. Brodie Smith Project consists of a U-shaped dam, an impoundment with a surface area of approximately 8 acres, a spillway, a power canal, a penstock with surge tank, a powerhouse containing one generating unit, a primary transmission line, and appurtenant facilities.

Exhibit A, *Project Description,* provides additional details about the existing J. Brodie Smith Project facilities.

2.1.2 Project Safety

Exhibit H provides additional details regarding CRP's safety programs.

2.1.3 Existing Project Operations

The Project is operated as run-of-river with minimal impoundment fluctuations. Article 402 of the existing license requires the Licensee to release a minimum flow of 20 cfs or inflow to the bypass reach, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River. The generating unit is normally operated remotely by Customized Energy Solutions (CES) located in Philadelphia, Pennsylvania, although the unit is also capable of local operation. Manual operations and maintenance of the J. Brodie Smith Project are performed by the

Upper Hydro Group, which is also responsible for CRP's Gorham Project (FERC No. 2288), downstream on the Androscoggin River and the Canaan Project (FERC No. 7528) located in northern New Hampshire on the Connecticut River. Daily logs of pond level, flow, and outages are maintained electronically for the Project. Minimum bypass flows through a 15-inch-square orifice in one of the two waste gates located immediately to the west of the existing flashboard opening. This enables CRP NH to provide the required minimum flow even if the pond were to suddenly drop.

2.1.4 Existing Environmental Measures

Under the current license, CRP provides the following PME measures:

- Operates the Project as run-of-river, which results in stable headpond and river flow levels and is therefore protective of environmental resources.
- Releases a minimum flow of 20 cfs or inflow to the project bypassed reach, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River.
- Provide public access to project reaches.
- Operate and maintain all project recreational facilities.
- Implement the provisions of the Programmatic Agreement among the FERC, the Advisory Council of Historic Preservation, and the New Hampshire Division of Historic Preservation, including the J. Brodie Smith Project.

2.2 Applicants Proposed Action

2.2.1 Proposed Project Facilities and Operations

CRP is proposing no modifications of the existing Project facilities. No changes of these facilities that are outside normal maintenance practices or FERC's safety requirements are proposed. CRP proposes to continue the existing licensed mode of project operations. CRP is not proposing any changes to facilities or operations that would affect resources, and as such, for the purposes of the DLA, the No-Action Alternative is the same as the Proposed Action. See additional description of proposed measures in Section 2.2.2, Proposed Environmental Measures.

2.2.2 Proposed Environmental Measures

CRP proposes the following PMEs to benefit resources in the J. Brodie Smith Project area:

- Continue to provide minimum flows to the bypass reaches of the Androscoggin River for the protection and enhancement of aquatic resources.
- Continue to operate the Project as a run-of-river facility, which is protective of environmental resources.
- Implement an updated Operations Compliance Plan for the project.
- Continue providing recreational use of the existing Smith Peninsula Park; Details of future recreation management will be developed following completion of the Recreation Use and Facility Assessment in 2022.
- Continue implementation of the existing Cultural Resources Management Plan (CRMP) for continued protection of historic resources.

2.3 Alternatives Considered but Eliminated from Further Analysis

2.3.1 Federal Government Takeover of the Project

No party has suggested that federal takeover of the Project would be appropriate, and no federal agency has expressed an interest in operating the Project. Federal takeover of the Project would require congressional approval. Moreover, there is no evidence that indicates a federal takeover should be recommended to Congress. Thus, the federal takeover of the Project is not a reasonable alternative and has not been considered in this analysis.

2.3.2 Issuing a Non-Power License

A non-power license is not a reasonable alternative to a new license with continuing PME measures and has not been considered in this analysis. A non-power license has not been sought by any party. As such, there is no basis for concluding that the J. Brodie Smith Project should no longer be used to produce power.

2.3.3 Decommissioning the J. Brodie Smith Project

The J. Brodie Smith Project provides a viable, safe, and clean renewable source of power to the region, and it provides recreational opportunities to the public. If the J. Brodie Smith Project were decommissioned, its contribution to renewable energy and recreation would cease. Decommissioning or license denial is not a reasonable alternative and has not been considered in this analysis.

2.4 Existing Project Boundary

The existing FERC project boundary for the J. Brodie Smith Project is shown in Figure 2.1. CRP is proposing no changes to the existing project boundary.

Figure 2.1 J. Brodie Smith Project Boundary

3.0 ENVIRONMENTAL ANALYSIS

3.1 General Description of the River Basin

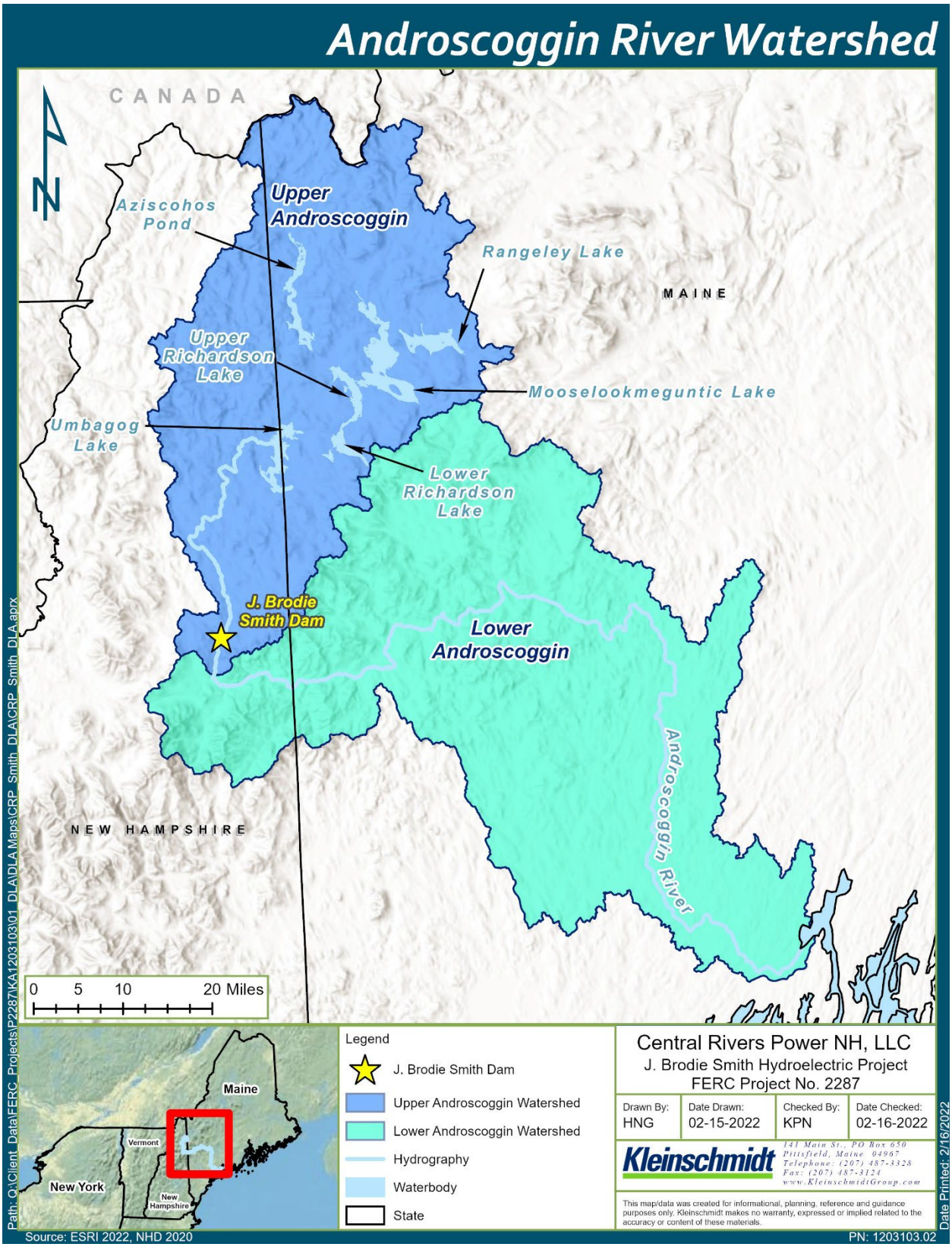
3.1.1 River Basin Overview

The Androscoggin River begins in northwestern Maine at Umbagog Lake, crosses into northern New Hampshire, then re-enters Maine near Bethel, eventually joining the Kennebec River at Merrymeeting Bay in coastal Maine (Figure 3.1). The Androscoggin River drops 1000-feet from its headwaters to the Atlantic Ocean, with an average descent of 8-feet per mile. The watershed has a total drainage area of 3,450-square-miles, with 720-square-miles of drainage in New Hampshire (Maine Rivers 2022). The watershed can be broken into two sections, the upper and lower Androscoggin River watersheds. The Project is within the upper Androscoggin River watershed (Figure 3.1). The J. Brodie Smith Project is one of eight hydroelectric projects within an 11-mile-long, high gradient reach of the river between Berlin and Shelburne, New Hampshire, with concentrated hydropower development. The river gradient from the most upstream project, GLHA's Sawmill and the most downstream project, GLHA's Shelburne is approximately 30 feet per mile, which provides excellent conditions for hydroelectric power generation. The drainage area at the J. Brodie Smith Project is approximately 1,337 square miles. Important tributaries in the Project area include the Dead River, which joins the Androscoggin River approximately 1,500 feet downstream of the dam in the bypassed reach of the J. Brodie Smith Project, and Stearns Brook which enters the Androscoggin River approximately six miles upstream of the project in Milan, NH.

3.1.2 Major Land and Water Uses

The J. Brodie Smith Project is surrounded by development on both the east and west. There is a small portion of land between the bypassed reach and penstock that is developed with walking trails and tree growth.

The Androscoggin River near the J. Brodie Smith Project is used for hydropower generation, wastewater assimilation, recreation, wildlife and aquatic habitat, and flood control.


Androscoggin River Watershed
CANADA
MAINE
NEW HAMPSHIRE
Aziscohos Pond
Upper Androscoggin
Rangeley Lake
Upper Richardson Lake
Mooselookmeguntic Lake
Umbagog Lake
Lower Richardson Lake
J. Brodie Smith Dam
Lower Androscoggin
Androscoggin River
0 5 10 20 Miles
Maine
Vermont
New York
New Hampshire
Legend
J. Brodie Smith Dam
Upper Androscoggin Watershed
Lower Androscoggin Watershed
Hydrography
Waterbody
State
Central Rivers Power NH, LLC
J. Brodie Smith Hydroelectric Project
FERC Project No. 2287
Drawn By: HNG
Date Drawn: 02-15-2022
Checked By: KPN
Date Checked: 02-16-2022
Kleinschmidt
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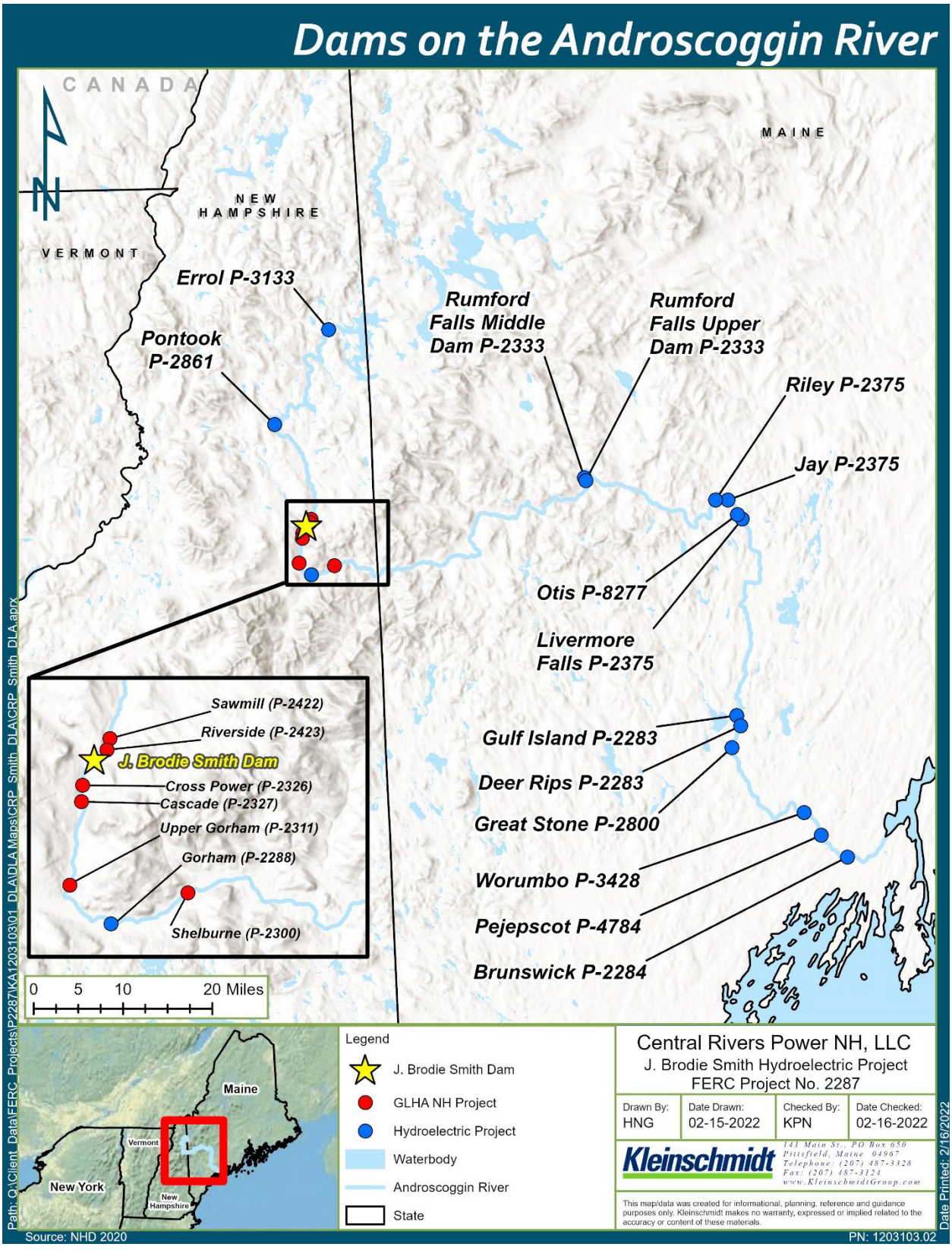
Date Printed: 2/16/2022

3.1.3 Dams Within the Basin

The Androscoggin River Basin contains over 200 dams, most of which are on various tributaries to the mainstem. Figure 3.2 provides a list of dams on the mainstem from Errol, New Hampshire, to Brunswick, Maine. Additional storage reservoirs and dams exist upstream of Errol, including Mahaney, Kennebago Falls, Rangeley, Upper Dam, Middle Dam, and Aziscohos.


Dams on the Androscoggin River
CANADA
MAINE
NEW HAMPSHIRE
VERMONT
Errol P-3133
Pontook P-2861
Rumford Falls Middle Dam P-2333
Rumford Falls Upper Dam P-2333
Riley P-2375
Jay P-2375
Otis P-8277
Livermore Falls P-2375
Gulf Island P-2283
Deer Rips P-2283
Great Stone P-2800
Worumbo P-3428
Pejepscot P-4784
Brunswick P-2284
Sawmill (P-2422)
Riverside (P-2423)
J. Brodie Smith Dam
Cross Power (P-2326)
Cascade (P-2327)
Upper Gorham (P-2311)
Gorham (P-2288)
Shelburne (P-2300)
0 5 10 20 Miles
Maine
Vermont
New York
New Hampshire
Legend
J. Brodie Smith Dam
GLHA NH Project
Hydroelectric Project
Waterbody
Androscoggin River
State
Central Rivers Power NH, LLC
J. Brodie Smith Hydroelectric Project
FERC Project No. 2287
Drawn By: HNG
Date Drawn: 02-15-2022
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3.1.4 Tributary Rivers and Streams

Principal tributaries to the Androscoggin River include: Dead River, which joins the Androscoggin River in Berlin, New Hampshire; the Moose River, which enters the Androscoggin River approximately 1.3-river-miles upstream of the Gorham Project; and the Peabody River, which enters the Androscoggin River approximately 1,000 feet downstream of the Gorham Project powerhouse (FERC No. 2288).

3.1.5 Climate

The Project region experiences mild, relatively humid summers and cold winters with moderate snowfall in the lower elevations. Average July air temperatures in the Project vicinity range from a daily average maximum of 78°F to a daily average minimum of 55°F. The daily average maximum air temperature for January is approximately 26°F while the daily average minimum air temperature for January is 5°F. The average annual total precipitation is 41.57 inches with an average annual snowfall of 78 inches (US Climate Data, 2022).

3.1.6 References

Maine Rivers. 2022. Androscoggin Watershed. [Online] https://mainerivers.org/watershed-profiles/androscoggin-watershed/. Accessed January 27, 2022.

U.S. Climate Data. 2022. Climate Data, Berlin, Maine. [Online] https://www.usclimatedata.com/climate/berlin/new-hampshire/united-states/usnh0020. Accessed January 27, 2022.

3.2 Geologic and Soil Resources

3.2.1 Affected Environment

New Hampshire is located in the New England physiographic province. This province is mountainous and contains highly deformed metamorphic rocks from the Precambrian and Paleozoic eras; the J. Brodie Smith Project area is in the part of the province made up of Paleozoic sedimentary and metasedimentary rocks (NPS 2018). The J. Brodie Smith Project is located in the White Mountains section of the New England physiographic province in northeast New Hampshire. The Androscoggin River valley was formed during the end of the last ice age, approximately 12,000 to- 15,000 years ago. The landscape was carved out by the melting and retreat of great massive glaciers that once covered the area. During this process the Androscoggin River channel formed leaving behind broad areas of rich alluvial soil along the riverbanks. The Androscoggin River valley is known for its rich, productive farmlands (Bethel Historical Society 2022).

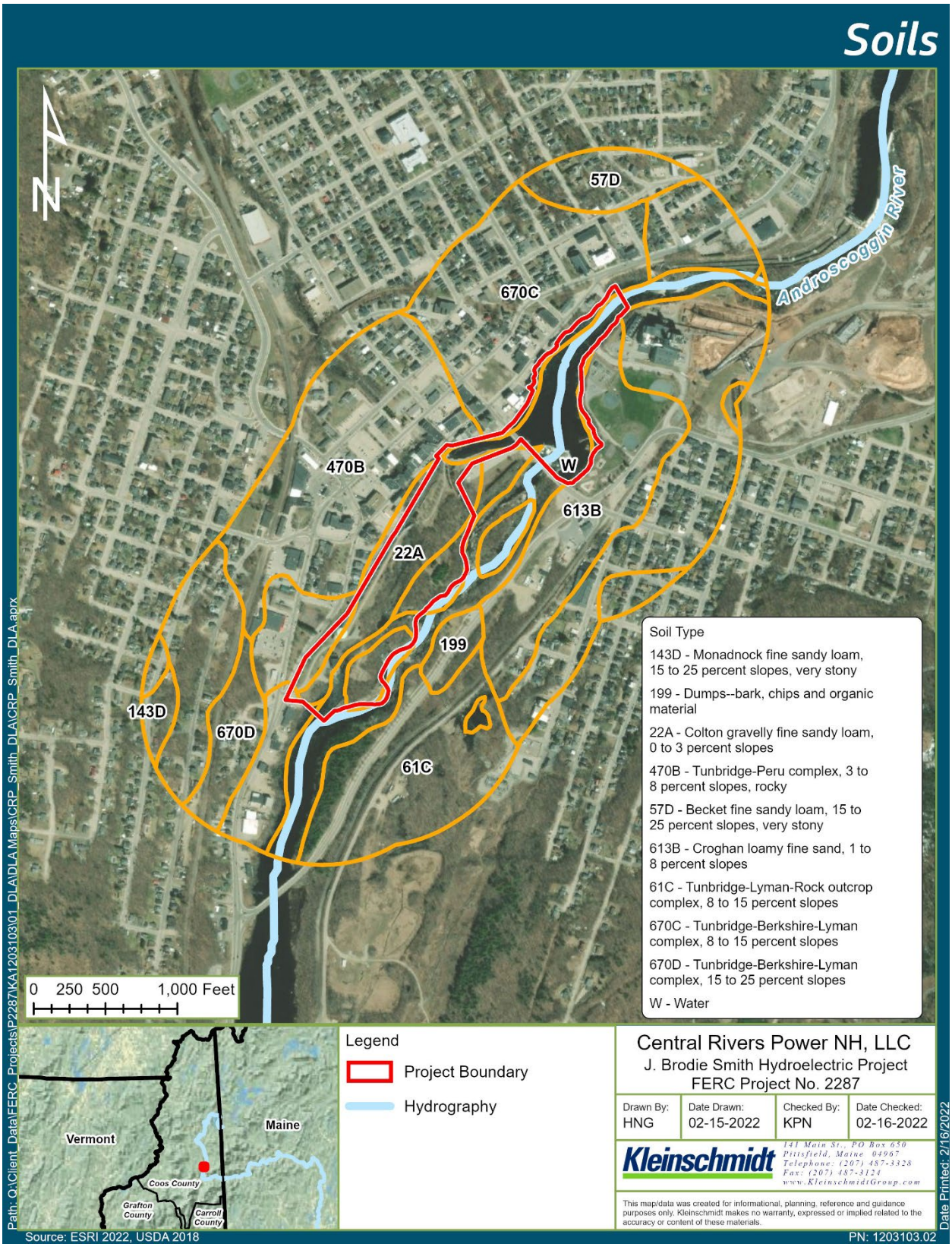
Bedrock Geology

The White Mountain section of the New England physiographic province is mainly comprised of Silurian and Devonian phyllite and schist, as well as Ordovician, Silurian, and Devonian intrusive igneous rocks. Most of the Project boundary occurs in the Littleton Formation, which is part of the Central Maine Composite Terrane and consists of sedimentary and volcanic rocks. It is the most widespread geologic formation in New Hampshire, and it extends from Massachusetts to Maine in a north-northeasterly direction. The primary rock type in this geological unit is metasedimentary rock, and the secondary rock type is metavolcanic rock. This geologic unit is fossiliferous in the western part of New Hampshire; the J. Brodie Smith Project occurs in the eastern part of the state, making it less likely for fossils to be found there (Billings 1980; USGS 2018).

The lithology of the Littleton Formation is particularly complex. The formation was originally composed primarily of argillaceous and arenaceous sediments but also contained beds of other rocks, including volcanics, quartzites, and impure dolomites. The formation possesses a large range in grade of metamorphism. Even locally within the formation there is wide variation between metamorphosed sedimentary rocks and plutonic rocks (Billings 1980).

Soils

The J. Brodie Smith Project area is made up of approximately 34.4 percent of Colton gravelly fine sandy loam with 0 to 3 percent slopes. The typical profile of this type of soil consists of the first horizon, 0 to 6 inches, being gravelly fine sandy loam; the second horizon, 6 to 18 inches, being stratified very gravelly sandy loam; and the third horizon, 18 to 65 inches, being extremely gravelly coarse sand. This soil type has a high capacity to transmit water, with no frequency of flooding or ponding. The map below shows the distribution of soil type in and 1000 feet around the Project boundary.


Soils
N
57D
Androscoggin River
670C
470B
W
613B
22A
199
143D
670D
61C
0 250 500 1,000 Feet
Soil Type
143D - Monadnock fine sandy loam, 15 to 25 percent slopes, very stony
199 - Dumps--bark, chips and organic material
22A - Colton gravelly fine sandy loam, 0 to 3 percent slopes
470B - Tunbridge-Peru complex, 3 to 8 percent slopes, rocky
57D - Becket fine sandy loam, 15 to 25 percent slopes, very stony
613B - Croghan loamy fine sand, 1 to 8 percent slopes
61C - Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes
670C - Tunbridge-Berkshire-Lyman complex, 8 to 15 percent slopes
670D - Tunbridge-Berkshire-Lyman complex, 15 to 25 percent slopes
W - Water
Vermont
Maine
Coos County
Grafton County
Carroll County
Legend
Project Boundary
Hydrography
Central Rivers Power NH, LLC
J. Brodie Smith Hydroelectric Project
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Date Printed: 2/16/2022

Table 3.1 Soils in the Project Area

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
22A	Colton gravelly fine sandy loam, 0 to 3 percent slopes	10.9	34.4%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	2.9	9.0%
470B	Tunbridge-Peru complex, 3 to 8 percent slopes,	3.6	11.4%
613B	Croghan loamy fine sand, 1 to 8 percent slopes	0.1	0.3%
670C	Tunbridge-Berkshire-Lyman complex, 8 to 15 percent slopes	2.6	8.3%
W	Water	11.6	36.5%
Totals for Area of Interest		**31.8**	**100.0%**

Source: USDA 2018

Reservoir Shoreline and Stream Banks and Erosion

The major soil types along the northern shoreline of the J. Brodie Smith project boundary are Colton gravelly fine sandy loam, Tunbridge-Lyman-Rock outcrop complex, and Tunbridge-Peru complex (Table 3.1, Figure 3.3). These soils range from being moderately well drained to excessively drained.

On August 1, 1995, PSNH (previous Project owner) filed a land Protection plan pursuant to Article 409 and in consultation with the City of Berlin, New Hampshire Fish and Game Department, and the National Park Service. On January 8, 1998, FERC modified and approved the plan (82 FERC ¶ 62,005).

All of the roughly 28 acres covered by article 409 is owned by the licensee and already in the project boundary. The licensee must already obtain Commission approval of any significant uses of this land in accordance with standard license conditions.

The licensee's proposed land protection plan recognizes that of the 28 acres, a little more than half is within 250 feet of the river's ordinary high-water mark and therefore subject to the State of New Hampshire's Comprehensive Shoreline Protection Act (Act). The State of New Hampshire passed the Act the month before the project was issued a new license. The land-use restrictions in the Act begin in section 483-B:9. Some of these restrictions are highlighted in the licensee's filing, they are:

The Act covers all land within 250 feet of the river's ordinary high-water mark. Within this area, several types of land uses are prohibited from establishment or expansion, they include salt storage yards, automobile junk yards and solid or hazardous waste facilities. Primary building structures must have a setback of 50 feet. A 150-foot woodland buffer, where existing, is also required. The buffer's purpose is to protect water quality by minimizing erosion, preventing excess nutrients and chemical pollution, maintaining natural water temperatures, maintaining a healthy tree canopy and understory, preserving fish and wildlife habitat, and respecting the overall natural condition of shoreline areas.

Other restrictions include removing no more than 50 percent of the basal area of trees, and a maximum 50 percent removal of saplings in a 20-year period. A healthy well distributed stand of trees, saplings, shrubs and ground cover shall be left in place. Replacement planting with native or naturalized species may be permitted to maintain the 50 percent level.

The licensee states that it will annually inspect the above lands to identify any needed screening of project features or general clean-up in accordance with article 409. It will also annually review the Act and notify the Commission if any substantial changes are made.

3.2.2 Environmental Effects

In SD 2, FERC identified no geologic and soils resource issues. CRP is not proposing any changes to project operations or existing facilities that would affect geology, soils, erosion, or cause sedimentation. CRP is also proposing no construction activities that could disturb sediments, affect soils, or affect geologic resources.

3.2.3 Proposed Environmental Measures

CRP is not proposing any new environmental measures related to geology and soils at the J. Brodie Smith Project.

3.2.4 Unavoidable Adverse Effects

Continued operation and relicensing of the J. Brodie Smith Project as proposed is not expected to have unavoidable adverse effects on soils because all facilities are operated as run-of-river.

3.2.5 References

Bethel Historical Society. 2022. "The Great River and its Valley." Available online: https://bethelhistorical.org/catalog/exhibits/show/rivers-journey/the-great-river-and-its-valley. (Accessed 1/25/2022).

Billings, Marland P. (1980.) The Geology of New Hampshire: Part II, Bedrock Geology. Concord, New Hampshire: Division of Forests and Lands, Department of Resources and Economic Development. Available at https://www.des.nh.gov/organization/commissioner/pip/publications/geologic/documents/geologyofnh2.pdf.

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). (2018.) "Custom Soil Resource Report for Coos County Area, New Hampshire. (Accessed 1/25/2022).

3.3 Water Resources

3.3.1 Affected Environment

3.3.1.1 Water Quantity and Use

Five large water storage reservoirs (Rangeley, Aziscohos, Upper and Lower Richardson Lakes, Mooselookmeguntic, and Umbagog) in the Upper Androscoggin watershed are operated to maintain a target flow of 1,550 cfs at Berlin, NH, year-round (FERC 1993). The system has a combined storage capacity of approximately 644,000 acre-feet (ARC 2020). Flow regulation occurs at the Errol Hydroelectric Project (FERC No. 3133), which impounds Lake Umbagog, approximately 31 river miles upstream of the Smith Project.

River flow data for the J. Brodie Smith Project was obtained from USGS gage No. 01054000 (Androscoggin River near Gorham, New Hampshire) (USGS 2021). The drainage area at the USGS gage is approximately 1,361 square miles. The USGS gage is located approximately 2.5 river miles downstream of the J. Brodie Smith Project dam. The data from the USGS gage was prorated (x0.982) to the J. Brodie Smith Project dam.

Annual and monthly river flows of the Androscoggin River at the J. Brodie Smith Project from January 1, 1991, to December 31, 2020, are provided in Table 3.2. Annual average, minimum, and maximum flows are estimated to be 2,756 cfs; 766 cfs; and 19,550 cfs, respectively. The maximum monthly average flow (4,667 cfs) was observed in April, and the minimum monthly average flow occurred in September (1,807 cfs). The maximum recorded daily average flow (19,550 cfs) occurred on April 1, 1998, and the minimum daily average flow (766 cfs) occurred on September 4, 2015. Flow duration statistics are provided in Table 3.3. Flow duration curves are provided in Exhibit B.

Table 3.2 Monthly minimum, maximum, and average flow at the J. Brodie Smith Project, (January 1, 1991 to December 31, 2020)

Month	Minimum (cfs)	Maximum (cfs)	Average (cfs)
January	1,228	6,189	2,595
February	1,248	6,828	2,720
March	1,238	13,950	3,010
April	1,248	19,550	4,667
May	1,356	15,915	4,045
June	1,120	12,575	2,812
July	927	10,119	2,269

Month	Minimum (cfs)	Maximum (cfs)	Average (cfs)
August	1,071	9,824	1,923
September	766	9,559	1,807
October	1,002	14,736	2,249
November	1,120	9,824	2,507
December	1,140	9,618	2,484
Annual	**766**	**19,550**	**2,756**

Source: USGS 2021

Table 3.3 Flow duration statistics for the J. Brodie Smith Project (January 1, 1991 to December 31, 2020)

Percent of Time Flow Equaled or Exceeded	Annual	January	February	March	April	May	June	July	August	September	October	November	December
0.1	14,740	6,189	6,828	13,950	19,550	15,915	12,575	10,119	9,824	9,559	14,736	9,824	9,618
0.5	12,104	4,913	5,724	8,833	15,372	14,414	11,443	9,573	8,849	6,733	10,126	8,156	9,097
1.0	10,413	4,770	5,018	7,809	14,343	13,368	10,407	9,078	7,072	4,517	8,368	7,505	8,345
5.0	6,366	3,822	3,969	5,137	10,900	10,217	7,161	5,016	2,858	2,760	4,813	5,361	4,252
10.0	4,391	3,399	3,606	4,156	8,830	8,449	5,236	3,193	2,564	2,328	3,389	4,018	3,428
15.0	3,636	3,232	3,353	3,717	7,639	6,890	4,087	2,790	2,348	2,220	2,921	3,389	3,111
20.0	3,262	3,144	3,234	3,497	6,676	5,816	3,464	2,562	2,151	2,102	2,484	3,026	2,918
30.0	2,839	2,937	2,967	3,203	5,184	4,303	2,839	2,207	1,965	1,952	2,201	2,659	2,711
40.0	2,554	2,780	2,780	2,937	4,313	3,533	2,413	2,010	1,876	1,817	2,000	2,397	2,544
50.0	2,289	2,594	2,613	2,761	3,625	3,075	2,186	1,867	1,719	1,700	1,867	2,107	2,294
60.0	2,014	2,446	2,525	2,643	3,236	2,613	1,926	1,758	1,601	1,582	1,733	1,955	2,014
70.0	1,817	2,262	2,394	2,498	2,869	2,220	1,729	1,650	1,533	1,496	1,631	1,771	1,847
80.0	1,631	1,955	2,220	2,338	2,505	1,935	1,582	1,572	1,483	1,356	1,503	1,623	1,700
85.0	1,542	1,778	2,145	2,151	2,264	1,808	1,524	1,523	1,434	1,307	1,395	1,503	1,608
90.0	1,444	1,650	1,984	1,965	1,956	1,680	1,454	1,474	1,356	1,267	1,326	1,405	1,483
95.0	1,326	1,375	1,375	1,572	1,670	1,533	1,346	1,395	1,287	1,179	1,199	1,327	1,322
99.0	1,159	1,248	1,282	1,307	1,356	1,415	1,179	1,290	1,103	1,041	1,074	1,238	1,211
99.5	1,090	1,238	1,267	1,287	1,272	1,378	1,145	1,248	1,090	1,022	1,048	1,218	1,172
99.9	1,041	1,228	1,248	1,238	1,248	1,356	1,120	927	1,071	766	1,002	1,120	1,140

Source: USGS 2021

The Androscoggin River in the J. Brodie Smith Project area is used for hydroelectric power generation, recreation, wastewater assimilation, and aquatic and wildlife habitat. There are seven other hydropower projects within the 11-mile reach of the Androscoggin River containing the J. Brodie Smith Project. The GLHA NH Projects Sawmill (FERC No. 2422) and Riverside (FERC No. 2423) hydroelectric projects are within approximately 1 river mile upstream of the J. Brodie Smith Project. The impoundment of the J. Brodie Smith Project is immediately downstream of the GLHA Riverside Project. There are five hydroelectric projects within approximately 10 river miles downstream of the J. Brodie Smith Project: the GLHA Cross (FERC No. 2326), Cascade (FERC No. 2327), Upper Gorham (FERC No. 2311), and Shelburne (FERC No. 2300) Projects and the CRP Gorham Project (FERC No. 2288). The GLHA Cross Project dam is approximately 0.6 river miles downstream of the J. Brodie Smith Project tailrace.

CRP is authorized to discharge drain and cooling water to the Androscoggin River from the J. Brodie Smith Project (National Pollutant Discharge Elimination System [NPDES] permit NH0001481). Other authorized discharges to the Androscoggin River approximately 0.5 river miles downstream of the J. Brodie Smith Project, and not within the project boundary, are the City of Berlin Pollution Control Facility (NPDES permit NH010013) and the Androscoggin Valley Regional Refuse Disposal District (NPDES permit NH0023523) (USEPA 2021). There are no current or proposed water withdrawals or consumptive uses of water at the J. Brodie Smith Project.

The Androscoggin River is used for a wide variety of water-based recreation activities. Additional information about recreation opportunities near the J. Brodie Smith Project is provided in Section 3.8 *Recreational Resources*.

CRP operates the J. Brodie Smith Project in a run-of-river mode where outflow from the powerhouse is approximately equal to inflow. Run-of-river operations minimize water level fluctuations in the impoundment; protect water quality, fishery, wildlife, and visual resources; and provide stable river flows downstream. Operation of the J. Brodie Smith Project results in the diversion of water from an approximately 0.5-mile-long bypassed reach. CRP provides a year-round minimum flow of 20 cfs or inflow, whichever is less, into the bypassed reach for the protection of water quality, aquatic habitat, and fishery resources (FERC 1994); the minimum flow was based on results from a fish survey and minimum flow study (FERC 1993). The minimum flow is provided through a 15-inch orifice in one of the two waste gates (PSNH 2004).

3.3.1.2 Water Quality

Water Quality Standards

The Androscoggin River at the J. Brodie Smith Project is classified by the state of New Hampshire as Class B. The designated uses of Class B surface waters in New Hampshire are aquatic life, fish consumption, potential drinking water supply, swimming and other recreation in and on the water, and wildlife. Class B waters are "*considered acceptable for fishing, swimming and other recreational purposes, and, after adequate treatment, for use as water supplies*" (NHDES 2020a). Water quality criteria for Class B waters in New Hampshire are provided in Table 3.4.

Table 3.4 Water Quality Criteria for Class B Waters in New Hampshire

Parameter	Criteria
Dissolved Oxygen (DO)	Instantaneous minimum concentration of 5 mg/L At least 75% saturation (daily average)
Nutrients	Shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.
Total Phosphorus	For the protection of aquatic life: < 8 µg/L in oligotrophic waters ≤ 12 µg/L in mesotrophic waters ≤ 28 µg/L in eutrophic waters (median based on a least 5 independent samples collected between May 24 and September 15).
Chlorophyll-a	≤ 15 µg/L for protection of recreational uses in freshwater. For the protection of aquatic life: < 3 µg/L in oligotrophic waters ≤ 5 µg/L in mesotrophic waters ≤ 11 µg/L in eutrophic waters (median based on a least 5 independent samples collected between May 24 and September 15).
pH	6.5 to 8.0
Temperature	Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class.

Source: NHDES 2016, 2020a

2020 Water Quality Study

In accordance with the FERC SPD, CRP completed a comprehensive water quality study throughout the J. Brodie Smith Project area during late June to September 2020. The goals of the study were to collect contemporary data to evaluate the spatial and temporal effects of operation of the J. Brodie Smith Project on water quality in the Androscoggin River and to assess compliance with New Hampshire water quality standards. The objectives of the study were to:

- Collect dissolved oxygen (DO), water temperature, pH, nutrients, chlorophyll-a, and Secchi disk data at the deep spot in the J. Brodie Smith impoundment; and,
- Collect DO, water temperature, and pH in a riverine reach upstream of the impoundment, in the bypass reach, in the tailrace, and downstream of the tailrace and bypass reach confluence.

CRP monitored water quality at 5 sites throughout the J. Brodie Smith Project area (Table 3.5, Figure 3.4); a complete description of all monitoring sites and methods is provided in the ISR. The monitoring sites were installed between June 29 and July 9, 2020; data loggers were retrieved on September 16 or 23, 2020. Concurrent water quality studies were completed at the CRP Gorham Project and the six GLHA hydropower projects for a total of 31 monitoring sites in the 11-mile reach of the Upper Androscoggin River in Berlin, Gorham, and Shelburne, NH.

Table 3.5 Water quality monitoring sites at the J. Brodie Smith Project, June 29-September 23, 2020.

Site Number and Name
Site 9a J. Brodie Smith Above Impoundment
Site 9b J. Brodie Smith Above Impoundment
Site 10 J. Brodie Smith Impoundment
Site 11 J. Brodie Smith Bypass Reach
Site 12 J. Brodie Smith Tailrace
Site 13a J. Brodie Smith Downstream Confluence
Site 13b J. Brodie Smith Downstream Confluence

* The monitoring sites were numbered sequentially beginning at the GLHA Sawmill Project (e.g., Site 1 Above Sawmill Impoundment) and continuing downstream.

Figure 3.4 Location of Water Quality Monitoring Sites at the J. Brodie Smith Project.

Two types of monitoring were completed in 2020 at the J. Brodie Smith Project: impoundment and riverine.

- Impoundment: Once per week, CRP collected a vertical profile (1-meter increments) of water temperature and DO using a calibrated YSI ProODO, YSI 550A, or YSI ProSolo handheld meter. In addition, each week, CRP collected water samples for analysis of chlorophyll-a, total phosphorus, total Kjeldahl nitrogen (TKN), and nitrite + nitrate nitrogen. In accordance with the sampling guidelines for a non-stratified impoundment described in NHDES (2020b), CRP collected a grab sample from a depth equal to 25 percent of the total depth for analysis of TKN, nitrite + nitrate nitrogen, and total phosphorus. A composite water sample to two thirds of the total depth was collected using a grab sampler for analysis of chlorophyll-a. CRP continuously monitored the DO concentration, water temperature, and pH with Onset HOBO U-26 and MX-2501 data loggers at 15-minute intervals. Secchi disk readings were not collected at Site 10 J. Brodie Smith Impoundment because the sampling occurred from a walkway next to the spill gates and not from on the water.
- Riverine: CRP performed continuous monitoring of DO, water temperature, and pH using Onset HOBO U-26 and MX-2501 data loggers at 15-minute intervals. DO percent saturation for each site was calculated using the DO concentration and atmospheric pressure data in the HOBOware software. The atmospheric pressure was recorded every 15 minutes with an Onset HOBO U-20 water level data sonde that was installed adjacent to the GLHA Sawmill Project powerhouse.

River flow data for the study period (June 29 to September 23, 2020) was obtained from USGS Gage # 01054000 Androscoggin River near Gorham, NH. Impoundment elevation and generation data were recorded through CRP's supervisory control and data acquisition (SCADA) system in 15-minute intervals.

The river flow was highest following rain events on June 29 through July 2 (4 inches) immediately after data logger installation at some sites, and on July 15 (2.4 inches) (Figure 3.5). Inflow to the project area increased from approximately 1,200 cfs on June 29 to 6,100 cfs on June 30 and from 2,600 cfs on July 14 to 4,600 cfs on July 15 (Figure 3.5). River flow ranged from approximately 1,400 cfs to 2,000 cfs from July 30 to August 20 and then stabilized at approximately 1,000 cfs to 1,150 cfs through the end of the study.

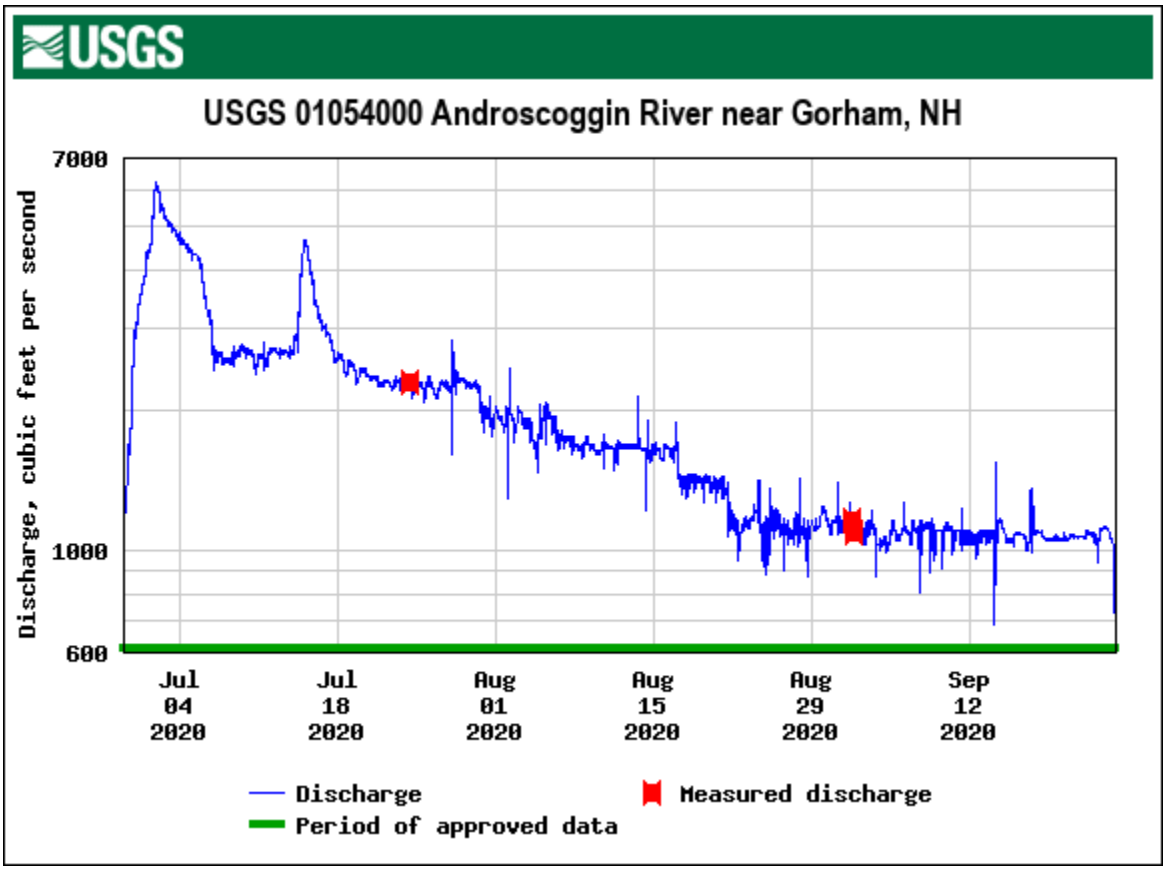

Figure 3.5 River flow (cfs) at USGS Gage #01054000, June 29 – September 24, 2020.

At the J. Brodie Smith Project, inflow was above the maximum hydraulic capacity (3,200 cfs) from June 29 to July 6 and again on July 14 to 16 in response to rain events. During these two periods, there was additional spill into the bypass reach. The J. Brodie Smith Project generated for the entire study period until annual maintenance began on September 14 and continued through the end of the study. The impoundment elevation was steady at the normal headpond level (1009.7 feet) until the drawdown on September 14.

Time series graphs of the DO concentration, DO percent saturation, daily average DO percent saturation, water temperature, and pH at the five monitoring sites at the J. Brodie Smith Project are shown in Figure 3.6 to Figure 3.10. The average DO concentration (8.3 Milligrams per liter (mg/L) to 8.9 mg/L), DO percent saturation (98.3 percent to 103.9 percent), water temperature (21.2 Degrees Celsius (ºC) to 22.1ºC), and pH levels (6.7 to 7.0) were similar at the five monitoring sites at the J. Brodie Smith Project throughout the

study period (Table 3.6). Water temperature, DO, and pH exhibited a diurnal variation which was more pronounced beginning in late July. Minimum water temperature, DO, and pH levels were observed overnight to early/mid-morning, and the highest levels occurred in the late afternoon through evening. These daily trends in DO and pH are consistent with natural variations due to photosynthesis (daytime uptake of carbon dioxide releases DO and increases pH) and respiration (nighttime consumption of DO). Throughout the day, water temperature varied by 1ºC to 3.5ºC, DO varied by 0.2 mg/L to 0.6 mg/L and 3 percent to 12 percent, and pH varied by 0.1 to 0.3 pH units.

The DO concentration and daily average DO percent saturation exceeded the state standards (5.0 mg/L and 75 percent saturation) at all five monitoring sites throughout the study period. Throughout the J. Brodie Smith Project area, DO ranged from 7.3 mg/L to 10.9 mg/L (Table 3.6). The DO percent saturation ranged from 89.6 percent to 111.9 percent, and the daily average DO percent saturation ranged from 94.4 percent to 111.0 percent. Through late August, the DO concentration ranged from 7.5 mg/L to 9.0 mg/L. DO then began to increase as temperatures decreased in late August but was stable in the first half of September. DO was near 10.5 mg/L at the end of the study.

The minimum water temperature (13.2ºC) at the above impoundment and downstream confluence sites occurred on September 22 and 23 (Table 3.6). The minimum temperature at the impoundment, bypass reach and tailrace sites (16.9ºC to 17.3ºC) was observed on August 31; monitoring ended at these three sites on September 14. The highest water temperatures (25.2ºC to 25.5ºC) were observed on August 14 at the above impoundment, impoundment, and tailrace sites, on August 12 (25.7ºC) in the bypass reach, and on July 10 (26.2ºC) at the downstream confluence. At the start of monitoring, the water temperature was near 21ºC and generally varied between 22ºC to 26ºC for most of July through mid-August. Water temperatures decreased from near 25ºC in mid-August to near 18ºC at the end of August. The temperature increased again briefly to 22ºC on September 9-10 followed by a steady decrease to near 13ºC at the end of the study. The water temperature differed by 1.8ºC or less among the five monitoring sites throughout the study.

pH was within the range of the state standard throughout the entire monitoring period at the impoundment, bypass reach, tailrace, and downstream confluence sites and ranged from 6.5 to 7.4 (Table 3.6). At the above impoundment site, pH met the state standard

during 97.3 percent of the study period. The time periods when pH was below 6.5 (July 1-3 and 14-15) corresponded to high flow events and cool temperatures.

Continuous monitoring data from the data loggers is available for the above impoundment and downstream confluence sites after the annual maintenance began on September 14. Coinciding with the reduced impoundment elevation and cessation of generation on September 14, the DO concentration and DO percent saturation increased; there was also a small increase in pH. The change in operations, as well as the late summer cooler water temperatures, may have contributed to the higher DO levels.

Water temperature and DO were uniform throughout the water column indicating that the J. Brodie Smith impoundment did not thermally stratify. The water temperature varied by less than 1ºC, the DO concentration by less than 0.3 mg/L, and the DO percent saturation by less than 3.1 percent throughout the water column in each profile (Table 3.7). The average water temperature throughout the water column ranged from 17.8ºC on September 3 to 24.1ºC on July 30. The average DO throughout the water column ranged from 7.6 mg/L on July 30 to 8.9 mg/L on July 16. The DO concentration was above the 5.0 mg/L standard in all profiles (Table 3.7). The average DO percent saturation ranged from 88.7 percent on September 3 to 97.9 percent on September 10.

Chlorophyll-a ranged from 0.6 µg/L to 3.3 µg/L with an average of 1.7 µg/L (Table 3.8). The median concentration of 1.5 µg/L is below the state of New Hampshire's standards for the protection of recreational and aquatic life uses. Total phosphorus ranged from 5.6 µg/L to 44 µg/L with an average of 12.6 µg/L. The median of 9.1 µg/L was below the 12 µg/L threshold for the protection of aquatic life in mesotrophic water. Nitrite+Nitrate N ranged from 0.05 mg/L to 0.07 mg/L. TKN ranged from 0.20 mg/L to 0.39 mg/L with an average of 0.27 mg/L; these values are considered average (NHDES 2011).

Table 3.6 DO (mg/L and percent saturation), daily average DO percent saturation, water temperature, and pH statistics at the J. Brodie Smith Project.

	Site 9a and 9b J. Brodie Smith Above Impoundment				
	DO (mg/L)	DO % saturation	Daily Average DO % Saturation	Water Temperature (ºC)	pH
Avg	8.9	103.9	104.0	21.2	6.7
Min	8.0	95.0	99.5	13.2	6.3
Max	10.6	111.9	111.0	25.2	7.2
	Site 10 J. Brodie Smith Impoundment				
	DO (mg/L)	DO % saturation	Daily Average DO % Saturation	Water Temperature (ºC)	pH
Avg	8.3	98.3	98.3	21.9	6.9
Min	7.3	89.6	94.4	17.2	6.6
Max	9.8	107.8	107.1	25.5	7.2

	Site 11 J. Brodie Smith Bypass Reach				
	DO (mg/L)	DO % saturation	Daily Average DO % Saturation	Water Temperature (ºC)	pH
Avg	8.5	100.4	100.5	21.8	7.0
Min	7.8	95.3	97.9	16.9	6.8
Max	9.6	106.0	105.4	25.7	7.4
	Site 12 J. Brodie Smith Tailrace				
	DO (mg/L)	DO % saturation	Daily Average DO % Saturation	Water Temperature (ºC)	pH
Avg	8.7	103.9	103.9	22.1	6.9
Min	8.2	96.3	99.0	17.3	6.6
Max	9.8	109.4	107.2	25.4	7.2
	Site 13 J. Brodie Smith Downstream Confluence				
	DO (mg/L)	DO % saturation	Daily Average DO % Saturation	Water Temperature (ºC)	pH
Avg	8.7	101.6	101.6	21.2	6.8
Min	7.9	93.3	96.8	13.2	6.5
Max	10.9	109.0	107.6	26.2	7.4

Table 3.7 Water temperature (ºC), DO concentration (mg/L), and DO percent saturation (%) profiles at Site 10 J. Brodie Smith Impoundment.

Water Temperature (ºC)										
Depth (m)	07/08/20 14:30	7/16/20 9:15	7/23/20 13:00	7/30/20 9:30	8/6/20 9:30	8/13/20 9:45	8/20/20 10:45	8/27/20 9:50	9/3/20 9:15	9/10/20 11:15
0.1	23.8	20.8	22.8	24.1	22.17	23.7	21.4	18.7	18.0	20
1	23.3	20.8	22.8	24.1	22.25	23.7	21.5	18.7	17.9	19.8
2	23.1	20.7	22.8	24.1	22.2	23.6	21.5	18.7	17.8	19.7
3	22.9	20.7	22.8	24.1	22.24	23.6	21.5	18.7	17.7	19.5
4	22.9	20.6	22.7	24.0	22.2	23.6	21.5	18.7	17.7	19.4
5	22.8	-	-	-	-	-	21.3	-	17.7	19.4
Avg	*23.1*	*20.7*	*22.8*	*24.1*	*22.2*	*23.6*	*21.5*	*18.7*	*17.8*	*19.6*
Min	*22.8*	*20.6*	*22.7*	*24.0*	*22.2*	*23.6*	*21.3*	*18.7*	*17.7*	*19.4*
Max	*23.8*	*20.8*	*22.8*	*24.1*	*22.3*	*23.7*	*21.5*	*18.7*	*18.0*	*20.0*
DO Concentration (mg/L)										
Depth (m)	07/08/20 14:30	7/16/20 9:15	7/23/20 13:00	7/30/20 9:30	8/6/20 9:30	8/13/20 9:45	8/20/20 10:45	8/27/20 9:50	9/3/20 9:15	9/10/20, 11:15
0.1	8.3	9.1	8.0	7.7	7.8	7.9	8.0	8.4	8.4	8.7
1	8.4	9.0	8.0	7.6	7.8	7.8	8.1	8.3	8.4	8.8
2	8.4	8.9	8.0	7.6	7.8	7.8	8.0	8.3	8.4	8.8
3	8.4	8.8	8.0	7.6	7.8	7.7	8.0	8.3	8.4	8.8
4	8.4	8.7	7.9	7.5	7.8	7.7	8.0	8.3	8.4	8.8
5	8.2	-	-	-	-	-	7.9	-	8.4	8.7
Avg	*8.3*	*8.9*	*8.0*	*7.6*	*7.8*	*7.8*	*8.0*	*8.3*	*8.4*	*8.7*
Min	*8.2*	*8.7*	*7.9*	*7.5*	*7.8*	*7.7*	*7.9*	*8.3*	*8.4*	*8.7*
Max	*8.4*	*9.1*	*8.0*	*7.7*	*7.8*	*7.9*	*8.1*	*8.4*	*8.4*	*8.8*

DO Percent Saturation (%)										
Depth (m)	07/08/20 14:30	7/16/20 9:15	7/23/20 13:00	7/30/20 9:30	8/6/20 9:30	8/13/20 9:45	8/20/20 10:45	8/27/20 9:50	9/3/20 9:15	9/10/20, 11:15
0.1	97.9	-	92.7	91.9	89.4	93	91.4	89.7	89.2	98.2
1	98.4	-	93	90.4	89.9	92.2	91.5	89.2	88.8	98.3
2	98.5	-	92.8	89.7	89.4	91.8	90.9	89.2	88.8	98.3
3	97.6	-	92.6	89.7	89.5	91.2	90.6	89.3	88.5	97.7
4	97.3	-	91	89.3	89.1	91.1	91.1	89.2	88.4	97.4
5	95.4	-	-	-	-	-	88.5	-	88.2	97.2
Avg	*97.5*	-	*92.4*	*90.2*	*89.5*	*91.9*	*90.7*	*89.3*	*88.7*	*97.9*
Min	*95.4*	-	*91.0*	*89.3*	*89.1*	*91.1*	*88.5*	*89.2*	*88.2*	*97.2*
Max	*98.5*	-	*93.0*	*91.9*	*89.9*	*93.0*	*91.5*	*89.7*	*89.2*	*98.3*

* "-" data not collected

Table 3.8 Chlorophyll-a and nutrient results from Site 10 J. Brodie Smith Impoundment.

Statistic	Chlorophyll-a (µg/L)	Total Phosphorus (µg/L)[a]	Nitrite+Nitrate N (mg/L)[b]	TKN (mg/L)[c]
Average	**1.7**	**12.6**	**0.06**	**0.27**
Median	**1.5**	**9.1**	**0.06**	**0.24**
Minimum	**0.6**	**5.6**	**0.05**	**0.20**
Maximum	**3.3**	**44**	**0.07**	**0.39**

*Monitoring at the J. Brodie Smith impoundment occurred from behind the railing above the spill gates; thus, Secchi disk readings were not performed.
[a]Below detection limit in 1 sample
[b]Below detection limit in 6 samples
[c]Below detection limit in 1 sample

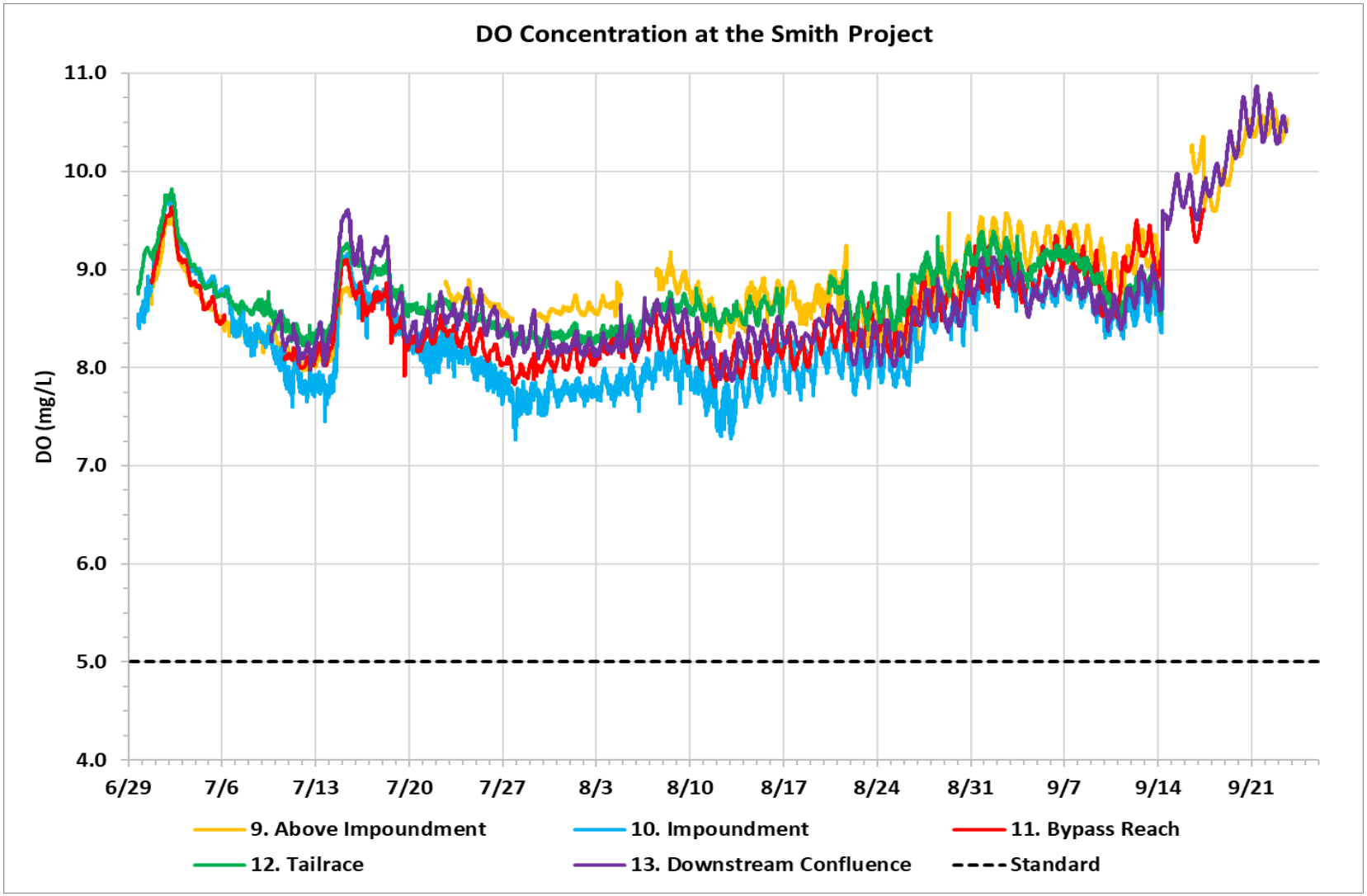

Figure 3.6 DO concentration (mg/L) and the Class B standard at the J. Brodie Smith Project, June 29-September 23, 2020.

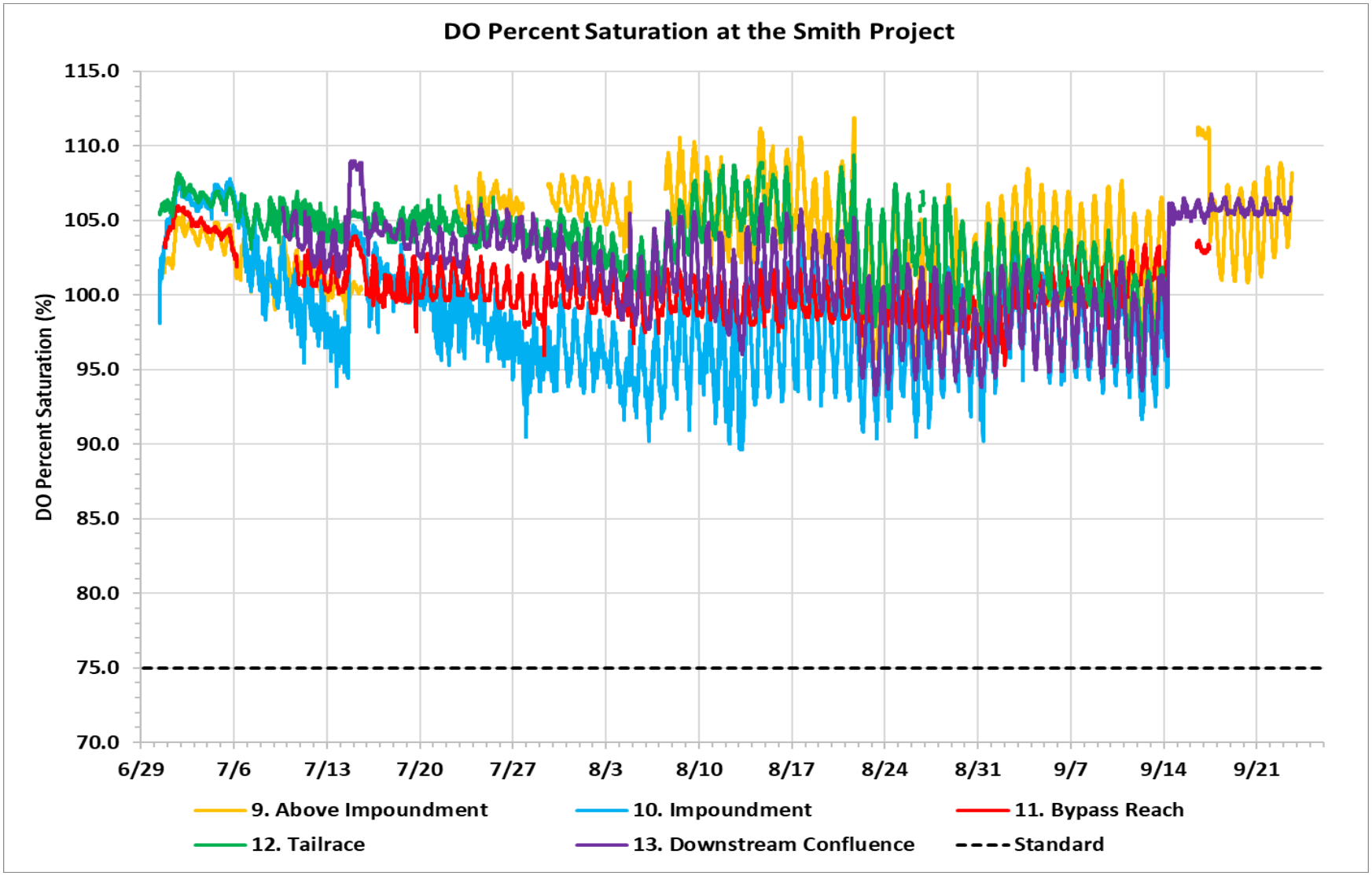

Figure 3.7 DO percent saturation and the Class B standard at the J. Brodie Smith Project, June 29-September 23, 2020.

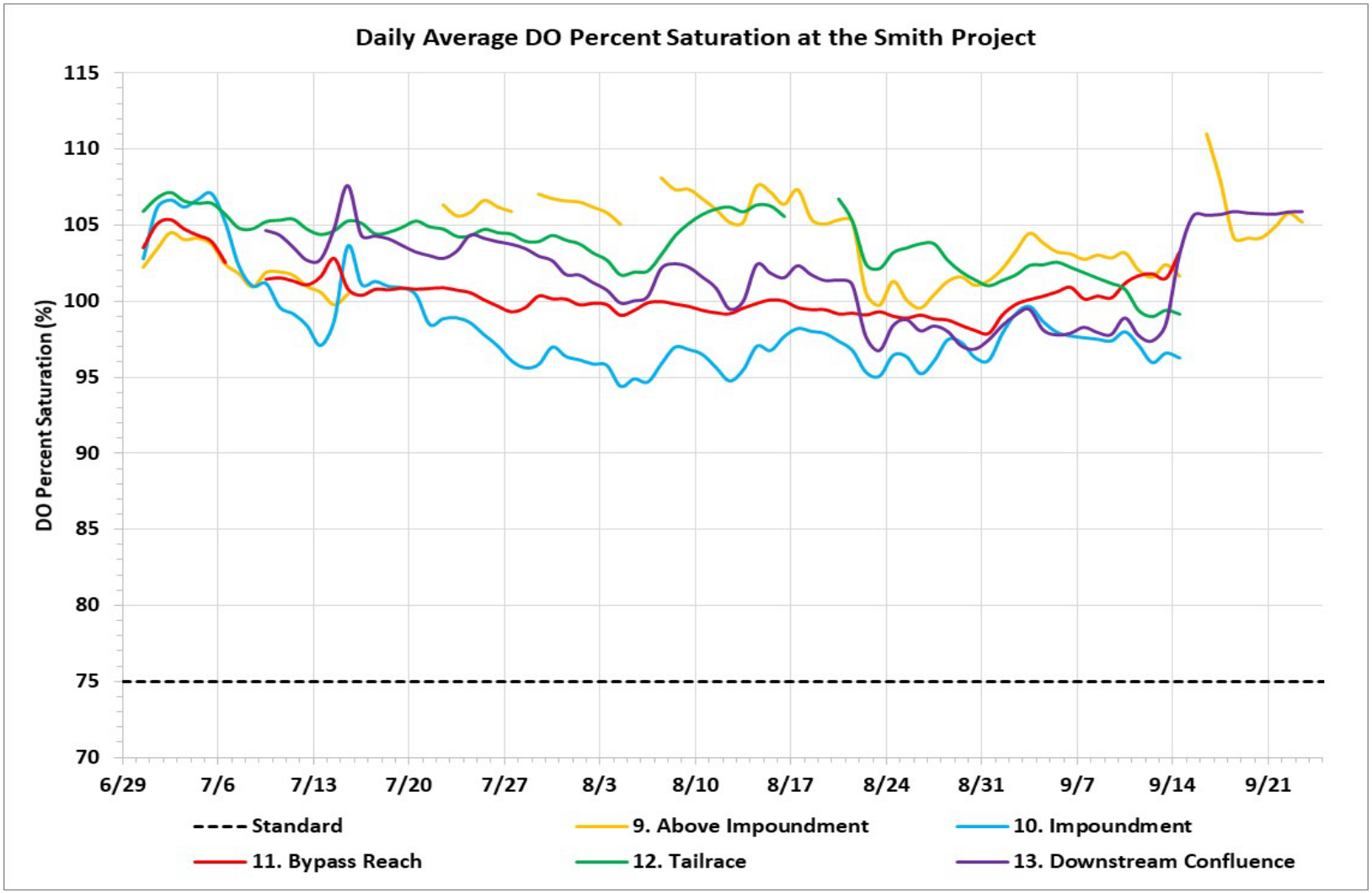

Figure 3.8 Daily average DO percent saturation and the Class B standard at the J. Brodie Smith Project, June 29-September 23, 2020.

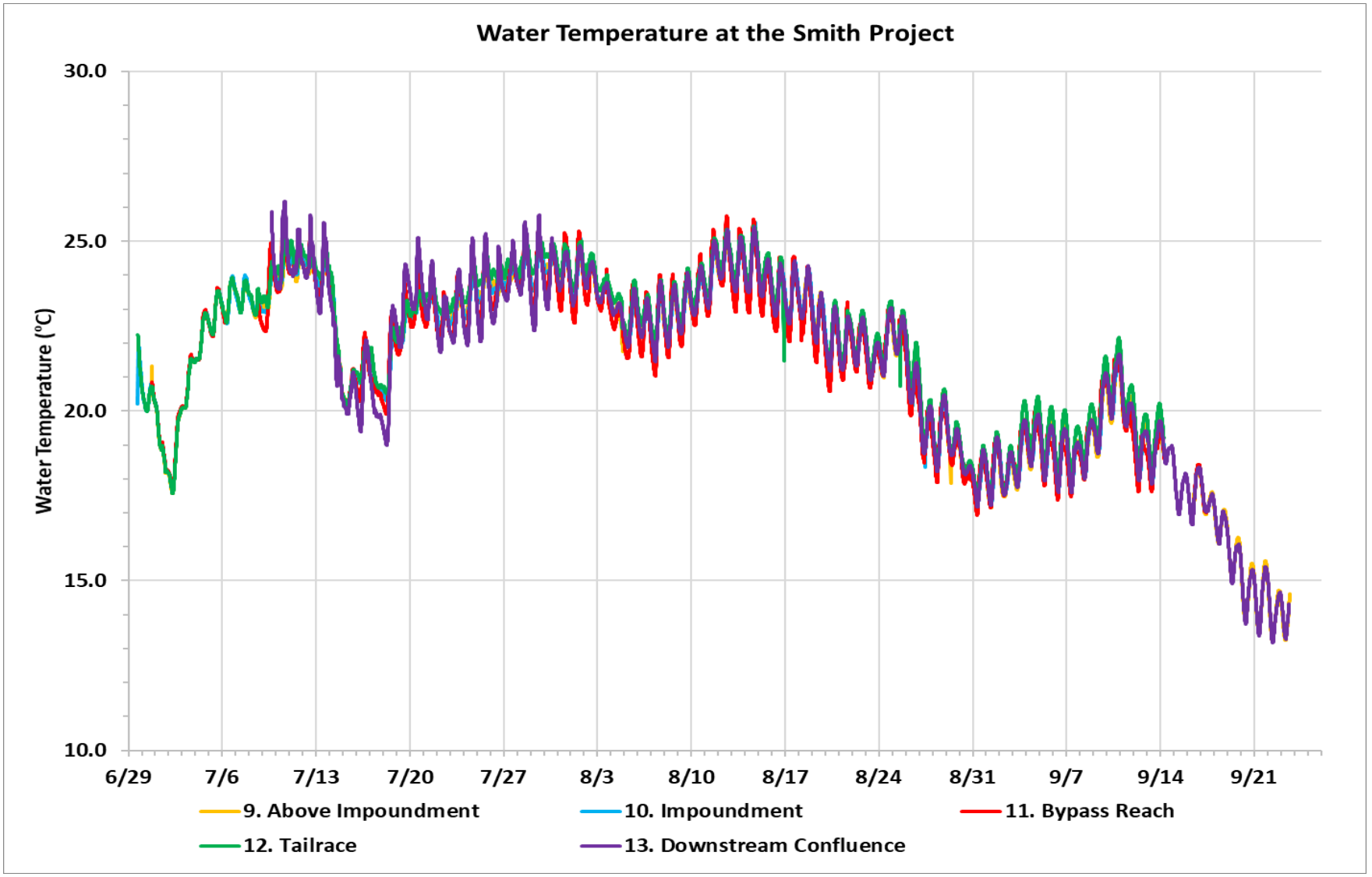

Figure 3.9 Water temperature (°C) at the J. Brodie Smith Project, June 29-September 23, 2020.

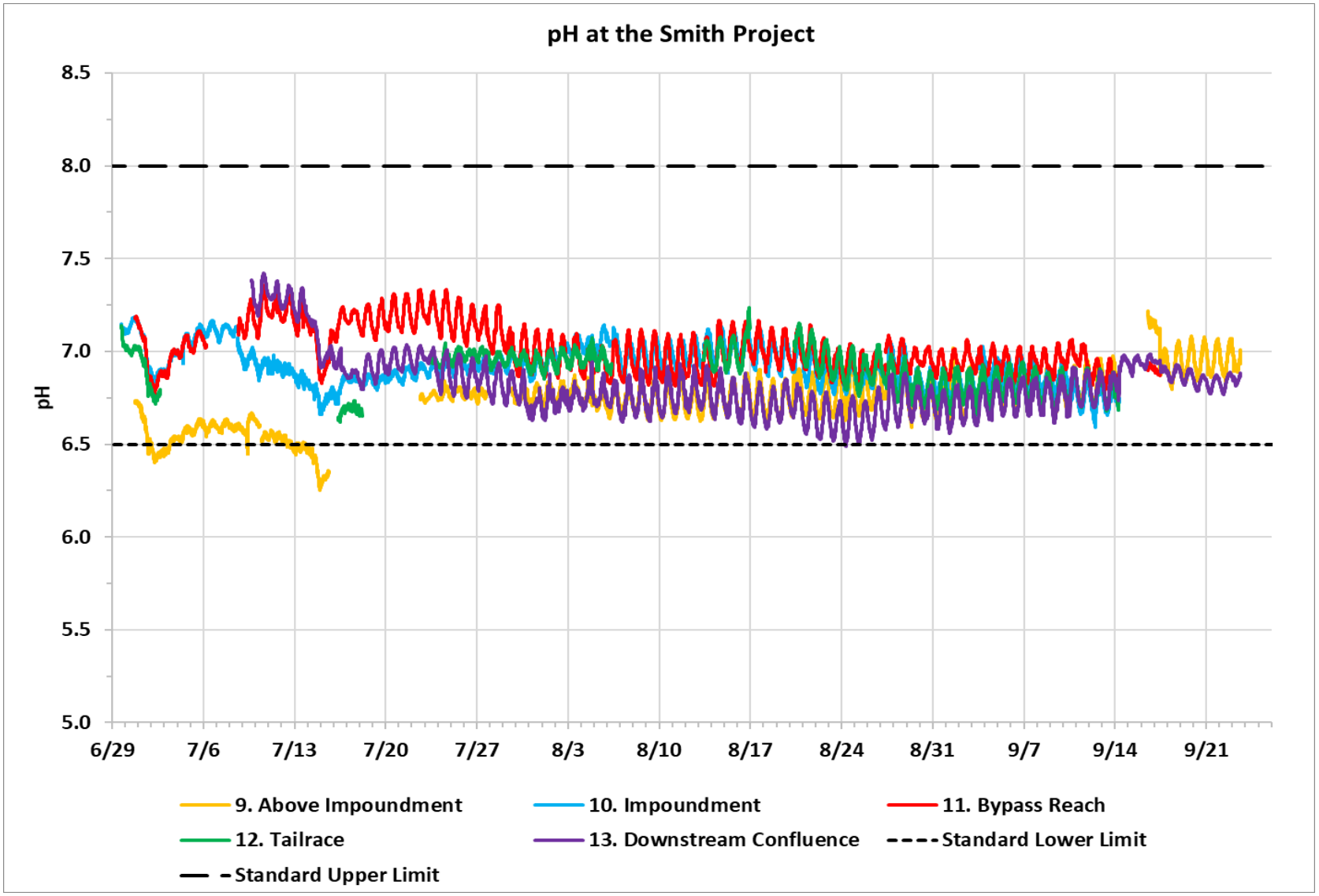

Figure 3.10 pH and the Class B standard at the J. Brodie Smith Project, June 29-September 23, 2020.

3.3.2 Environmental Effects

3.3.2.1 Water Quantity

CRP is not proposing any modifications to existing project facilities or operations. CRP is proposing to continue to operate the J. Brodie Smith Project as run-of-river where natural inflow to the dam is equal to the outflow and there is no water storage in the impoundment for generation. CRP will continue to provide a minimum flow of 20 cfs to the bypass reach. CRP is proposing to develop an Operations and Maintenance Plan which describes the current operations and maintenance practices. As such, there are no anticipated adverse effects on water quality in the J. Brodie Smith Project area.

3.3.2.2 Water Quality

The comprehensive water quality study completed at the J. Brodie Smith Project in late June through mid-September 2020 documented that state Class B water quality standards were met. The DO concentration, daily average DO percent saturation, pH, chlorophyll-a, and total phosphorus measurements collected throughout the J. Brodie Smith Project were all in attainment with standards. pH was slightly below the 6.5 standard lower limit above the J. Brodie Smith impoundment during two high flow events in July. The J. Brodie Smith impoundment did not thermally stratify and was well mixed. The DO concentration exceeded the state standard in all vertical profiles. Chlorophyll-a and total phosphorus were in attainment with standards for the protection of aquatic life and recreational designated uses. The low chlorophyll-a and nutrient concentrations indicate that the Androscoggin River in the J. Brodie Smith Project area has low productivity and is not influenced by algal blooms. Minor variations in DO and pH were observed during short-term maintenance work after September 14; both parameters remained above the Class B standards.

Similar results were documented by the concurrent water quality monitoring studies completed at the CRP Gorham Project and the six GLHA hydropower projects demonstrating good water quality throughout this 11-mile reach of the Upper Androscoggin River. The DO concentration, daily average DO percent saturation, chlorophyll-a, and total phosphorus measurements collected throughout the Upper Androscoggin River were all in attainment with standards. pH was within the limit of the standard throughout the entire study period at 15 of the 31 total monitoring sites. A limited amount of pH data was below the 6.5 standard for short periods at the remaining

sites; the majority of these periods coincided with high flow events and cooler water temperatures or were observed during the daily early morning pH minimum. None of the CRP Gorham or GLHA Project impoundments were thermally stratified. The 2020 monitoring results demonstrate that operation of the eight hydroelectric projects, including the Smith Project, throughout the Upper Androscoggin River in Berlin, Gorham, and Shelburne, NH, does not have adverse impacts on water quality.

CRP is not proposing any changes to existing project facilities or operations. CRP is proposing to develop an Operations and Maintenance Plan which describes the current operations and maintenance practices. The 2020 water quality study demonstrated that normal project operations did not have an adverse influence on water quality. CRP does not anticipate that continued operation of the J. Brodie Smith Project will have an adverse effect on water quality in the Androscoggin River.

3.3.3 Proposed Environmental Measures

CRP is not proposing any new environmental measures related to water resources at the J. Brodie J. Brodie Smith Project.

3.3.4 Unavoidable Adverse Effects

The proposed action (i.e., continued operation and relicensing of the Project) as proposed is not expected to have result in unavoidable adverse effects on water quantity and water quality resources in the Androscoggin River. Minor erosion will likely occur as a result of high river flows.

3.3.5 References

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3.4 Fish and Aquatic Resources

3.4.1 Affected Environment

3.4.1.1 Aquatic Habitat

The J. Brodie Smith Project is within an 11-mile-long, high gradient reach of the upper Androscoggin River with concentrated hydropower development, industrial development, towns, and residential areas. There are long reaches of free-flowing river and tributaries upstream and downstream of these concentrated hydroelectric facilities, including a 32-mile-long reach upstream interrupted only by the Pontook Project (FERC No. 2861), and a 40-mile-long reach downstream of Shelburne, New Hampshire. Dam owners farther upstream in the watershed manage the Androscoggin River for industrial purposes, recreation, instream flow uses, and for protecting aquatic species, with regulated outlets at Rangeley Lake, Mooselookmeguntic Lake, Richardson Lake, Aziscohos Lake and Lake Umbagog. The final re-regulating point is at the Errol dam in Errol, New Hampshire. The Errol Project is not operated as a peaking facility, but provides relatively steady discharges, striving to meet the target flow of 1,550 cfs on the Androscoggin River in Berlin, NH on a year-round basis (Brookfield, et. al. 2021); the Errol dam is approximately 32 river miles upstream of the J. Brodie Smith Project. The licensee operates the J. Brodie Smith Project as a run-of-river facility, which minimizes the effects of operations on fish and aquatic resources by maintaining stable river flow conditions and impoundment levels.

Aquatic habitat in the J. Brodie Smith project area includes a small, riverine impoundment with a surface area of 8 acres (Photo 3.1), a 2,000-foot-long riverine bypass reach, and the tailwater area. Like many hydropower dams, the J. Brodie Smith Project was built at falls or cascades with steep gradients and bedrock substrates. As a result, the J. Brodie Smith bypass reach is steep-sided with numerous bedrock ledge outcrops, largely inaccessible to anglers, and provides limited nursery, rearing, or spawning habitat for fish (Photo 3.2). Existing deep pools provide cover for transient, resident fish that may inhabit the reach seasonally. The bypass reach is narrow and confined with substrates mostly made up of boulders and steep bedrock. Mature trees and vegetation cover most of the river banks. CRP provides a year-round minimum flow of 20 cfs or inflow from the dam, whichever is less, into the bypass reach for the protection of water quality, aquatic habitat, and fishery resources; the minimum flow was based on results from fish surveys and a minimum flow study conducted in consultation with agencies during the prior relicensing. The minimum flow is provided through a 15-inch orifice in one of the gates at the dam. Additional inflow

to the reach comes from leakage from power canal gates at the penstock intake and from the Dead River, a small tributary that discharges in the lower half of the reach (Photo 3.2).

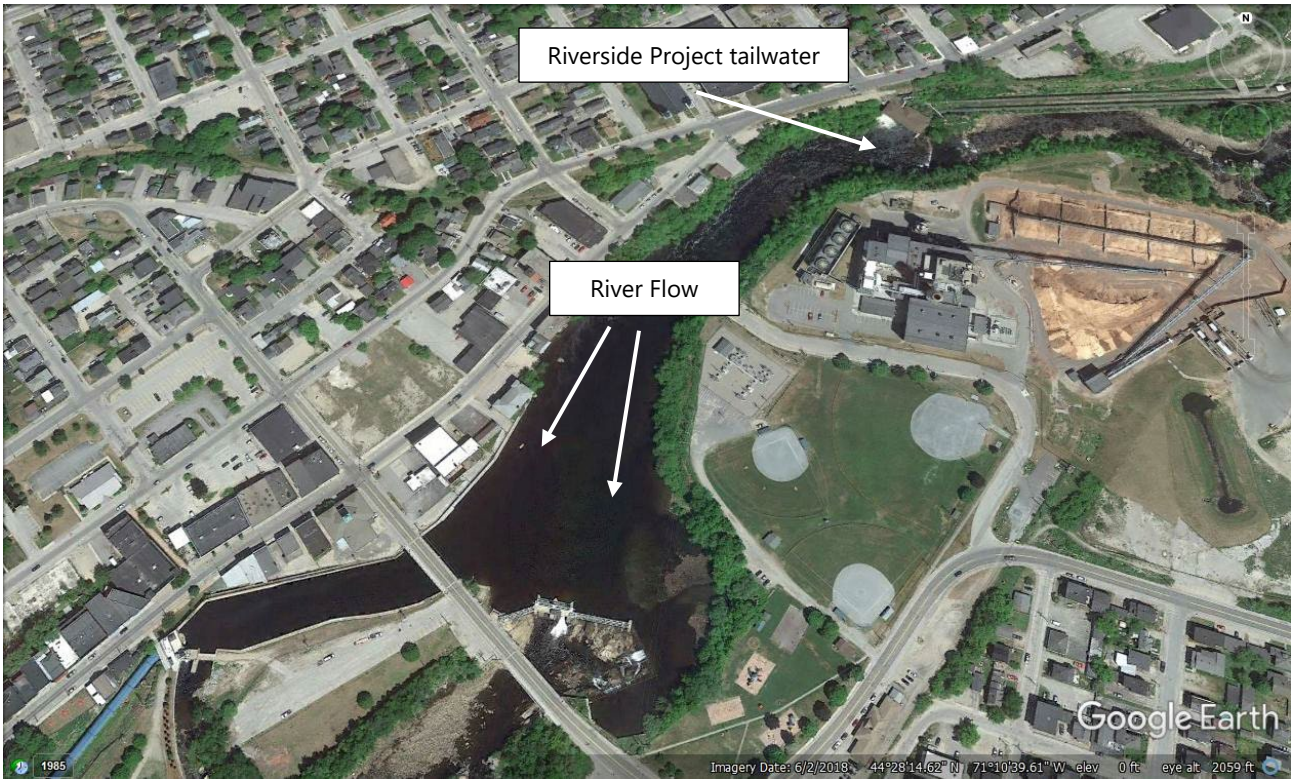

Photo 3.1 J. Brodie Smith Impoundment

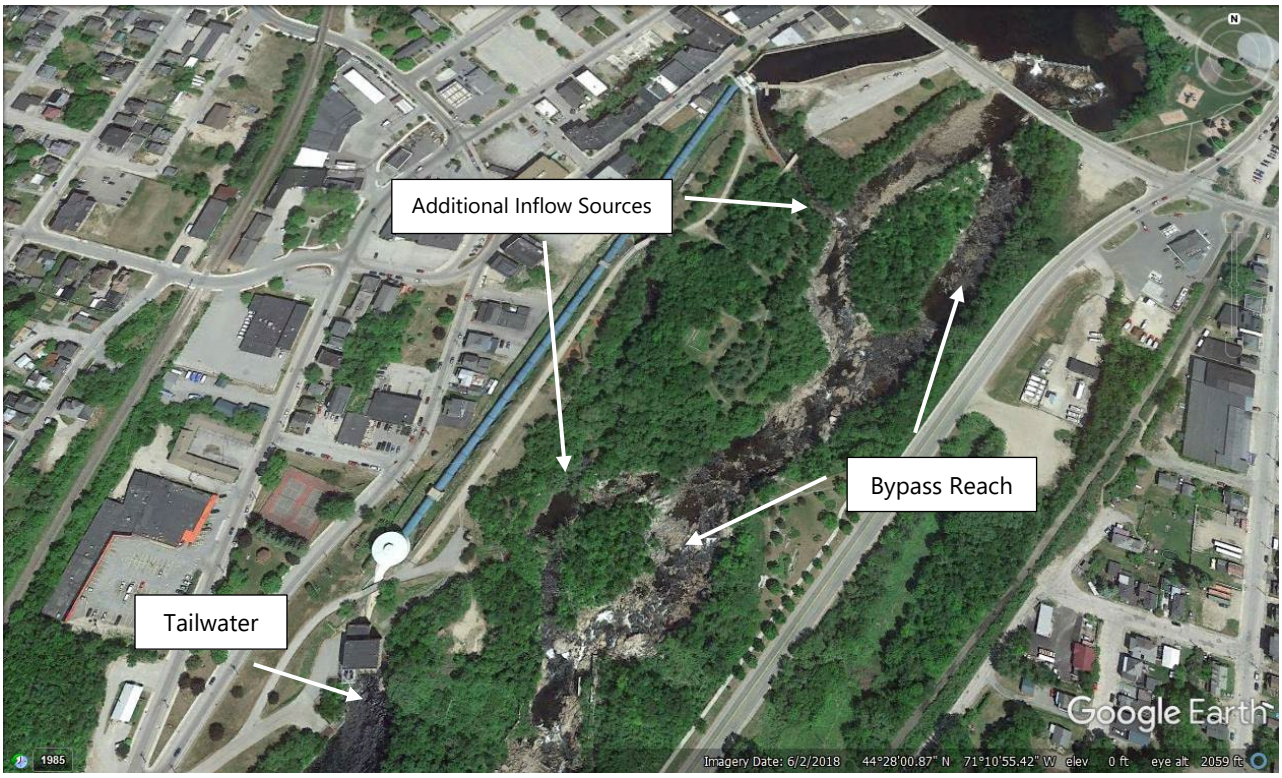

Photo 3.2 J. Brodie Smith Project Bypass Reach and Tailwater

In 2020, CRP collected habitat data within the J. Brodie Smith bypass reach to document hydrologic conditions and aquatic habitat at the existing minimum flow release. The study was completed in response to requests received from the NHDFG and NHDES. CRP originally proposed to establish transects in the bypass reach and collect instream data, measure discharge, collect detailed photography and video, and perform drone flyovers to capture high resolution photographs and video. Due to safety and access constraints, and after consulting with NHDES and NHDFG (Appendix A), CRP focused on drone aerial photography combined with analyses of applicable existing data in 2020. The drone was flown in a continuous direction to the limit of visibility, after which it was returned to the launch site and transported to the next launch location. The drone was generally flown 30 to 60 feet above the river bed unless navigation around structures or tree canopy required a change in elevation. The drone captured images of substrate and instream cover, river transect areas from previous instream flow studies, mesohabitat type (e.g., riffle, run, pool), wetted width, overall hydrologic conditions (flow patterns, areas of turbulence, and reoxygenation), substrates for macroinvertebrate colonization, and conditions related to zone of passage for fish movements, such as water depth and large elevation gradients.

The pilot and biologist noted mesohabitat types, dominant substrates, cover types, and cover quality based on direct observation and professional judgement. Mesohabitat substrate types were classified after Dunn and Leopold (1998). Dominant substrates were classified as: bedrock, boulder (small, medium, or large), cobble, gravels, and sand (Bovee 1982). The following activities were performed to analyze the data for the study:

- Classified mesohabitats using the collected drone imagery as follows:
  - **Riffle**: shallow, with moderate velocity, turbulent, high gradient (usually > 1 percent), moderate to large substrates (cobbles or gravels).
  - **Rapid**: shallow, with moderate to high velocity, turbulent, with chutes and eddies, high gradient (usually > 2 percent), large substrates, or bedrock.
  - **Run**: moderately deep to deep, well-defined non-turbulent laminar flow, low-moderate velocity, well-defined thalweg, typically concave stream geometry, varying substrates, gentle slope (< 1 percent).
  - **Glide**: shallow, well-defined non-turbulent laminar flow, low velocity, well-defined thalweg, flat stream geometry, finer substrates, transitional from pool.
  - **Pool***:* deep, low velocity, well-defined hydraulic control at outlet.
- Verified and calibrated bed profile, depths, velocities, and water elevation data from previous studies to describe existing depth, wetted area, wetted perimeter, and wetted width across transects at the existing minimum flow release.
- Summarized information about how CRP provides and maintains minimum flows.
- Evaluated DO, pH, and water temperature data collected in 2020 in each bypass reach.

An irregular-shaped spillway section and a series of hinged flashboards define the upstream end of the reach (Photo 3.3 and Photo 3.4). A vertical concrete retaining wall defines the upstream banks and vertical bedrock walls defining the banks downstream from the dam. These vertical walls preclude safe public access and are fenced. Surrounding land use is urban/commercial with a fringe of wooded upland area atop each bank.

Photo 3.3 Overview of J. Brodie Smith Project looking upstream at the existing minimum flow of 20 cfs, provided via orifice in the waste gate.

Substrate in the reach is predominantly bedrock overlain with boulder and rubble. Approximately 250 feet downstream from the dam the upper bypass is split into two channels; mesohabitats from the dam downstream to the mid-section of the reach include pool, riffle, and run (Photo 3.4). The middle section of the reach is composed of riffles and pocket pools (Photo 3.5). The Dead River, a small tributary, discharges into the lower section of the bypass channel, as does intermittent leakage flow from the intake area. The lower bypass includes a deep gorge with a very steep gradient, and is dominated by ledge outcrops, sharp drops in gradient, and waterfalls downstream to the confluence with the Cross Project impoundment (Photo 3.5), Pocket pools and riffles are interconnected and occupy terraces between cascades at the existing minimum flow. Substrates are well-scoured with little if any fine sediments.

Photo 3.4 Upper J. Brodie Smith Bypass Reach; West Channel (left) and East Channel (right) at the Existing Minimum Flow (20 cfs).

Photo 3.5 Middle and Lower J. Brodie Smith Project Bypass Reach at the Existing Minimum Flow (20 cfs).

Cover is comprised of scattered boulders and deep pocket pools although many of these pools are separated from each other by cascades. Six transects were established during a study conducted during the previous relicensing (Normandeau Associates 1991a). Transects were in pool habitat and measured changes in wetted area and habitat suitability at leakage, 20 cfs, and 65 cfs. Most pools were basin-like scour pools that exhibited modest increases in wetted area across the flow range; both leakage and 20 cfs flows provided suitable resting conditions for fish; however, at 65 cfs increased velocities in pools made conditions less suitable.

During the 2020 water quality monitoring study, CRP monitored DO, pH, and water temperature in the J. Brodie Smith bypass reach. The 2020 data demonstrated average DO levels of 8.5 mg/L and 100.4 percent saturation. The DO standard for the Androscoggin River is 5 mg/L with a daily average of 75 percent saturation. Average water temperature and pH ranged were 21.7 °C and 7.0 pH units. Water quality monitoring in 2020 demonstrated that the existing minimum flow requirements in the bypass reaches maintain New Hampshire's surface water quality standards. Section 3.3, *Water Resources*, and the ISR provide additional detail on the 2020 water quality monitoring.

In their August 6, 2021, letter providing comments on the ISR, NHDES requested several clarifications regarding the study methodology and additional data collection in the J. Brodie Smith bypass reach. In the fall of 2021, CRP completed additional habitat data collection and analysis. CRP plans to provide the results of the 2021 effort in the USR or FLA. Responses to NHDES' requests for clarifications will also be included in the USR or FLA, as applicable.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act requires the NMFS to describe and identify EFH in federal fishery management plans for commercial species. The Magnuson-Stevens Act requires federal agencies to consult with NMFS when any activity is proposed to be permitted, funded, or undertaken by a federal agency may have adverse effects on designated EFH. The upper Androscoggin River does not have any commercially-managed fish species; therefore, no EFH is not designated in the project vicinity.

3.4.1.2 Fish Assemblage and Management

Resident Fish Community

Historically, the upper Androscoggin River near Berlin, New Hampshire, was heavily polluted due to point source discharges from municipal, paper mill, and textile effluents (Inglis et al. 2014, Yoder et al. 2006a, Boucher 1997). Pollution from point source discharges, dams, timber drives, land use practices, non-native fish species, and over-fishing all contributed to a decline in the quality of the fishery (AMC 2003, Boucher 1997). Improvements to water quality since the 1970s resulting from regulations, new municipal and industrial treatment facilities, and the establishment of more stringent water quality

standards have allowed the reach of the river between Berlin and Shelburne (i.e., near the J. Brodie Smith Project) to improve as a recreational and ecological resource (Inglis et al. 2014). However, NHDES continues to recommend that fish caught from Berlin, New Hampshire, to the Maine border do not get consumed because of elevated dioxin and mercury levels resulting from past industrial discharges (NHDES 2021).

The upper Androscoggin River supports approximately 30 species of fish, a quarter of which are non-native (AMC 2003). Angling for salmonids is bolstered by trout stocking and wild reproduction in the upper watershed and within tributaries. Cold water inflow from tributaries and regulated water releases from upper storage reservoirs[1] enhances coldwater fisheries habitat in the main stem of the Androscoggin River. The Midwest Biodiversity Institute (MBI) sampled 51 sites in the Androscoggin River in 2003 to document the spatial distribution and relative abundance of fish in large, non-wadeable river systems of the northeastern United States (Yoder et al. 2006a). MBI electrofished nine 0.6-mile-long reaches within or near the J. Brodie Smith Project (Figure 3.11), collecting 3,378 fish representing 18 species (Table 3.9). MBI's overall catch was dominated by common fish species from the northeastern United States, including fallfish (30.6 percent), smallmouth bass (26.3 percent), white sucker (14.9 percent), and longnose dace (10.7 percent); common shiner (6.4 percent) and spottail shiner (4.2 percent) were also relatively abundant (Table 3.9).

[1] Umbagog, Aziscohos, and Richardson lakes.

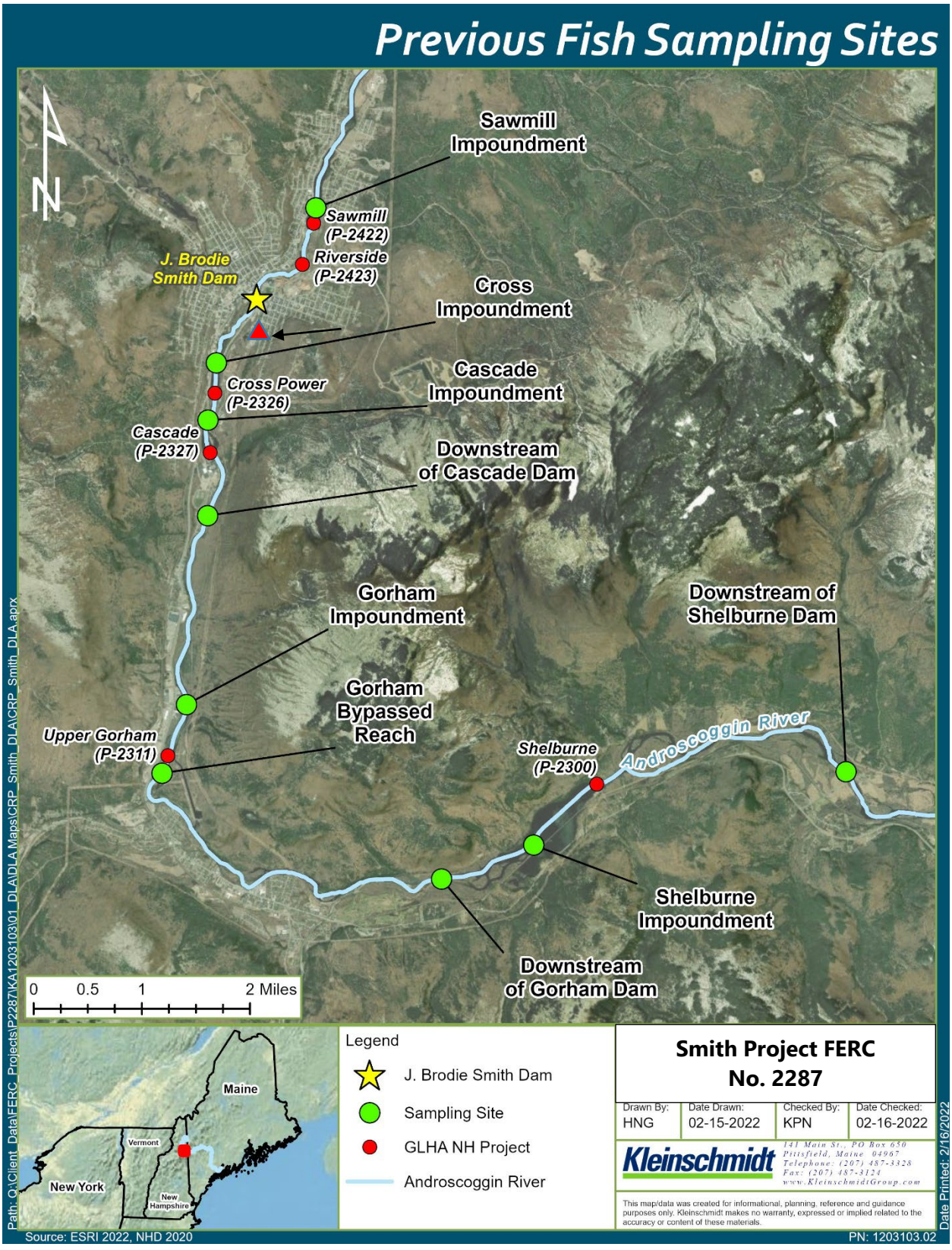

Figure 3.11 Midwest Biodiversity Institute's 2003 Fish Sampling Locations

Other species, such as rainbow trout, bullhead, and yellow perch were less common (i.e., less than or equal to 2 percent of the total catch). Smallmouth bass and white sucker were the most common species in riverine segments; smallmouth bass and fallfish were the most common species in the impounded segments (Yoder et al. 2006a). Rainbow trout and brown trout were present but not predominant. Species richness ranged from 5 to 12 in sampled reaches. MDIFW reports that burbot and chain pickerel also occur in the upper Androscoggin River (Brautigam and Pellerin 2014).

James River New Hampshire Electric (JRNHE, former Licensee of several hydropower projects in the upper Androscoggin River) completed baseline fisheries surveys in the near the J. Brodie Smith Project in the late 1980s using boat and backpack electrofishing, fyke nets, gill nets, and experimental angling. Like what was documented by MBI in 2003, the fish assemblage in lacustrine (i.e., lake or impounded) waters was composed primarily of common fish species from the northeastern United States, including fallfish, white sucker, common shiner, and lesser numbers of smallmouth bass, yellow perch, longnose dace, lake chub, rainbow trout, and brown trout (Table 3.10); the fish assemblage in riverine sections were composed of white sucker, longnose sucker, longnose dace, landlocked salmon, rainbow trout, lake chub, common shiner, golden shiner, brown bull head blacknose dace, slimy sculpin, fallfish, pumpkinseed sunfish, and brown trout (Table 3.10).

Table 3.9 Fisheries Assemblage Documented near the J. Brodie Smith Hydroelectric Project in 2003

Species	Sawmill impound.	Cross Power impound.	Cascade impound.	Downstream Cascade dam	Gorham impound.	Gorham bypass	Downstream of Gorham	Shelburne impound.	Total by Species	Relative Percent
Fallfish	22	16	8	200	314	149	279	44	1,032	30.54
Smallmouth bass	65	132	189	125	160	32	91	95	889	26.31
White sucker	-	-	4	89	102	214	88	7	504	14.92
Longnose dace	-	-	-	124	-	203	36	-	363	10.74
Common shiner	1	-	1	3	183	1	12	14	215	6.36
Spottail shiner	-	-	-	-	61	1	3	78	143	4.23
Yellow perch	-	3	-	4	1		38	23	69	2.04
Largemouth bass	12	11	14	4	3	-	-	-	44	1.30
Rainbow trout	1	-	-	1	-	21	11	-	34	1.01
Lake chub	-	-	-	-		22	2	-	24	0.71
Golden shiner	3	-	-	-	2		-	14	19	0.56
Brown bullhead	-	-	-	-	2	-	-	10	12	0.36
Rock bass	3	1	1	-	6	-	-	-	11	0.33
Blacknose dace	-	-	-	-	-	6	1	-	7	0.21
Brown trout	2	-	1	1	-	-	1	-	5	0.15
Longnose sucker	-	-	-	1	-	2	1	-	4	0.12
Creek chub	-	-	-	1	-	2	-	-	3	0.09
Landlocked salmon	-	-	-	1	-	-	-	-	1	0.03
Total Catch	**109**	**163**	**218**	**554**	**834**	**653**	**563**	**285**	**3,379**	**100.00**
No. of Species	**8**	**5**	**7**	**12**	**10**	**11**	**12**	**8**	**18**	**-**

Source: Yoder et al. 2006a; 2006b.

Table 3.10 Fisheries Assemblage Documented near the J. Brodie Smith Project in 1988

Waterbody	No. Fish Collected	Percent Abundance Fish Species Collected
Sawmill impoundment	44	Fallfish (57%); common shiner (25%); white sucker (11%); rainbow trout (2.3%); yellow perch (2.3%); blacknose dace (2.3%)
Sawmill bypassed reach	67	White sucker (36%); landlocked salmon (24%); rainbow trout (24%); common shiner (13%); longnose sucker (3%); lake chub, blacknose dace, longnose dace, and slimy sculpin were common but not quantified
Riverside bypassed reach	21	Longnose sucker (28%); common shiner (19%); fallfish (14%); rainbow trout (14%); landlocked salmon (10%); blacknose dace (10%); white sucker (5%)
Cross Power impoundment	19	Common shiner (47%); white sucker (37%); fallfish (16%)
Cross Power tailwater	64	White sucker (64%); fallfish (14%); smallmouth bass (8%); common shiner (8%); brown trout (1.5%); yellow perch (1.5%); blacknose dace (1.5%); lake chub (1.5%)
Cascade impoundment	60	White sucker (68%); fallfish (13%); smallmouth bass (8%); common shiner (6.5%); brown trout (1.5%); yellow perch (1.5%)
Gorham impoundment	44	White sucker (70%); longnose dace (18%); fallfish (7%); unidentified minnows (5%)
Gorham bypassed reach	149	White sucker (27%); blacknose dace (20%); longnose dace (17%); longnose sucker (13%); rainbow trout (9%); slimy sculpin (abundant, but not quantified); brook trout (9%); lake chub (abundant, but not quantified); brown bullhead (1%); fallfish (1%); pumpkinseed sunfish (1%)
Shelburne impoundment	40	White sucker (60%); rainbow trout (20%); fallfish (18%); yellow perch (2%)
Shelburne bypassed reach	19	Golden shiner (42.5%); yellow perch (32%); white sucker (10.5%); brook trout (5%); brown bullhead (5%); burbot (5%)

Source: JRNHE 1991, JRNHE 1989.

Fisheries Management

Fishing between Berlin, New Hampshire, and the Maine-New Hampshire border is catch-and-release only with no seasonal closures and no limits on the number and size of fish taken (NHDFG 2021). There is no formal, published fisheries management plan for the upper Androscoggin River near the J. Brodie Smith Project; however, NHDFG stocks brown trout, rainbow trout, and brook trout upstream of Berlin annually to support a put and take fishery (Table 3.11). In 2020, NHDFG stocked just over 53,500 brook trout, brown trout, and rainbow trout in the main stem of the Androscoggin River (Table 3.11). Most stocking locations are more than 10 miles upriver from the Berlin area (e.g., Errol, Cambridge, Milan, and Dummer; Table 3.11). NHDFG also stocks the Moose, Wild, and Peabody rivers with brown and rainbow trout to bolster the trout fishery in the main stem Androscoggin River in New Hampshire and Maine (Brautigam and Pellerin 2014); the Moose and Peabody rivers discharge to the mainstem Androscoggin below the Gorham Project, and the Wild River confluence is well downstream from the Shelburne Project (Figure 3.12). Stocking and fishing regulations are the main drivers controlling game fish populations in the upper Androscoggin River (AMC 2003). NHDFG has not stocked trout in the main stem of the Androscoggin River between Berlin and Shelburne since 2003 because of fish consumption advisories (personal communication, Jesse Wechsler, Kleinschmidt, with Diane Timmons, NHDFG June 28, 2019).

Table 3.11 2020 Trout Stocking Data for the Androscoggin River in New Hampshire

Town	Species	Age	Number
Berlin	Brown trout	1+YR	2,000
Berlin	Brook trout	1+YR	8,654
Berlin	Brook trout	2+YR	500
Berlin	Rainbow trout	1+YR	2,500
Cambridge	Brown trout	1+YR	1,000
Cambridge	Brook trout	1+YR	4,254
Cambridge	Brook trout	2+YR	200
Cambridge	Rainbow trout	1+YR	1,500
Dummer	Brown trout	1+YR	1,000
Dummer	Brook trout	1+YR	4,254
Dummer	Brook trout	2+YR	1,185
Dummer	Rainbow trout	1+YR	2,000
Errol	Brown trout	1+YR	1,184

Town	Species	Age	Number
Errol	Brook trout	1+YR	5,254
Errol	Brook trout	2+YR	300
Errol	Brook trout	3+YR	200
Errol	Rainbow trout	1+YR	6,500
Milan	Brown trout	1+YR	3,023
Milan	Brook trout	1+YR	5,054
Milan	Brook trout	2+YR	500
Milan	Rainbow trout	1+YR	2,500
Total Rainbow Trout			15,000
Total Brown Trout			8,207
Total Brook Trout			30,355
Total Stocked			**53,562**

Source: NHDFG, 2021

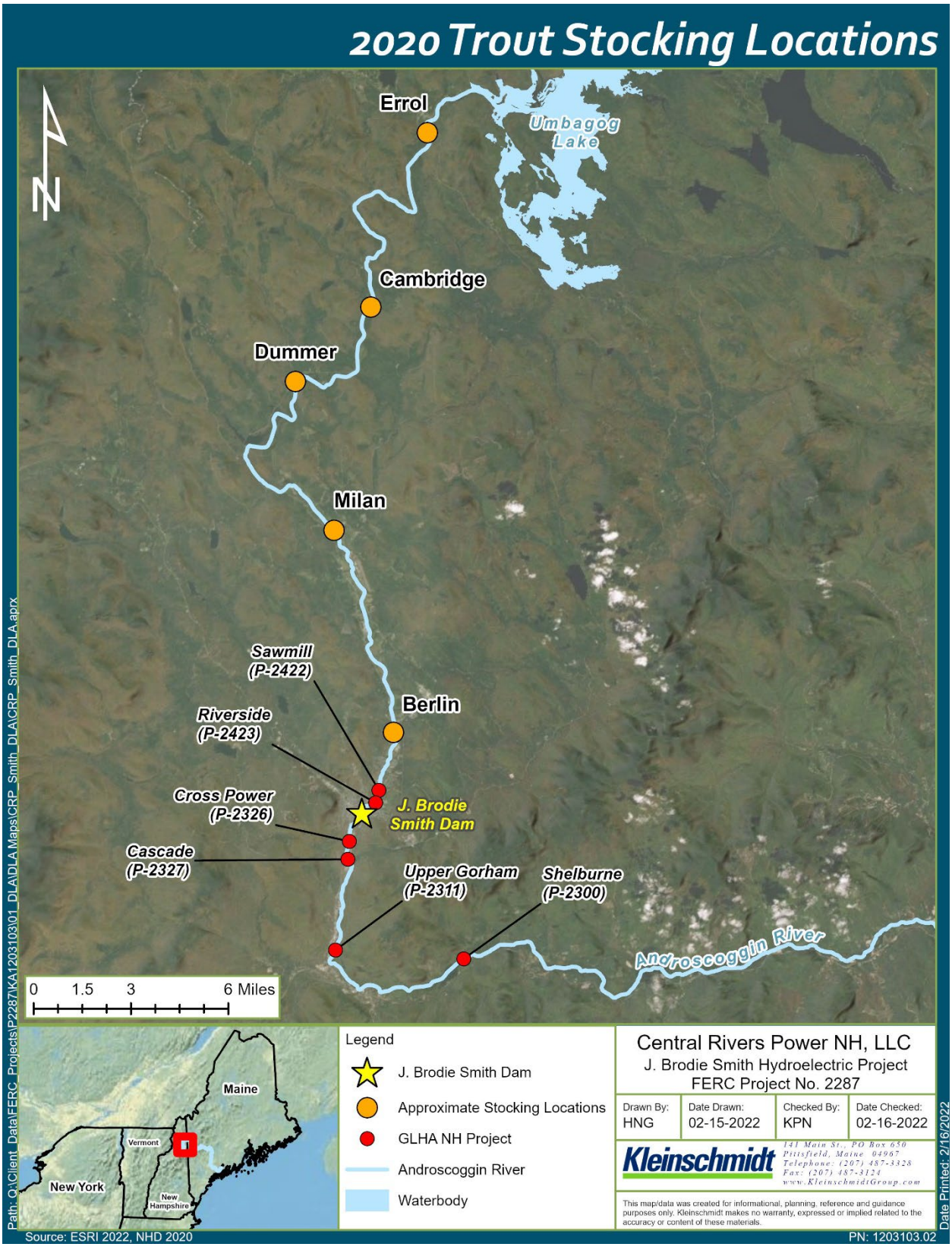

Figure 3.12 Trout Stocking Locations on the Main Stem Androscoggin River and Major Tributaries

According to MDIFW, native brook trout are well established in tributaries and inhabit the main stem of the Androscoggin River seasonally between Gilead and Bethel, Maine (approximately 12 RM and 24 RM downstream of the Shelburne Project, respectively) (Brautigam and Pellerin 2014). Wild tributary populations in conjunction with annual stocking of hatchery brook trout, rainbow trout, and brown trout contribute to the local coldwater fishery (Brautigam and Pellerin 2014).

Diadromous Fish Species

The natural range of migratory, anadromous fish does not extend to the upper Androscoggin River. Two major cascades in the lower Androscoggin River drainage (Lewiston Falls and Rumford Falls) are natural barriers for anadromous fishes (Wippelhauser et al. 2017). Atlantic sturgeon, shortnose sturgeon, and rainbow smelt likely did not pass beyond Pejepscot Falls (Wippelhauser et al. 2017) in Brunswick, Maine. Lewiston Falls prevented the upstream migration of sea-run alewives, American shad, blueback herring, striped bass, and sea lamprey, while Rumford Falls was a barrier to Atlantic salmon (Wippelhauser et al. 2017). The J. Brodie Smith Project is approximately 65 RMs upstream of Lewiston Falls and 45 RMs upstream of Rumford Falls. American eel, a catadromous fish species, are present in the lower Androscoggin River (i.e., downstream of Lewiston Falls) in relatively low numbers as compared to other watersheds in Maine (Yoder et al. 2006a). MBI collected no American eels in the upper Androscoggin River in 2003 (Yoder et al. 2006a).

Fish Entrainment and Impingement

As proposed in the RSP, the Licensee completed a desktop study in 2021 to assess the potential risk of entrainment and impingement of resident fish species at the J. Brodie Smith Project. A final report was provided in the ISR. The objectives of the study were to:

- Describe the configuration of the intake areas, including forebay characteristics, size of the intakes, trash rack spacing, approach velocities, and trash rack debris and cleaning protocols.
- Assess entrainment risk and impingement risk of stocked salmonids (e.g., brown trout and rainbow trout) and the four most abundant resident fish species known to occur in the study area.

CRP evaluated entrainment and impingement risk of juvenile and adult lifestages of stocked trout, fallfish, smallmouth bass, white sucker, and longnose dace (four most

common species known to occur in the project area). In addition, CRP estimated turbine passage survival for juvenile species that have weaker swimming speeds that may be entrained. This combination of species and lifestages represented a range of game species, nongame species, and native species that may be affected by project operations. CRP reviewed features of the J. Brodie Smith Project that were applicable to fish entrainment and impingement including:

- Trash rack configuration (e.g., surface area of rack system and clear spacing of trash rack bars).
- Water use through the turbines (e.g., cfs used for generation).
- Calculated approach velocity (feet per second; fps) in front of the trash racks.
- Debris accumulation and handling.
- Turbine characteristics (e.g., power output, turbine type and orientation, revolutions per minute, and head).

Biological characteristics of the target species that influence their susceptibility to entrainment and impingement and aquatic habitat in the project area were also reviewed, including:

- Applicable life history information for each species (e.g., length, body width, and burst swim speed for juvenile and adult lifestages).
- Habitat preferences and an assessment of aquatic habitats near the project intakes.
- Propensity to migrate (i.e., requirements for obligatory downstream migration).
- Applicable species- or family-specific turbine survival data.

Entrainment and impingement risk for juveniles and adults of each target species was ranked as high, moderately high, moderate, moderately low, or low according to swim speed (i.e., ability to avoid or resist intake velocities that could result in involuntary entrainment or impingement), body size (likelihood of passing through trash racks), habitat preference or availability of habitat near the intake area, and the proclivity to move (i.e., migratory requirements).

Burst fish swim speed information was collected from a literature review of published and unpublished information. In instances where information on swim speeds was not readily available, burst swim speed estimates were derived using the following equation developed by the USFWS:

Burst Swimming Speed (ft/s) = (Fish length (ft) x 3 body lengths per second (ft/s)*(2)[2]

Turbine passage survival estimates were made for those species and lifestages that were found to be at risk (i.e., could physically fit through the trash racks and with swim speeds less that calculated approach velocities). Turbine passage survival estimates were derived from past studies described in the Electric Power Research Institute's (EPRI 1997) database for hydropower projects using sites similar to CRP's hydroelectric facilities. In addition, the USFWS' Turbine Blade Strike Analysis model (Towler and Pica 2020) was used to assess turbine passage survival for those species or lifestages classified as at risk (i.e., in instances where swim speeds were less than calculated approach velocities).

The J. Brodie Smith Project is located within the urban setting of Berlin, New Hampshire. The intake area consists of a 500-ft-long, concrete lined power canal that contains no structural fish habitat such as aquatic plant beds, rocky substrates, gravel, or woody debris (Photo 3.6). Because there is no fish habitat other than open water near the intake and no migratory fish species, it is expected that few fish inhabit the intake area. There is no habitat for stocked salmonids in the J. Brodie Smith impoundment near the intakes. The J. Brodie Smith Project has one vertical Francis turbine with a total hydraulic capacity of 3,000 cfs and a maximum generation of 15 MW. The station's trash rack has a surface area of 885 square feet (25.5-ft X 34.7-ft). Full depth, vertical trash rack bars are spaced at 3 inches. Relevant turbine and site characteristics are provided in Table 3.12.

Trash rack spacing is wide enough for adult smallmouth bass, white sucker, and fallfish to become entrained. Maximum intake velocities were calculated to be 3.4 fps when operating at the full hydraulic capacity of 3,000 cfs and 2.3 fps during median river flow conditions from June through September (2,000 cfs). Burst speeds of adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 3.4 fps, which means fish can swim away from the intake area to avoid entrainment.

[2] USFWS 1989.

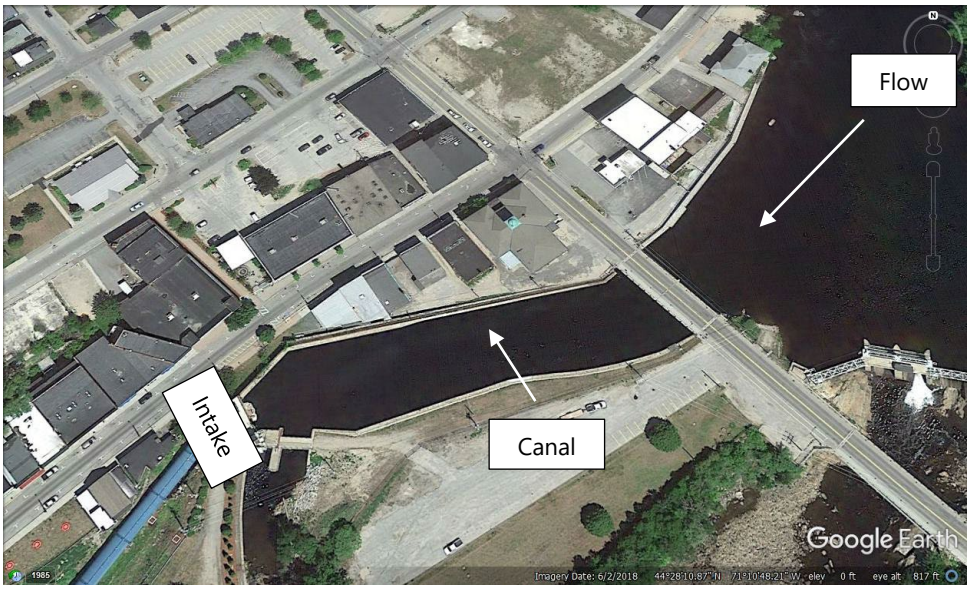

Photo 3.6 J. Brodie Smith Project Intake and Forebay Area, Upper Androscoggin River.

Table 3.12 Characteristics of the J. Brodie Smith Project

Characteristic	J. Brodie Smith Project Unit 1
Turbine Orientation	Vertical
Turbine Type (e.g., Kaplan/Francis)	Francis
Rated Power (MW)	15
Turbine Rated Max Flow (cfs)	3,000 cfs
Average River Flow (50% on Flow Duration Curve) During June-September[3]	2,000 cfs
Head (feet)	83
Turbine Revolutions per Minute (RPM)	128.6
Runner Diameter (feet)	12.25
Number of Blades or Buckets	17
Description of Debris Management/Removal	Hydraulic Rake
Gross Dimensions of Trash Rack (square feet)	885
Calculated Approach Velocity at Max Flow (fps)	3.4
Calculated Approach Velocity at Average Flow (fps)	2.3
Clear (Open) Spacing Between Trash Rack Bars	3 inches

[3] This is the season when resident species are expected to be most active.

However, small juvenile lifestages of fallfish, smallmouth bass, and white sucker (e.g., 4 to 6-inch-long fish) have burst speeds of approximately 2.0 to 3.0 fps. Therefore, juvenile smallmouth bass, fallfish, and white sucker, if in the forebay area, may be at risk of entrainment during high flow conditions, although entrainment risk is low because average river flow during June through September (50% exceedance) of 2,000 cfs reduces approach velocities to approximately 2.3 fps. Impingement is unlikely because of the wide rack spacing.

Trash raking is done with a hydraulic rack rake; it is expected this has no influence on impingement and entrainment of fish. Survival estimates for small (5 to 7 inch long), juvenile fish through the J. Brodie Smith turbine was predicted to be between 90 and 91.5 percent based on the USFWS's turbine blade strike model results (Appendix A provides the Turbine Blade Strike Analysis (TBSA) results for the J. Brodie Smith Project).

The results of the study demonstrated that the risk of impingement and entrainment of fish at the J. Brodie Smith Projects is low. This is a result of several factors including:

- The lack of quality aquatic habitat in the power canal, which minimizes the likelihood that fish will encounter the intake areas.
- The industrial nature and developmental history of the project area, which has resulted in limited fisheries management in the 11-mile-long reach of the Androscoggin River with concentrated hydropower development.
- Low water velocities in front of the intake racks during the open water season when fish are more likely to be at large and the ability of fish to swim away from the racks.
- The absence of migratory fish that require downstream passage which would be more at risk of entrainment as compared to resident fish species; the natural range of migratory, anadromous fish does not extend to the upper Androscoggin River.

Small, resident fish (e.g., less than 6-inches-long) that may encounter the intake area at the J. Brodie Smith Project have the potential to become entrained because approach velocities are expected to be greater than 3.0 fps at full generation during high flow periods. Risk of entrainment decreases as river flow decreases throughout the summer and early fall as inflow to the turbine is reduced resulting in lower approach velocities at the intake. For those small, juvenile fish that may become entrained at the J. Brodie Smith

Project, survival is expected to be high (~ 90 to 91.5 percent) based on the characteristics of the turbine and results of the turbine blade strike model analysis.

Benthic Macroinvertebrates and Freshwater Mussels

MDEP has monitored benthic macroinvertebrate communities on the upper Androscoggin River every 5 years at Bethel, Maine, which is approximately 23 RM downstream of the Shelburne Project. MDEP uses benthic macroinvertebrate data to assess attainment of established water quality class designation. The Androscoggin River at Bethel, Maine, is a Class B water. Benthic macroinvertebrate data collected since 1998 demonstrate that the Androscoggin River attains Class A or Class B designation based on benthic macroinvertebrate community metrics (MDEP 2019); Class A waters are the second highest designation in Maine. Attainment of Class is based on 30 benthic macroinvertebrate community metrics, including abundance, taxa richness, species diversity, and the characteristics of the Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) Orders, which are sensitive to pollution and provide forage opportunities for fish communities.

Ten freshwater mussel species are known to occur in New Hampshire, six of which are species of concern or protected species. Four species are reported to occur in the upper Androscoggin River near Berlin, New Hampshire (NHDFG 2021b) (Table 3.13). None of the four is listed by NHDFG as a rare species and three are commonly-occurring with secure population levels (Table 3.13).

Table 3.13 Status and Distribution of Freshwater Mussel Species in the Upper Androscoggin River

Common Name	Status
Creeper	Not listed, vulnerable; known to occur downstream of Shelburne Project and upstream of Berlin, New Hampshire.
Eastern elliptio	Not listed, population secure; occurs upstream of Berlin and within all major watersheds in New Hampshire.
Eastern floater	Not listed, population secure; occurs upstream of Berlin, NH.
Triangle floater	Not listed, population secure; known to occur downstream of Shelburne Project and upstream of Berlin, New Hampshire.

Source: NHDFG 2021b

The NHDFG requested that the Licensee complete freshwater mussel surveys throughout the J. Brodie Smith project area as part of the relicensing study effort. CRP contracted Biodrawversity, Inc. to perform freshwater mussel surveys in 2020. A summary of the study results is provided below; the full study report was provided in the ISR. The objective of the study was to characterize species composition, distribution, abundance, demographics (inferred from shell length distribution), and habitat use of the mussel community.

An initial site visit to confirm access and identify potential survey sites was completed on July 27, 2020. A list and map of 7 proposed survey sites was developed based on the initial site assessment and submitted to NHDFG for review. After approval from the NHDFG, 7 survey locations were established in the tailwater (1), bypass reach (4), and impoundment (2). The surveys were completed from September 1 through September 4, 2020. Water was clear, water temperature was in the low to mid 60s, and visibility was excellent even in deep water. Three biologists worked together at each site; two people conducted the snorkel surveys, and the third person provided support, recorded all data, and checked shorelines for shells. At each survey site, biologists recorded mussel species present, counts for all species, habitat descriptions, photographs of mussels and habitat, survey method and duration, and location.

Eastern elliptio and triangle floater were found during the survey. Eastern elliptio is common and widespread in New Hampshire; the triangle floater is widespread but usually not common. No state-listed species were detected. No live triangle floaters were found, but two shells were found in the impoundment. Eastern elliptio was found at low densities throughout the project area: 10 live mussels (and 9 shells) in the impoundment, 1 live mussel (and 12 shells) in the bypass reach, and a higher-density patch in the tailrace of approximately 100 individuals.

Researchers from Biodrawversity documented that most of the impoundment contains suitable habitat for these two species, especially the middle and lower impoundment which has fine substrates (silt, sand, and gravel) and slower flows. The uppermost section of the small impoundment has high flow velocities and large substrates that generally preclude mussels. Nearly the entire bypass reach is very poor mussel habitat due to its high-gradient channel with cascades and rapids, bedrock and boulder substrate, and strong scouring flows. Deeper areas of the tailrace, with fairly stable flows and fine substrates (gravel and small cobble) provided suitable mussel habitat.

3.4.1.3 Invasive Aquatic Species

The NHDES reports no invasive aquatic species infestations in the upper Androscoggin River (NHDES 2019).

3.4.2 Proposed Environmental Measures

CRP is proposing no changes to operations or construction activities at the J. Brodie Smith Project. As such, there will be no land or surface water disturbances, no changes in short term or long term river flow management, and no changes in reservoir elevations resulting from the proposed relicensing of the hydroelectric facilities, except during infrequent maintenance activities throughout the term of any new license. CRP is proposing to develop and implement an updated OCP for the duration of a new license term to reliably maintain run-of-river operations at the J. Brodie Smith Project.

3.4.2.1 Aquatic Habitat

The bypass reach was the subject of studies and consultation between the licensee and agencies (e.g., USFWS, NHDFG, and NHDES) in the late 1990s. CRP's predecessor and the agencies arrived at the existing flow regime through a collaborative consultation process; the existing minimum flow has been provided for several decades to protect and promote fish and aquatic organisms. The J. Brodie Smith bypass reach is a steep, highly-scoured, bedrock dominated reach that functions much the same as it did during the last relicensing, with little geomorphic change over time. The bypass reach has limited fishery resource management value (i.e., limited to no spawning or rearing fish habitat) given its underlying characteristics. NHDFG has not stocked trout in the project area since 2003 because of fish consumption advisories (personal communication, Jesse Wechsler, Fisheries Scientist, Kleinschmidt, with Diane Timmons, NHDFG June 28, 2019). The reach is mostly inaccessible to the public due to the industrial setting and steep, hazardous banks; therefore, it does not support active recreational activities such as angling, boating, and other water sports.

Aquatic habitat provides temporary refuge to transient fish that may be washed into the project area from upstream during high flows, or those ascending from the Cross Project impoundment. These fish may transiently use scour pools throughout the reach or the small impoundment as refugia. CRP documented that existing minimum flows in the bypass reaches provide a diversity of quality aquatic habitats. As demonstrated during the 2020 follow up work, the minimum flows generally wet the channel from bank to bank

and provide areas of deep, fast water, and substrates that promote benthic macroinvertebrate habitat. The river channel remains interconnected at the existing minimum flows which allows volitional zone of passage movements for aquatic organisms. The impoundment will be maintained at a stable elevation as a result of run-of-river operations, which is protective of fish and aquatic organisms. Monitoring of DO and pH in 2020 also demonstrated that the existing minimum flow requirement meets New Hampshire's surface water quality standards.

3.4.2.2 Fish and Aquatic Species

The fish assemblage is representative of cool and warmwater fisheries in New England. The proposed action (continued operation) is not expected to have an adverse effect on existing fish communities. The proposed action will maintain riverine and lacustrine habitats throughout the J. Brodie Smith project area. Run-of-river operations will maintain and provide aquatic habitats for fish and other aquatic organisms.

3.4.2.3 Fish Entrainment

CRP is proposing no changes to operations; therefore, the risk of entrainment or impingement is expected to remain low.

3.4.2.4 Benthic Macroinvertebrates and Freshwater Mussels

CRP is proposing no changes to operations of facilities; therefore, invertebrate species and freshwater mussels are not expected to be affected by the proposed action. Drawdowns needed for non-routine maintenance purposes would be permitted under separate regulatory proceedings to minimize the effects on fish and aquatic communities.

3.4.3 Proposed Environmental Measures

The Licensee is proposing to operate the J. Brodie Smith Project in a run-of-river mode and provide a 20 cfs minimum flow to the bypass reach to maintain and support aquatic communities. These measures will help protect aquatic communities and maintain habitats throughout the term of a new license. These operational conditions would be implemented under the proposed updated OCP.

3.4.4 Unavoidable Adverse Effects

Some unavoidable effects such as short-term erosion or infrequent entrainment of small fishes will occur over the term of a new license. The Licensee will implement erosion control measures in the event that construction activities are required for maintenance. Infrequent, short-term drawdown for maintenance (e.g., canal repairs, flashboard replacement) will likely occur during the term of a new license. Any permits needed at the time for these operational activities would be acquired by the Licensee at their onset.

3.4.5 References

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3.5 Wildlife and Botanical Resources

3.5.1 Affected Environment

The J. Brodie Smith project occurs within the Northern Appalachians and Atlantic Highlands ecoregion. This region covers most of the northern and mountainous regions of New England. Characteristic wildlife are moose, black bear, white-tailed deer, red fox, bobcat, lynx, snowshoe hare, porcupine, fisher, marten, racoon, beaver, rabbit, northern flying squirrel, osprey, red-tailed hawk, wild turkey, ruffed grouse, black-backed woodpecker, gray jay, common loon, and red-back salamander (Wiken 2011). Vegetation here is characterized as mostly mixed hard and softwood with spruce-fir forests. Typical forests include mixed hardwoods like sugar maple, beech, and yellow birch; mixed forests with hardwoods, hemlock, and white pine; and spruce-fir forests with balsam fir, red spruce, and birches. In swampy areas, black spruce, white spruce, red maple, black ash, and tamarack dominate. The region is a transitional zone between the boreal zone to the north and the broadleaved and deciduous forests to the south (Wiken 2011).

3.5.1.1 Wildlife Resources

Characteristic wildlife in this region includes moose, black bear, white-tailed deer, red fox, bobcat, lynx, snowshoe hare, porcupine, fisher, marten, racoon, beaver, rabbit, northern flying squirrel, osprey, red-tailed hawk, wild turkey, ruffed grouse, black-backed woodpecker, gray jay, common loon, and red-back salamander. Diverse types of birds and shorebirds are also abundant (Wiken, 2011).

Mammals

Habitat within the Projects boundaries are primarily aquatic with limited terrestrial habitat. Mammalian wildlife species are likely transient, using the riparian corridor for movement and occasional foraging. Species such as moose may occur, as they use a variety of habitats including second-growth boreal forests interspersed with semi-open areas, swamps, mature stands of balsam fir or white birch, and young aspen stands (DeGraaf and Yamasaki, 2001). Larger mammal species, such as moose, deer, and bear do not likely reside year round within the Project J. Brodie Smith Project. Other mammals such as the raccoon are likely common, especially along riparian corridors associated with the Project Boundaries. Furbearers, small game species, rodents, and bats are also likely present in the Project area. These species reside in many different habitat types such as woodland, scrub-shrub or early successional areas, and grassland areas; use of these areas may shift

during different life stages and/or times or year (DeGraaf and Yamasaki, 2001). Mammals that likely inhabit the forest and shrub communities near these Projects include moose, white-tailed deer, black bear, eastern coyote, beaver, mink, gray squirrel, red squirrel, raccoon, opossum, muskrat, fisher, and porcupine (DeGraaf and Yamasaki, 2001; NHFAG, 2019).

Appendix C provides a list of the mammalian species that may exist or use habitat near the Project, as well as their habitat preferences. It is likely that many of these species may occur near the Project area but they are likely limited in the Project boundaries because terrestrial habitat is limited.

Mammals typically found in woodland and riparian areas such as the riparian habitat along the impoundments, include raccoon, long-tailed weasel, striped skunk, white-footed mouse and common bat species such as the little brown bat and big brown bat. These mammals are normally found in woodland or riparian areas due to food requirements, predator or prey relationships, and a preference by several species for trees as den or nest sites (DeGraaf and Yamasaki, 2001).

Due to the size and nature of the Project, scrub-shrub habitat is common along the impoundment shoreline and generally occurs in narrow bands along the fringe of emergent wetland areas or forested riparian habitats. Early successional areas generally include upland areas that are in transitional from cleared areas back to forest. Mammals typically found in scrub-shrub or early successional areas include coyote and red fox. These mammals are normally found in scrub-shrub areas due to food requirements, predator or prey relationships, and cover (DeGraaf and Yamasaki, 2001).

Mammals typically found in grassland areas include the meadow vole, house mouse, and the deer mouse. Several species of bats may also use these areas or manmade structures within these areas. Additionally, several species can be found in multiple habitat types due to their generalized requirements. Coyotes, for example, use woodlands, wetlands, and grasslands in addition to scrub-shrub areas for foraging, dens, and travel corridors (DeGraaf and Yamasaki, 2001).

Amphibians and Reptiles

Reptile and amphibian species inhabit many different habitat types such as woodland, riparian, scrub-shrub or early successional areas, and grasslands. Use of these areas may shift during different life stages and/or times of year.

Reptile and amphibian habitat preferences are primarily influenced by food and reproductive requirements. Species typically found in wetland and open water areas within the Projects and in aquatic habitats such as the impoundments and tributaries may include the northern leopard frog, green frog, bullfrog, pickerel frog, northern spring peeper, and the snapping turtle (DeGraaf and Yamasaki, 2001; NHFAG, 2019). These species use aquatic habitats for foraging, loafing (i.e., resting), protection, reproduction, and hibernation (DeGraaf and Yamasaki, 2001; NHFAG, 2019). Species typically found in woodland areas, including riparian areas, include the spotted salamander, American toad, gray treefrog, wood frog, and the northern red-backed salamander. Many species utilize riparian zones for shelter, venturing into more aquatic and/or terrestrial habitats to forage and reproduce (DeGraaf and Yamasaki, 2001; NHFAG, 2019).

Appendix C lists amphibians and reptiles that may occur within the Project area or nearby their habitat preferences. Because terrestrial habitats are limited within the Project, many of the species in Appendix C may occur within the Project vicinity rather than within the Project boundaries.

Birds

Habitats associated with the Project includes the Project impoundment, tributaries, wetlands, and riparian areas. These areas provide breeding habitat, migratory stopovers, and wintering habitat for a high diversity of avifauna including neotropical songbirds, resident species, water birds, and waterfowl. Avian species typically found in wetland habitats and along the shoreline of the impoundment include or lakes in the area include red-winged blackbird, song sparrow, and waterfowl such as the mallard duck (DeGraaf and Yamasaki, 2001). Species of ducks may nest within vegetated shallows and wetlands and forage in open water (DeGraaf and Yamasaki, 2001; NHFAG, 2019).

Appendix C lists bird species that may occur or may use habitat near the Project and their preferred habitat. Appendix C represents the assemblages of birds likely to use Habitat in the Project area, but it is not a complete list of all the bird species known from the region.

The Androscoggin River corridor and adjacent wetlands attract a wide variety of waterfowl. Waterfowl species that may occur within the vicinity include common species such as the wood duck, redhead, American black duck, mallard, and common merganser. Water birds are found primarily in wetland and riparian habitat areas in the vicinity of the Project, including the impoundment. Some of the water birds known to use wetland and riparian habitats in the vicinity of the Project include the belted kingfisher, and American bittern.

The J. Brodie Project may include several species of birds of prey, and many of these species may use habitat in the boundaries on a seasonal basis. Some of these species include the bald eagle, osprey, red-tailed hawk, and barred owl. These species utilize many different habitat types throughout the year including woodland, scrub-shrub or early successional areas, and wetland and open water areas.

3.5.1.2 Botanical Resources

J Brodie Smith Project occurs within the Boreal region of New Hampshire. The boreal region encompasses the great northern conifer forest in New Hampshire, boreal species occur from the White Mountains northward. Boreal region plants include balsam fir, black spruce, paper birch, larch, and quaking aspen. Numerous plant species in New Hampshire are restricted to the southeastern portion of the North American boreal forests or occupy the transition zone between boreal and eastern deciduous forests, including red spruce, red pine, northern white cedar, sheep laurel, and rhodora (Sperduto, 2012).

In 2020, CRP conducted reconnaissance level field surveys of botanical species (including RTE plant species) within the Project area and used aerial photo interpretation and publicly available National Wetland Inventory (NWI) mapping to identify cover types as well as desktop reviews. The goal of this study was to document the botanical resources within the Project boundaries and to note any RTE species. The reconnaissance level surveys were also designed to document invasive vegetation in the Project area. Researchers identified 18 habitat types, and documentation of 167 botanical species. Seven invasive botanical species were identified in the Project area. No RTE species plant were identified.

Table 3.14 lists the botanical communities along with dominant species and calculated acreage present within the study area. Table 3.15 lists the botanical invasive species identified in the study area.

Table 3.14 Botanical Communities

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
Ruderal Forest	Bigtooth Aspen (Populus grandidentata), Paper Birch (Betula papyrifera), and Quaking Aspen (Populus tremuloides)	Bigtooth Aspen (Populus grandidentata), Paper Birch (Betula papyrifera), and quaking Aspen (Populus tremuloides), Striped Maple (Acer pensylvanicum)	Common Tansy (Tanacetum vulgare), Red Clover (Trifolium pretense), Winter Vetch (Vicia villosa), Goldenrod (Solidago spp.) Lowbush Blueberry (Vaccinium angustifolium)	34.74	7.08%
Sugar Maple-Beech-Yellow Birch Forest	American Beech (Fagus gradifolia), Sugar Maple (Acer saccharum), and Paper Birch (Betula papyrifera)	American Beech (Fagus gradifolia), Sugar Maple (Acer saccharum), and Paper Birch (Betula papyrifera), Hobblebush (Viburnum lantanoides), Smooth Shadbush (Amelanchier laevis), Withe-rod (Viburnum nudum)	Shining Clubmoss (Huperzia lucidula), Trillium (Trillium spp.), Canada Mayflower (Maianthemum canadense), Starflower (Trientalis borealis), Wild Sarsaparilla (Aralia nudicaulis), Lance-leaved Twistedstalk (Streptopus lanceolatus), Indian Cucumber (Medeola virginiana)	74.57	15.20%
Hemlock-Oak-Northern Hardwood Forest	Eastern Hemlock (Tsuga canadensis), Northern Red Oak (Quercus rubra), Red Maple (Acer rubrum), American Beech (Fagus gradifolia), Red Spruce (Picea rubens)	Striped Maple (Acer pensylvanicum), Hobblebush (Viburnum lantanoides)	Woodferns (Dryopteris spp.), Shining Clubmoss (Huperzia lucidula), Western Bracken fern (Pteridium aquilinum) Lowbush Blueberry (Vaccinium angustifolium)	38.9	0.079213058%

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
Hemlock-Beech-Oak-Pine Forest	Eastern White Pine (Pinus strobus), Red Maple (Acer rubrum), Northern Red Oak (Quercus rubra), American Beech (Fagus gradifolia),Paper Birch (Betula papyrifera)	Eastern White Pine (Pinus strobus), Red Maple (Acer rubrum), Northern Red Oak (Quercus rubra), American Beech (Fagus gradifolia),Paper Birch (Betula papyrifera), Striped Maple (Acer pensylvanicum)	Eastern Teaberry (Gaultheria procumbens), Wild Sarsaparilla (Aralia nudicaulis), Canada Mayflower (Maianthemum canadense) Indian Cucumber (Medeola virginiana)	50.89	10.37%
Hemlock-White Pine Forest	Eastern Hemlock (Tsuga canadensis), White Pine (Pinus strobus)	Striped Maple (Acer pensylvanicum)	Lowbush Blueberry (Vaccinium angustifolium), Fan Clubmoss (Lycopodium digitatum)	1.55	0.32%
Northern white cedar forest/woodland	White Cedar (Thuja occidentalis), Eastern Hemlock (Tsuga canadensis), Eastern White Pine (Pinus strobus), Paper Birch (Betula papyrifera), Red Maple (Acer rubrum)	Striped Maple (Acer pensylvanicum), American Witch-hazel (Hamamelis virginiana)	White Cedar (Thuja occidentalis), Eastern Hemlock (Tsuga canadensis), Eastern White Pine (Pinus strobus), Paper Birch (Betula papyrifera), Red Maple (Acer rubrum)	3.81	0.78%

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
Sugar Maple-Silver Maple-White Ash Floodplain Forest	Silver Maple (Acer saccharinum), Sugar Maple (Acer saccharum), white ash (Fraxinus americana), American Elm (Ulmus americana)	Speckled Alder (Alnus incana), Redosier Dogwood (Cornus sericea), White Meadowsweet (Spiraea alba var. latifolia), Devil's Darning Needles (Clematis virginiana), Virginia Creeper (Parthenocissus quinquefolia), Groundnut (Apios americana), Oriental Bittersweet (Celastrus orbiculatus)	Sensitive Fern (Onoclea sensibilis), Ostrich Fern (Matteuccia struthiopteris), Poison Ivy (Toxicodendron radicans), Bristly Dewberry (Rubus hispidus)	18.47	3.77%
Red Maple Floodplain Forest	Red Maple (Acer rubrum), Black Cherry (Prunus serotina), White Ash (Fraxinus americana), Yellow Birch (Betula alleghaniensis)	White Meadowsweet (Spiraea alba var. latifolia), Striped Maple (Acer pensylvanicum)	Sensitive Fern (Onoclea sensibilis), Ostrich Fern (Matteuccia struthiopteris), Interrupted Fern (Osmunda claytoniana),Canadian Clearweed (Pilea pumila), King of the Meadow (Thalictrum pubescens), Arrowleaf Tearthumb (Polygonum sagittatum), Goldenrods (Solidago spp.)	42.25	8.61%
Mesic Herbaceous River Channel	N/A	N/A	Goldenrods (Solidago spp.), Sedges (Carex spp.), Asters (Symphyotrichum spp.), spotted Joe Pye Weed (Eutrochium maculatum), Woolgrass (Scirpus	2.68	0.55%

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
			cyperinus), Hedge False Bindweed (Calystegia sepium), Jewelweed (Impatiens capensis), Common Boneset (Eupatorium perfoliatum), Japanese Knotweed (Polygonum cuspidatum), Purple Loosestrife (Lythrum salicaria)		
Emergent Marsh	N/A	N/A	White Water Lily (Nymphaea odorata), includes Broad-leaved Cattail (Typha latifolia), Woolgrass (Scirpus cyperinus), Soft Rush (Juncus effusus), Three-way Sedge (Dulichium arundinaceum)	7.44	1.52%
Tall Graminoid Meadow Marsh	N/A	Steeplebush (Spiraea tomentosa), White Meadowsweet (Spiraea alba var. latifolia), Sweetgale (Myrica gale)	Reed Canarygrass (Phalaris arundinacea), Woolgrass (Scirpus cyperinus), Fringed Sedge (Carex crinita), Soft Rush (Juncus effusus), Godenrods (Solidago spp.)	9.93	2.02%

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
Open Bog	N/A	Steeplebush (Spiraea tomentosa)	Royal Fern (Osmunda regalis), Tawny Cottongrass (Eriophorum virginicum), Northern St. John's-wort (Hypericum boreale), Three-way Sedge (Dulichium arundinaceum)	1.22	0.25%
Alder-Dogwood-Arrowwood Alluvial Thicket	N/A	Speckled Alder (Alnus incana), Red Osier Dogwood (Cornus sericea), Red Maple (Acer rubrum), Arrow-wood (Viburnum dentatum), Meadowsweet (Spiraea alba var. latifolia)	Goldenrods (Solidago spp.) Virgin's Bower (Clematis virginiana), Parasol Whitetop (Doellingeria umbellata), Sensitive Fern (Onoclea sensibilis), Swamp Dewberry (Rubus hispidus), King of the Meadow (Thalictrum pubescens)	8.86	1.81%
Red maple - Sphagnum basin swamp	Red Maple (Acer rubrum)	Meadowsweet (Spiraea alba var. latifolia), Common Winterberry (Ilex verticillate)	Woolgrass (Scirpus cyperinus), Fringed Sedge (Carex crinita), Peat Mosses (sphagnum spp.)	0.49	0.10%
Park/Wetland	Silver Maple (Acer saccharinum), Green Ash (Fraxinus pennsylvanica), American Elm (Ulmus americana)	Black Chokeberry (Aronia melanocarpa), Arrowwood Viburnum (Viburnum dentatum), White Meadowsweet (Spiraea alba var. latifolia), Red Osier Dogwood, Morrow's Honeysuckle (Lonicera morrowii)	Bluegrass (Poa sp.), King of the Meadow (Thalictrum pubescens), Sensitive Fern (Onoclea sensibilis), Spotted Joe Pye Weed (Eutrochium maculatum)	1.63	0.33%

Habitat Type	Dominant Overstory	Dominant Shrub	Dominant Herbaceous	Acres	Percent of Area
Developed	N/A	N/A	Annual Ragweed (Ambrosia artemisiifolia) Common Tansy (Tanacetum vulgare), Common Plantain (Plantago major), Asters (Symphyotrichum spp.), Common Evening Primrose (Oenothera biennis), Goldenrod (Solidago spp.), Butter and Eggs (Linaria vulgaris), Bird's-foot Trefoil (Lotus corniculatus).	132.48	27.01%
Open Space	Japanese Maples (Acer spp.), Apple and Crabapple (Malus spp.)	Honeysuckle (Lonicera spp.), Common Juniper (Juniperus communis)	Bluegrass (Poa spp.) Goldenrods (Solidago spp.), Hedge False Bindweed (Calystegia sepium), Winter Vetch (Vicia villosa), and Asters (Symphyotrichum spp)	57.38	11.70%
Transmission Right-of-Way	N/A	Allegheny Blackberry (Rubus allegheniensis), Staghorn Sumac (Rhus typhina), Steeplebush (Spiraea tomentosa),Northern Bush Honeysuckle (Diervilla lonicera)	Sensitive Fern (Onoclea sensibilis), Indian Hemp (Apocynum cannabinum), Common Cinquefoil (Potentilla simplex), Goldenrod (Solidago spp.), Asters (Symphyotrichum spp.) and Oriental Bittersweet (Celastrus orbiculatus)	3.30	0.67%
Total				490.56	100.00%

Invasive Species

A total of seven invasive botanical species were documented in the or adjacent to the study area (Table 3.15) for both the Smith and Gorham Projects. Invasive species densities were low to moderate in the study area. The most common invasive botanical species include Oriental Bittersweet (*Celastrus orbiculatus*), Multiflora Rose (*Rosa multiflora*), and Japanese Barberry (*Berberis thunbergia*) which grow in the understory of several forest communities as well as in open and developed areas.

Table 3.15 Invasive Plants within the Study Area

Scientific Name	Common Name	Lifeform Type	Notes
Acer platanoides	Norway maple	Tree	One tree found just outside the Study Area near a Ruderal Forest community.
Berberis thunbergii	Japanese Barberry	Shrub	Found in the understory of several forested communities.
Euonymus alatus	Burning Bush	Shrub	Only one individual plant was observed in a Developed area associated with the town of Berlin.
Polygonum cuspidatum	Japanese Knotweed	Perennial herb-subshrub	One relatively dense area was observed in an Open Space in the Smith Study Area.
Lonicera morrowii	Morrow's Honeysuckle	Perennial Shrub	Only a few small stands were observed in the Ruderal Forest and an Open Space in the Smith Study Area.
Rosa multiflora	Multiflora Rose	Shrub	Found in relatively disturbed areas in the Ruderal Forest, Open Area, and ROW communities.

3.5.2 Environmental Effects

In SD2, FERC identified the potential effects of continued project operation and maintenance on riparian, littoral, and wetland habitats and associated wildlife, including nesting bald eagles as a potential resource issues. CRP is not proposing any changes to project operations or existing facilities that would affect wildlife or botanical species, including bald eagles. CRP is also proposing no construction activities that could affect terrestrial resources or nesting species. CRP is proposing to continue operating the Project as a run-of-river facility which will maintain impoundment levels and river flows, thereby protecting aquatic shoreline habitats and the aquatic or terrestrial biota.

3.5.3 Proposed Environmental Measures

CRP is not proposing any changes to project operations or existing facilities that would affect wildlife or botanical species, including bald eagles. CRP is also proposing no construction activities that would likely affect terrestrial resources (including invasive species) or nesting species. CRP is proposing to continue operating the Project as a run-of-river facility which will maintain impoundment levels and river flows, thereby minimizing potential effects on aquatic shoreline habitats and the aquatic or terrestrial biota.

3.5.4 Unavoidable Adverse Effects

Continued operation and relicensing of the J. Brodie Smith Project as proposed is not expected to have unavoidable adverse effects on wildlife and botanical resources.

3.5.5 References

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3.6 Wetland, Riparian and Littoral Habitats

3.6.1 Affected Environment

The J. Brodie Smith Project is located within the boreal region of New Hampshire. The boreal region species occur from the White Mountains northward, and in peatlands throughout the state. Specifically, the Berlin Projects occur within the White Mountains section which includes all of the White Mountains as well as the hilly country in Northern New Hampshire (Sperduto and Nichols 2012). The Project is within the Upper Androscoggin watershed on the Androscoggin River and includes several wetlands. The shoreline and much of the impoundment supports the littoral zone, and nearly all the upland areas provide riparian habitat.

3.6.2 Wetlands

In 2020, CRP conducted a Botanical Resources study in the J. Brodie Smith Project vicinity. The study area included a 200-foot buffer of the Project boundary. In addition to open water wetlands identified by the NWI, the reconnaissance survey identified two wetland botanical communities (CRP 2021).

Pond, Riverine and Lacustrine Wetlands

The most common wetland types within the Project boundary are open water wetlands including pond, riverine and lacustrine wetlands associated with the Androscoggin River and the impoundment. The results of the 2020 survey work demonstrated that wetlands in the Project boundary contain primarily deep-water habitats. These results were generally consistent with open water wetlands mapped by the USWFS and recorded in the National Wetland Inventory (USFWS 2021) (Figure 3.13). The primary wetland types are impounded freshwater pond (PUBH), lacustrine (L1UBH) and riverine wetlands (R2UBH) in the Androscoggin River channel. The freshwater pond, riverine and the lacustrine wetlands are classified as having unconsolidated bottoms. Unconsolidated bottoms are characterized by the "lack of large stable surfaces for plant and animal attachment" (USGS 1992). Substrate of the ponds, riverine and lacustrine wetlands likely consist of cobble, gravel, sand, mud, or organic material.

Botanical Communities Identified

Mesic Herbaceous River Channel

The mesic herbaceous river cannel community occurs on shores and islands in the Androscoggin river channel within the Androscoggin River channel (riverine) (Photo 3.7). This community is subjected to ice scour and flooding and the substrate consists of sand and small to medium sized cobble deposited in the active river channel. The lower areas may be wet throughout the growing season while the upper areas are more mesic. Sparse vegetation is variable and occurs below ordinary high water. Common plants include goldenrods, sedges, asters, spotted Joe Pye weed, woolgrass, hedge false bindweed, jewelweed, and common boneset.

Photo 3.7 Representative Mesic Herbaceous River Cannel

Cattail Marsh

This community type is found exclusively in the J. Brodie Smith Impoundment just upstream of the dam. This community is dominated by broad-leaved cattail and is seasonally to semi-permanently flooded with mucky mineral soils. White water lily is common in the deeper areas along the edge of the marsh.

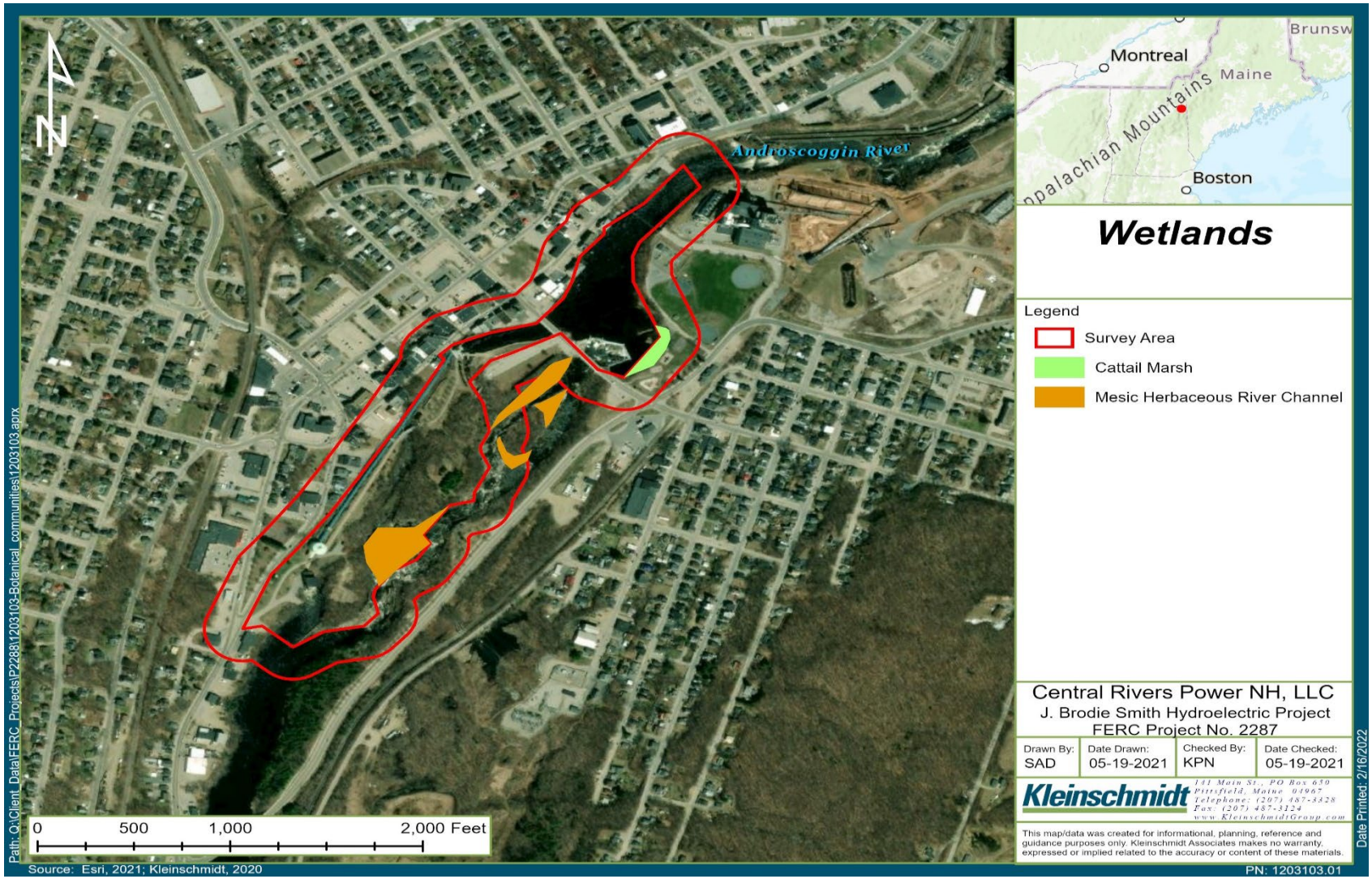

Figure 3.13 Project Wetlands

Riparian and Littoral Habitat

Riparian habitat within the J. Brodie Smith Project vicinity is a mix of deciduous and mixed forest, parks, and commercial and residential development as discussed in section 3.5.1.2, Botanical Resources. Much of the riparian area contains concentrated residential and commercial development associated with the town of Berlin. These areas are often dominated by weedy or shrubby species commonly found in disturbed sites or ornamental plantings and manicured lawns. Dominant forest community is hemlock-oak-northern hardwood forest and ruderal forests. Ruderal forests are early succession forest often found in areas that have been disturbed by human activity such as the construction or maintenance of roads, trails, and buildings.

The littoral zone is the transitional area between deep-water, aquatic habitat and terrestrial wetlands or uplands. Littoral habitats include those areas of a water body through which light penetrates resulting in primary productivity. Within the Project boundary, this zone is often unvegetated with a cobble-gravel, sand, mud, or organic bottom. In some areas, this zone is vegetated with species that grow on or below the water surface and form an aquatic bed wetland. Deeper portions of the open water will likely support submerged aquatic vegetation such as coontail or wild celery. Shallower waters are commonly dominated by floating leaved vegetation such as various pondweeds, yellow water-lily, white water-lily, floating heart, or watershield. Shallow water aquatic habitat is dominated by a mixture of emergent plants, floating plants, and submerged plants suspended in the water column. Pickerelweed, yellow water-lily, and bladderworts are almost always present, and one or more is typically dominant. A variety of pondweed species, bulrushes, bur-reed species, and other aquatics may also be present (Sperduto and Nichols 2012).

While no aquatic invasive species are identified in Berlin, NH (NHDES 2017) there are several know occurrences of aquatic invaders that pose a potential risk of infestation. Species known to occur within NH, as of 2017 include curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), European naiad (*Najas minor*), fanwort (*Cabomba caroliniana*), variable milfoil (*Myriophyllum heterophyllum*), water chestnut (*Trapa natans*) (NHDES 2017).

3.6.3 Environmental Effects

In SD2, FERC identified potential effects of continued project operation and maintenance on riparian, littoral, and wetland habitats and associated wildlife. CRP is not proposing any changes to project operation or existing facilities that would affect the riparian, littoral, or wetland habitats. CRP is proposing to continue operate the Project as a run-of-river facility which will maintain impoundment levels and river flows, thereby protecting the littoral, riparian, and adjacent wetland habitats and the aquatic or terrestrial biota that uses them during their lifecycles.

3.6.4 Proposed Environmental Measures

CRP is not proposing any new environmental measures related to riparian, littoral, and wetland resources at the Project because the proposed action is not expected to adversely affect wildlife or botanical resources.

3.6.5 Unavoidable Adverse Effects

Continued operation and relicensing of the Project as proposed is not expected to have unavoidable adverse effects on wetlands because they are operated as run-of-river. An annual drawdown typically occurs each September for maintenance and inspections, for a duration of 1-3 days, and are not expected to have lasting effects on the riparian, littoral, or wetland habitats as evidenced by the persistence of these habitats in the Project boundary. CRP provides notification to agencies regarding timing, extent, and duration of such drawdowns.

3.6.6 References

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3.7 Threatened, Endangered and Special Status Species

3.7.1 Affected Environment

3.7.1.1 Federally Listed Species

The USFWS's Information for Planning and Consultation (IPaC) project planning tool identifies the Canada lynx (*Lynx canadensis*) and the northern long-eared bat (NLEB, *Myotis septentrionalis*) as potentially occurring in the J. Brodie Smith Project area (USFWS 2022) (Appendix B). Both species are listed as threatened under the ESA. The bald eagle (*Haliaeetus leucocephalus*), which was removed from the ESA list on June 28, 2007, is federally protected by the Bald and Golden Eagle Protection Act of 1940; bald eagles may occur in the Project area. The IPaC also identified monarch butterfly (*Danaus plexippus*) as a candidate species for listing. Section 7 ESA consultation is not required for candidate species (USFWS 2022). There are no critical habitats for recovery of federally protected species in the Project area.

3.7.2 State Listed Species

Rare wildlife species are protected under the New Hampshire Endangered Species Conservation Act (NHDFG 2017). Depending on their level of vulnerability to extinction, species may be listed as endangered or threatened, or identified as a species of special concern if it does not meet criteria for listing but is particularly vulnerable, could easily become threatened, or is suspected to be endangered or threatened but for which insufficient data exists (NHDFG 2018a). On January 21, 2022, CRP requested a review from the New Hampshire Natural Heritage Bureau (NHB) for the Project to identify species protected by New Hampshire's endangered species law. NHB reported there is a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity of the J. Brodie Smith Project; however, NHB does not expect that it will be impacted by the proposed project, based on the project information submitted.

Based on available habitat and range, four state endangered bat species, including the federally threatened northern long-eared bat, have the potential to occur in or near the Project area (Table 3.18).

Table 3.16 Potential State and Federally Listed Species that May Occur in the Gorham Project Area.

Common Name	Scientific Name	Status
Eastern small-footed bat	*Myotis leibii*	SE
Little brown bat	*Myotis lucifugus*	SE
Northern long-eared bat	*Myotis septentrionalis*	SE, FT
Tri-colored bat	*Perimyotis subflavus*	SE
Canada lynx	*Lynx canadensis*	SE, FT

Source: USFWS 2022; NHB 2019
Key; SE – state endangered
FT – Federally threatened

3.7.3 Description of Threatened and Endangered Wildlife Species

3.7.3.1 Northern Long-Eared Bat

The NLEB was listed as threatened on April 2, 2015, with a final rule published in the Federal Register on January 14, 2016. On April 27, 2016, the USFWS determined that the designation of critical habitat for the species was not prudent; therefore, no critical habitat is established for the NLEB (USFWS 2016). The NLEB feeds on invertebrates and is known to glean prey from vegetation and water surfaces. The NLEB winters in underground caves and cave-like structures, but summers alone or in small colonies in cavities, under bark, or in hollows of live and dead trees typically greater than 3-inches in diameter. Suitable roosting trees also include exfoliating bark, cavities, or cracks (USFWS 2016). While the J. Brodie Smith Project is within the range of the NLEB, there are no known overwintering or summer roosting sites, although feeding may occur over the impoundments and tailraces.

3.7.3.2 Canada Lynx

Canada lynx occupy various habitats in boreal forests and their southern extensions. In eastern forests, dominant vegetation includes spruce and balsam fir. Snowshoe hare are important prey for lynx, and young or subalpine stands may be preferred because they contain more hare than do mature stands. Though data on competition and predation are equivocal, lynx may avoid bobcat and coyote by seeking deep snow, to which lynx are morphologically adapted (long legs and large feet) (NHDFG 2015c). Although critical habitat has been designated in Maine, northern New Hampshire is only considered supporting landscape for the species. Given its developed state, proximity to towns and

cities, and predominantly aquatic habitats (e.g., river reaches and impoundments), it is unlikely that Canada lynx are present in the Project area.

Eastern small-footed bat

The eastern small-footed bat is known to occur in Coos and Rockingham counties in New Hampshire. Summer records are known from seven localities: the White Mountain National Forest, Bartlett, New Boston, Peirmont, Surry, Hinsdale, and Newington (NHDFG 2015b). In winter, this species requires cave or mine habitat that provides adequate characteristics for successful hibernation. Such characteristics include low levels of human disturbance and a stable microclimate (NHDFG 2015b). Summer habitat for the species includes caves and mines, hollow trees and under bark. This suggests that forested areas with caves, mines, rock outcrops or talus provide key summer habitat, but few small-footed bats are captured during mist-netting surveys on potential summer foraging habitat, so little is known about the species' reproduction or summer behavior (PGC 2014).

Due to the narrow project boundary with little wooded area, it is unlikely that lands include wintering and summering habitat. However, the species may use nearby areas and feed over impoundments and tailraces.

Little Brown Bat

The little brown bat is a migratory species found throughout New England, whose habitat depends on the season and setting. This species lives in colonies that can range from hundreds to thousands of individuals (National Wildlife Federation 2015). During the winter, they hibernate in caves, abandoned mines, or other caverns. Summer habitat includes both day and night roosts, which include but are not limited to buildings, trees, under rocks, and in piles of wood. Day and night roosts are typically spaced away from each other, day roosts have very little or no light, provide good shelter, and typically have southwestern exposures to provide heat for arousal from daily torpor. Night roosts are typically in confined spaces with temperatures below 15 degrees Celsius (Havens 2006). The mating season usually starts in August and pups are born approximately two months later. Little brown bats feed strictly on insects and will typically live to six or seven years (National Wildlife Federation 2015).

Due to the narrow project boundaries with little wooded area, it is unlikely that lands include wintering and summering habitat. However, the species may use nearby areas and feed over impoundments and tailraces.

Tri-colored bat

The tri-colored bat is listed as a listed as endangered at the state level. This species winters in caves and mines, and occasionally use other structures to hibernate with low levels of human disturbance and temperature stability. No available data describe the summer habitat requirements of tricolored bats in New Hampshire. After leaving hibernacula, females from maternity colonies in live or dead foliage of deciduous trees (NHDFG 2015a).

Currently the majority of the project boundary is surrounded by hardwood riparian forest and by urban development. While the Gorham Project fall within the species' range, due to the narrow project boundaries with little wooded area, it is unlikely that lands in include wintering and summering habitat. However, the species may use nearby areas and feed in the project impoundments and tailraces.

3.7.3.3 Migratory Birds

The protection of migratory birds is regulated by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the USFWS (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)).

Bald eagles are no longer listed under the ESA but maintain federal protection under the Bald and Golden Eagle Protection Act. They are legally protected in New Hampshire as a species of concern. Bald eagles typically nest near large bodies of open water, such as lakes and large rivers. Eagles nest in large, super-canopy trees or snags often in late-successional forest. They prefer a nest site at the edge of the forest, near foraging areas, unobstructed views, and with little human disturbance. Most eagles forage primarily on fish, with lesser quantities of waterfowl, carrion, and small mammals. The bald eagle often winters along large interior or coastal bodies of water that remain free of ice (NHDFG 2018b). Although bald eagles have been observed at the Project, the Licensee knows of no eagle nests within the Project boundary, and eagles were not raised as a resource issue of concern during consultation with NHB.

Table 3.17 Birds of Conservation Concern That May Occur Within or in the J. Brodie Smith Project Area.

Common Name	Scientific Name	Level of Concern	Breeding Period
Evening Grosbeak	*Coccothraustes vespertinus*	BCC Rangewide	Breeds May 15 to Aug 10

Source: USFWS 2022

3.7.3.4 Mussels

Based on the IPaC and NHB reviews, no state or federally listed freshwater mussel species were identified in the Project area. As described in Section 3.4, *Fish and Aquatic Resources,* at the request of the NHDFG, the Licensee completed RTE freshwater mussel surveys throughout the Project area in 2020; no RTE mussel species were encountered. The complete freshwater mussel report was provided as part of the ISR and is available on FERC's e-Library.

3.7.3.5 Rare, Threatened, and Endangered Botanical Resources and Habitats

The Project area includes a variety of upland and wetland habitat along the shoreline of the Androscoggin River.

NHB reported there is a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity of the J. Brodie Smith Project; however, NHB does not expect that it will be impacted by the proposed project, based on the project information submitted.

3.7.4 Environmental Effects

In SD2, FERC identified potential effects of continued project operation and maintenance on threatened or endangered species or their habitat in the vicinity of the proposed projects, including the federally threatened Canada lynx and northern long-eared bat. CRP is not proposing any changes to project operations or existing facilities that would affect RTE species. CRP is proposing no construction activities that could temporarily affect any listed species.

3.7.5 Proposed Environmental Measures

CRP is not proposing any new environmental measures related to RTE species or their habitats at the J. Brodie Smith Project. Continued run-of-river operations will provide

stable headpond and river flows, which is beneficial to RTE species or plant communities that use or are associated with aquatic habitats in the J. Brodie Smith Project area.

3.7.6 Unavoidable Adverse Effects

Continued operation and relicensing of the Project as proposed is not expected to have unavoidable adverse effects on identified rare, threatened, endangered, or special status species.

3.7.7 References

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USFWS. 2022. List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your project. J. Brodie Smith Hydroelectric Project (P-2288). January 20, 2022.

3.8 Recreational Resources

3.8.1 Affected Environment

3.8.1.1 Existing Recreation Facilities in the Project Boundary

CRP provides access to the approximately 10-acre Smith Peninsula Park located between the penstock and bypassed reach of the J. Brodie Smith Project. The park provides a main walking trail, a loop trail, a spur trail, picnic tables, benches, landscaping, parking, restroom facilities, as well as scenic overlooks of the mountains, Dead River, and Androscoggin River (FERC 2000; PSNH 2000). The park is open year-round and can be used for cross-country skiing and snowmobiling access to downtown Berlin in the winter (Photo 3.9).

Photo 3.8 View of Smith Peninsula Park entrance along Main Street

Photo 3.9 View of trail within park, alongside penstock

Photo 3.10 View of trail in park near gatehouse. Surveillance cameras have been installed to stem vandalism

Photo 3.11 View of parking area near powerhouse for the Smith Peninsula Park.

Photo 3.12 Trail along river in Smith Peninsula Park.

3.8.1.2 Project Recreation Use and Capacities

CRP reported the number of recreation days at the J. Brodie Smith Project in the 2015 FERC Form 80 Licensed Hydropower Development Recreation Report. The annual total recreation days were 738, 54, and 1,440 in 2003, 2009, and 2015, respectively (Table 3.20). Capacity utilization ranged from 5 percent to 10 percent (PSNH 2003, 2009; Eversource 2015).

Table 3.18 Recreation days* and capacity utilization from the 2003, 2009, and 2015 FERC Form 80 reports for the J. Brodie Smith Project.

	2003	2009	2015
Annual Total Recreation Days	738	54	1,440
Peak Weekend Average Recreation Days	15	28	16
Capacity Utilization (%)	5	5	5-10

*A recreation day is defined as each visit by a person to a development for recreational purposes during any portion of a 24-hour period.

FERC and the Town of Shelburne requested that CRP conduct a recreation study at the CRP Projects. FERC requested a recreation use and facility assessment to determine the existing use and condition of access sites and whether those sites are adequate to meet recreation demand. The components of the study should include an access site inventory, user spot counts, and a recreation user survey to determine visitor perceptions of the adequacy of access sites and any need for improvements. The Town of Shelburne requested a study on recreational access and use of the Androscoggin River. The town of Gorham requested the development of a Unified Recreation Plan of all eight hydroelectric projects (including the six projects owned and operated by GLHA) for recreational development or recreational opportunities. In addition, the town of Berlin, residents of Shelburne, New Hampshire, the National Park Service, and the Appalachian Mountain Club provided comments discussing recreation water access and trails throughout the CRP projects vicinity.

CRP proposed in their Revised Study Plan to conduct a recreation use and facility assessment study to determine existing use and condition of recreation water access sites at or near the CRP Projects, and whether those sites are adequate to meet existing and future recreation demand in the project areas.

On May 29, 2020, FERC issued their Study Plan Determination (SPD). However, due to anticipated anomalous usage due to the COVID-19 pandemic, the revised study plan states that CRP plans to complete the recreation use study from May to September 2021. As part of FERC's SPD, the proposed 2021 recreation schedule was accepted.

After reviewing the given state of affairs in 2021, on March 29, 2021, CRP notified the Commission that they would be postponing the recreation study due to continued COVID-19 outbreak once again. CRP did not anticipate that 2021 will reflect typical recreation conditions or use at the J. Brodie Smith and Gorham Projects. Like observed in 2020, some FERC-approved recreation sites could see a significant increase in use as individuals look for ways in which to exercise and recreate while maintaining social distancing recommendations, while other recreation sites could see a significant decrease in use from closures, whether in response to public safety concerns, or from individuals choosing to shelter in place and not participate in their normal recreation activities.

In either case, CRP did not believe that a recreation use and facility assessment study conducted during the 2021 recreation season will reflect an accurate depiction of typical recreation facility use and adequacy, nor would it be particularly informative regarding site specific capacity and needs. Additionally, given the scope of the recreation study, requiring CRP staff or consultants to frequently gather information from recreational users at the recreation sites potentially exposes both them and the public to the COVID-19 virus. As such, CRP is expecting to conduct the recreation use study during the 2022 study season. The results of the 2022 survey will be incorporated in a supplement filing to the Final License Application, anticipated to be filed with FERC by the end of 2022.

3.8.1.3 Regional Recreation Opportunities

The J. Brodie Smith Project is within the Androscoggin Valley in the Great North Woods region of New Hampshire. This region is known for its open wilderness, hiking trails, mountain peaks, and scenic views. The White Mountain National Forest and the Presidential Range of the White Mountains are south and west of the project. State parks within the White Mountain National Forest include Mount Washington State Park, Crawford Notch State Park, and Franconia Notch State Park. Over 100 miles of the Appalachian Trail pass through the White Mountains (ATC 2022). The Presidential Rail Trail is a popular 18-mile hike between Gorham and along the northern border of the White Mountains; opportunities for horseback riding, biking, snowmobiling, cross-country skiing, and scenic and wildlife viewing are also available along the trail (NHDCNR 2021a).

Popular destinations within approximately 30 miles of the J. Brodie Smith Project include the New Hampshire towns of Littleton, Bethlehem, Jefferson, Lancaster, Conway, and Gorham, as well as Bethel, Maine. Several state parks are less than 10 miles from the J. Brodie Smith Project (Moose Brook State Park, Milan Hill State Park, and the Nansen Wayside Park) which provide opportunities for camping, swimming, fishing, hiking, biking, picnicking, scenic viewing, boating, canoeing, kayaking, horseback riding, snowmobiling, and snowshoeing (NHDCNR 2021b, c, d). The Nansen Wayside Park is next to the Nansen Ski Jump State Historic Site; this ski jump was once the largest in the eastern U.S. (NHDCNR 2021e). In addition, several downhill skiing facilities are within 30 miles of Berlin, including Wildcat Mountain, Attitash Mountain, Bretton Woods Mountain, and Sunday River (Recreation in Gorham, NH 2021).

The Ice Gulch Town Forest in Randolph and Gorham, is approximately 6 miles southwest and provides hiking, walking trails, and sightseeing (Section Hiker 2022). The Milan Community Forest is approximately 6 miles northeast and provides sightseeing, outdoor education, and pedestrian recreational use (Town of Milan 2022).

3.8.1.4 Recreation Opportunities in the Project Vicinity

A variety of recreation opportunities are available within the vicinity of the J. Brodie Smith Project. Municipal recreation facilities in the City of Berlin include five parks, six athletic fields, and 4 playgrounds (City of Berlin 2018). The Community Street playground, park, and athletic fields are directly to the east of the impoundment. The Unity Street Park, which provides walking, picnic tables and scenic viewing, is just east of the bypassed reach. The Northern Forest Heritage Park is approximately 1 mile north of the J. Brodie Smith Project along the Androscoggin River and highlights the history of the wood products industry with a museum and replica logging camps (Upstate NH 2018).

Jericho Mountain State Park is in Berlin approximately 3 miles west of the J. Brodie Smith Project. The park provides access to Jericho Lake and opportunities for camping, hiking, boating, swimming, canoeing, fishing, horseback riding, picnicking, snowshoeing, snowmobiling, and ATV riding (NHDCNR 2021f).

The City of Berlin provides several opportunities for water-based recreation from rivers, lakes, and brooks within the city limits including the Androscoggin River, Dead River, Upper Ammonoosuc River, Head Pond, and Horne Brook (City of Berlin 2010). There are numerous trails and paths throughout the City of Berlin which serve hikers, walkers, bikers,

snowmobilers, and cross-country skiers (City of Berlin 2010). Formal snowmobile trails throughout the western portion of the city connect to the statewide trail system. Mount Jasper is approximately 1.3 miles northwest of the J. Brodie Smith Project and provides a diversity of habitats for viewing (e.g., wetlands, vernal pools, ledges, rock outcrop) (Watershed to Wildlife, Inc 2013). Mount Jasper provides a hiking trail, a snowmobile trail, wildlife viewing and views of downtown Berlin, the Dead River, and Mount Forist. Hiking opportunities within Berlin are also available on Mount Forist and Cates Hill (Watershed to Wildlife, Inc 2013).

3.8.1.5 Regional Needs Identified in Management Plans

The 2019-2023 New Hampshire Statewide Comprehensive Outdoor Recreation Plan (NH SCORP) serves to qualify New Hampshire for funding from the federal Land and Water Conservation Fund (LWCF) and provides guidance on prioritizing the allocation of LWCF grants. Goals of the NH SCORP include identifying outdoor recreation trends, needs, and issues; evaluating the supply and demand of recreation resources; and providing a strategic plan for addressing recreation issues in the state (NH DNCR 2019). The strategic priorities for the state of New Hampshire from the 2019-2023 SCORP are connecting people to the outdoors to promote healthy lifestyles, consistent and wise stewardship and conservation of natural resources, economic vitality through the promotion of outdoor recreation and tourism, and education of recreation users, partners, and agencies (NH DNCR 2019).

The City of Berlin Master Plan outlines development and growth priorities for the city through 2030 (City of Berlin, 2010). Several of the primary themes are centered around preserving, maintaining, and improving the historic and cultural heritage and the natural resources of the city. Specific components of the plan include providing more natural resource based recreation opportunities such as multi-use, multi-seasonal trails that connect the urban core with the surrounding area; additional walking paths and trails; increased use of the Androscoggin River (e.g., recreation events); promoting tourism; improving visual access of the surrounding mountains; protecting the scenic value of the river; and maintaining or improving historic sites or restoring them as interpretive sites (City of Berlin 2010).

3.8.1.6 Existing Shoreline Management Policies

The previous Licensee adopted provisions from the New Hampshire Shoreland Water Quality Protection Act (SWQPA) to serve as the Shoreland Protection Plan for the Gorham Project (PSNH 1995; FERC 1999; NHDES 2022). Specifically, all land within 250-feet of the ordinary high water mark will be defined as protected shoreland with restrictions on the uses of that land, and land within a 150-foot buffer of the ordinary high water mark will be maintained as a natural woodland buffer (FERC 1999; NHDES 2022). CRP manages vegetation growth along the transmission line right-of-way to minimize adverse impacts to facilities and aesthetics (FERC 1999; PSNH 1999). Furthermore, CRP conducts annual inspections of the shoreland to assess compliance with the SWQPA and whether any changes to the SWQPA impact the Gorham Project. The annual shoreland inspections have not identified any violations of the SWQPA (e.g., Eversource Energy 2017).

3.8.1.7 National and State Designations

The Androscoggin River in the J. Brodie Smith Project area is not listed on the Nationwide Rivers Inventory (NRI). The reach of the Androscoggin River from the just above the City of Berlin to the Pontook Reservoir is listed on the NRI because of fishery and hydrologic resources; the reach from the Pontook Reservoir to Errol, NH, is also listed on the NRI for recreation and hydrologic resources (NPS 2016). The Appalachian Trail is designated a National Scenic Trail (NPS 2021); sections of the trail to the southeast are within 5 miles of the J. Brodie Smith Project. There are no project lands being considered for inclusion in the National Trail System or as a Wilderness Area.

3.8.2 Environmental Effects

In SD2, FERC identified potential effects of continued project operation on recreational use in the J. Brodie Smith Project area, including the adequacy and condition of existing recreational access and facilities, as well as on aesthetic resources and public access within shoreline protection zones. CRP is planning to conduct a recreation study in 2022 that will collect data that will address these effects.

3.8.3 Proposed Environmental Measures

CRP is not proposing any environmental measures related to recreation at this time, but if determined appropriate based upon 2022 study results, will work with FERC, resource

agencies, and local governments to develop a Recreation Management Plan that will use information gathered in the 2022 Recreation Use Survey.

3.8.4 Unavoidable Adverse Effects

Continued operation and relicensing of the J. Brodie Smith Project as proposed are not expected to have unavoidable adverse effects on recreational resources.

3.8.5 References

Appalachian Trail Conservancy (ATC). 2022. Explore by State. http://appalachiantrail.org/home/explore-the-trail/explore-by-state/new-hampshire. Accessed February 4, 2022.

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New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2021a.. Presidential Recreational Rail Trail. https://www.nhstateparks.org/visit/recreational-rail-trails/presidential-recreational-rail-trail.aspx. Accessed February 4, 2022.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2021b. New Hampshire State Parks Moose Brook State Park. https://www.nhstateparks.org/visit/state-parks/moose-brook-state-park.aspx. Accessed February 4, 2022.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2021c. New Hampshire State Parks. Milan Hill State Park. https://www.nhstateparks.org/visit/state-parks/milan-hill-state-park.aspx. Accessed February 4, 2022.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2021d. New Hampshire State Parks. Nansen Wayside Park. https://www.nhstateparks.org/visit/state-parks/nansen-wayside-park.aspx. Accessed February 4, 2022.

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New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2021f. New Hampshire State Parks. Jericho Mountain State Park. https://www.nhstateparks.org/visit/state-parks/jericho-mountain-state-park.aspx. Accessed February 4, 2022.

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3.9 Aesthetic Resources

3.9.1 Affected Environment

3.9.1.1 Visual Character of the Project Lands and Waters

The J. Brodie Smith Project is located within the Androscoggin River Valley in the City of Berlin, Coos County, New Hampshire. The river basin surrounding the J. Brodie Smith Project is dominated by the landscape of the White Mountains, Mount Jasper, and Mount Forist. Approximately 45 percent of the City of Berlin is in the White Mountain National Forest, and another 20 percent is owned by the state of New Hampshire and other organizations for recreation and conservation (City of Berlin, 2010). The Androscoggin River Valley is relatively narrow with steep adjacent upland areas (FERC 1993); within the reach between Berlin and Shelburne, the width of the valley floor ranges from approximately 0.2 miles to 0.6 miles (1,050 to 3,170 feet) (FERC 1993). The elevation of the Androscoggin River drops from around 1,095 feet at the Sawmill Project (approximately one river-mile upstream of the J. Brodie Smith Project) to 720 feet at the Shelburne Project (approximately 10 river miles downstream) (FERC 1993).

The J. Brodie Smith Project is in the commercial and industrial section of Berlin which was developed for pulp and paper production and related industries in the 1800's (FERC 1993). Remnants of an old paper mill are visible to the northeast; this site now contains a biomass energy plant. The Androscoggin River at the J. Brodie Smith Project flows within a steep-sided rocky gorge with vertical outcrops, concrete retaining and foundation walls, and bridge abutments on both sides (FERC 1993).

The J. Brodie Smith Project is visible to passersby from the Mason Street Bridge which crosses over the upper end of the power canal and bypassed reach (Photo 3-14, Photo 3-15). The surge tank and penstock are visible from Route 16 on the west side of the J. Brodie Smith Project (Photo 3-16). The surge tank and penstock were painted green to blend with the surrounding area and enhance aesthetics at the site (FERC 2002).

Photo 3.13 View of J. Brodie Smith power canal from the Mason Street Bridge. (Photo Courtesy of Google Earth).

Photo 3.14 View of J. Brodie Smith bypassed reach from the Mason Street Bridge.

Photo 3.15 View of J. Brodie Smith penstock and surge tank from Route 16.

Photo 3.16 View of J. Brodie Smith dam including waste gates, minimum flow opening, and spillway from the Mason Street Bridge.

Photo 3.17 View of J. Brodie Smith impoundment from the Mason Street Bridge.

3.9.1.2 Nearby Scenic Attractions

The J. Brodie Smith Project is situated in the Androscoggin River Valley between two of the most scenic regions of New Hampshire: the Great North Woods and the White Mountains. Scenic attractions near the J. Brodie Smith Project include mountains, national and state forests, national and state scenic byways, and covered bridges. The following is a list of some scenic attractions near the J. Brodie Smith Project:

- Cates Hill Road is approximately 2.5 miles north of the project. The City of Berlin has designated Cates Hill Road as a Scenic Road (City of Berlin 2010).
- The Appalachian Trail is a National Scenic Trail (NPS 2021). Over 100 miles of the Appalachian Trail passes through the White Mountain National Forest and continues through Shelburne less than 5 miles from the J. Brodie Smith Project (ATC 2022).
- The 100-mile Woodland Heritage Trail travels through Berlin and the northern section of White Mountain National Forest; the trail is designated a New Hampshire Scenic and Cultural Byway (NHDOT 2015a). The trail provides access to state parks, state forests, historic sites, and covered bridges.
- The 98-mile Moose Path Trail passes through Berlin and past the J. Brodie Smith Project on Route 16. The trail is designated a New Hampshire Scenic and Cultural Byway and provides access to historic sites, hiking, campgrounds, and state parks (NHDOT 2015b).

- The Thirteen Mile Woods Wilderness Area is approximately 15 miles north of Berlin. The land is adjacent to the Androscoggin River and Umbagog National Wildlife Refuge and provides hiking, fishing, scenic and wildlife viewing, snowmobiling, and cross-country skiing (TPL 2018).

3.9.2 Environmental Effects

In SD2, FERC identified the effects of continued J. Brodie Smith Project operation on land use resources as a potential issue.

The continued run-of-river operation and maintenance of the J. Brodie Smith Project will maintain the character of surrounding lands.

No changes are proposed to the operation and maintenance of J. Brodie Smith Project lands. Continued operation and maintenance of the J. Brodie Smith Project will maintain the existing aesthetics of the area.

3.9.3 Proposed Environmental Measures

CRP is not proposing any environmental measures related to land use or aesthetics at this time. CRP is proposing no modifications of the existing J. Brodie Smith Project facilities.

3.9.4 Unavoidable Adverse Effects

Continued operation and relicensing of the J. Brodie Smith Project as proposed are not expected to have unavoidable adverse effects on aesthetic resources.

3.9.5 References

City of Berlin. 2021. Maps Online. https://www.mapsonline.net/berlinnh/index.html. Accessed February 4, 2022.

Eversource Energy. 2017. Annual Shoreland Water Quality Protection Act (SWQPA) Review and Inspection. FERC Project No. 2287-NH, J. Brodie Smith and No. 2288-NH, Gorham. Filed December 8, 2017.

Multi-Resolution Land Characteristics Consortium. 2021. 2019 National Land Cover Database. https://www.mrlc.gov/. Accessed February 11, 2022.

3.10 Cultural and Tribal Resources

3.10.1 Affected Environment

Long before the first Europeans explored the area the ancestors of today's Abenaki Indians, Paleo-Indians, inhabited the river basin. Humans first came to the region during the Paleoindian period, ca 9000- 7000 B.C., although there are few remains in the area. Evidence of successive hunter-gather Archaic populations, ca 7000 -1000 B.C., are more common. The Androscoggin River was likely a travel route from these early periods through the Woodland period (1,000 to 1,500 AD). There are several landforms in the area that are likely to have a potential for cultural resources given that flat areas with easy access to water were conducive for encampments and activities like tool making, and for canoe portage around rapids (FERC 1993). Early Native Americans survived by primarily hunting large game. Based on an engraving dated to the late 1500s the Abenaki Indians of the area had developed some agricultural skills, growing corn, and boiling sap. They had also developed a series of trails and portages along the river (Bethel Historical Society 2007).

3.10.1.1 Historic Properties

J. Brodie Smith Project

The original dam on the site was built by the Glen Manufacturing Company or the International Paper Company in 1885. Most of this dam was dismantled as it became a safety concern. The J. Brodie Smith Project was constructed from August 1945 to May 1948 on the original International Paper Company Mill (IPC Mill Site). Although the J. Brodie Smith Project overlays much of the IPC Mill Site, the site was designated as eligible for listing on the National Register of Historic Places (NRHP) by the New Hampshire State Historic Preservation Office (SHPO). The Smith Project uses the original granite lined canal and spillway and also the original timber crib (PSNH 1996). Although the IPC Mill Site should not be altered by continued Smith Project operation, the CRP will consult with the SHPO on any future plans that could alter the property.

In 1991, Justine Gengras and Dr. Charles Bolian conducted a Phase 1 archeological study of the Smith Project vicinity. No prehistoric resources were identified in the Smith Project boundary and the IPC Mill Site was the only historic property within the Smith Project Boundary. The IPC Mill site consists of portions of canals, retaining walls, dams, building foundations, tunnels, cellars, and masonry.

As set forth in the 1993 Programmatic Agreement for Managing Historic Properties, CRP has a Cultural Resources Management Plan (FERC 1994) for the Project and is required to submit an annual report for managing historic properties. For CRP. This Agreement states that CRP is required to submit an annual report regarding any alterations, or future planned alterations to the structures listed above.

FERC requested in its November 25, 2019, study request, the CRP conduct a historic architectural survey of the J. Brodie Smith. Dam. Therefore, Harvey Research and Consulting reviewed all components of the project that are 50 years or older and evaluated them for eligibility on the National Register and, if eligible, assessed them for project-related effects so that the nature and extent of potential project effects and measures to avoid, lessen, or mitigate adverse effects can be properly determined. CRP surveyed the structures in the area of potential effect (APE) of the Project, in consultation with the New Hampshire State Historic Preservation Office (New Hampshire SHPO).

In accordance with the RSP, Harvey Research and Consulting completed a desktop review in 2020 to document the presence of historical structures and completed the historic architectural survey in September 2020 (CRP 2021).

3.10.1.2 Area of Potential Effect

FERC requested in its comments on the PAD, that the J. Brodie Smith Project be evaluated for eligibility for listing on the National Register.

It is Harvey Research and Consulting's professional opinion that there are no eligible structures for the National Register of Historic Places (NRHP) within the Project APE (CRP 2021 filed as CEII).

NHDHR individual inventory forms were submitted to the NH Division of Historical Resources (DHR) on June 10, 2021, for review of eligibility.

3.10.1.3 Tribal Resources

There are no Native American lands, known Native American TCPs or religious properties, or NRHP-eligible or -listed sites associated with Native American Nations within the Project boundary or which would likely be affected by the proposed relicensing. The following Tribes have been consulted by CRP (via distribution of the NOI, PAD, and ILP filings) and by FERC (letters dated September 18, 2019). No responses were received.

Abenaki Nation of New Hampshire
Rhonda Besaw, Speaker
262 Lancaster Rd
Whitefield NH 03598
TEL 603-837-3381

Cowasuck Band – Pennacook/Abenaki People
Paul Pouliot, Council Chief and Speaker
COWASS North America, Inc.
Cowasuck Band of the Pennacook - Abenaki People
P.O. Box 52
840 Suncook Valley Road (Route 28)
Alton, NH 03809-0052
TEL: 603) 776-1090
FAX: 603) 776-1091
cowasuck@cowasuck.org
www.cowasuck.org

Koasek Abenaki of the Koas
Council of Chiefs : Amy Therrian, Carrie Gendreau, John Prescott, Shirly Hook
Koasek of the Koas
Box 42
Newbury, Vt. 05051
www.koasekofthekoas.org
www.voicesofthekoas.com

Koasek Traditional Abenaki Nation
Chiefs Paul Bunnell and Nathan Pero
PO Box 147
Post Mills, VT 05058-0147
bunnellloyalist@aol.com
www.cowasuckabenaki.com

Eastern Pequot Reservation
Eastern Area Office
Roy Sebastian, Chairperson
North Stonington, CT 06359

Golden Hill Indian Reservation
Golden Hill Paugussett 3 Chief Government
Moonface Bear, Leader
95 Stanavage Rd.
Trumbull, CT 06415
(203) 377-4410 phone
(203) 738-2051 fax

Paucatuck Eastern Pequot Tribe
Eastern Area Office
Roy Sebastian, Chairperson
935 Lantern Hill Rd.
Ledyard, CT 06339

Schaghticaoke Tribal Nation of Kent
Schaghticoke Tribal Council
Richard Velky, Chairperson
605 Main St.
Monroe, CT 06468
(203) 459-2531 phone
(201) 459-2535 fax

Laconia Indian Historical Association
Cliff Williamson, President
P.O. Box 224
Tilton, NH 03276
603-934-4819 (Gerald Dulac, Land Trust)

Nulhegan Band of the Coosuk - Abenaki Nation
Don Stevens, Chief
156 Bacon Drive
Shelburne VT 05482
Tel: (802) 985-2465
www.abenakitribe.org

NH Intertribal Native American Council
Peter Newell, Council Chief
9 Durrell Mountain Road
Belmont NH 03220

Vermont State Recognized Tribe
Sovereign Abenaki Nation of Missisquoi
St. Francis/Sokoki Band
Chief Eugene Rich
Debra Bergeron, Repatriation Coordinator
PO Box 276
100 Grand Avenue
Swanton, VT05488
TEL 802-868-2559
FAX 802-868-5118
SOGOMO@COMCAST.NET

3.10.2 Environmental Effects

In SD2, FERC identified the effects of continued project operation and maintenance activities on properties that are included in or eligible for inclusion in the National Register of Historic Places as a potential resource that could be affected by the proposed action. CRP proposes to continue existing operations and implementing the existing PME measures as described in Section 2.2, *Applicant's Proposed Action*.

CRP is not proposing any changes to the Project or operations CRP is not proposing the construction of any new facilities or ground disturbing activities that have the potential to affect eligible cultural resources. CRP will continue to implement the existing Cultural Resources Management Plan (CRMP) for continued protection of historic resources.

3.10.3 Unavoidable Adverse Effects

Continued operation and relicensing of the Project as proposed is not expected to have unavoidable adverse effects on cultural and tribal resources.

3.10.4 References

Bethel Historical Society. June 2, 2007. *A River's Journey: The Story of the Androscoggin*. Available online: https://www.bethelhistorical.org/legacy-site/A_River%27s_Journey.html (Accessed 7/2/19)

Central Rivers Power, LLC (CRP). 2021. Initial Study Report: J. Brodie Smith (FERC No. P-2287) and Gorham Hydroelectric Projects (FERC No. P-2288).

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Federal Energy Regulatory Commission (FERC). 1994. Order Issuing New License (FERC# 2288). Federal Energy Regulatory Commission, Washington, D.C. 68 FERC § 61,170

Public Service Company of New Hampshire (PSNH). 1996. Cultural Resource Management Plan for the Gorham Hydroelectric Facility, in Gorham Township, Coos County, New Hampshire. Santa Fe, NM 87505.

3.11 Land Use and Socioeconomic Resources

3.11.1 Affected Environment

3.11.1.1 Land Uses and Management Within the Vicinity of the Project

The dominant land cover class within a 1-mile buffer around the J. Brodie Smith Project boundary is deciduous forest (28.5 percent) followed by medium intensity development (19.4 percent), mixed forest (15.1 percent), and low (11.4 percent) and high (10.5 percent) intensity development; the remaining cover classes each constitute less than five percent of the land cover (Figure 3.14, Table 3.21). The J. Brodie Smith Project is located in the most developed area of the watershed (Figure 3.14). The area immediately to the west of the J. Brodie Smith Project and bordering the Androscoggin River is zoned for downtown and general business (Figure 3.15). The area to the east is zoned for industrial/business and residential/general (City of Berlin 2021) (Figure 3.15).

Table 3.19 Land Cover in a 1-mile Buffer Around the J. Brodie Smith Project Boundary.

Land Cover	Area (square miles)	Percent
Open Water	0.12	2.5%
Developed, Open Space	0.16	3.3%
Developed, Low Intensity	0.53	11.4%
Developed, Medium Intensity	0.91	19.4%
Developed, High Intensity	0.49	10.5%
Barren Land	0.07	1.4%
Deciduous Forest	1.34	28.5%
Evergreen Forest	0.07	1.5%
Mixed Forest	0.71	15.1%
Shrub/Scrub	0.05	1.1%
Herbaceous	0.09	1.9%
Hay/Pasture	0.11	2.2%
Woody Wetlands	0.03	0.6%
Emergent Herbaceous Wetlands	0.02	0.5%
Total	4.7	1

Source: MRLC 2021

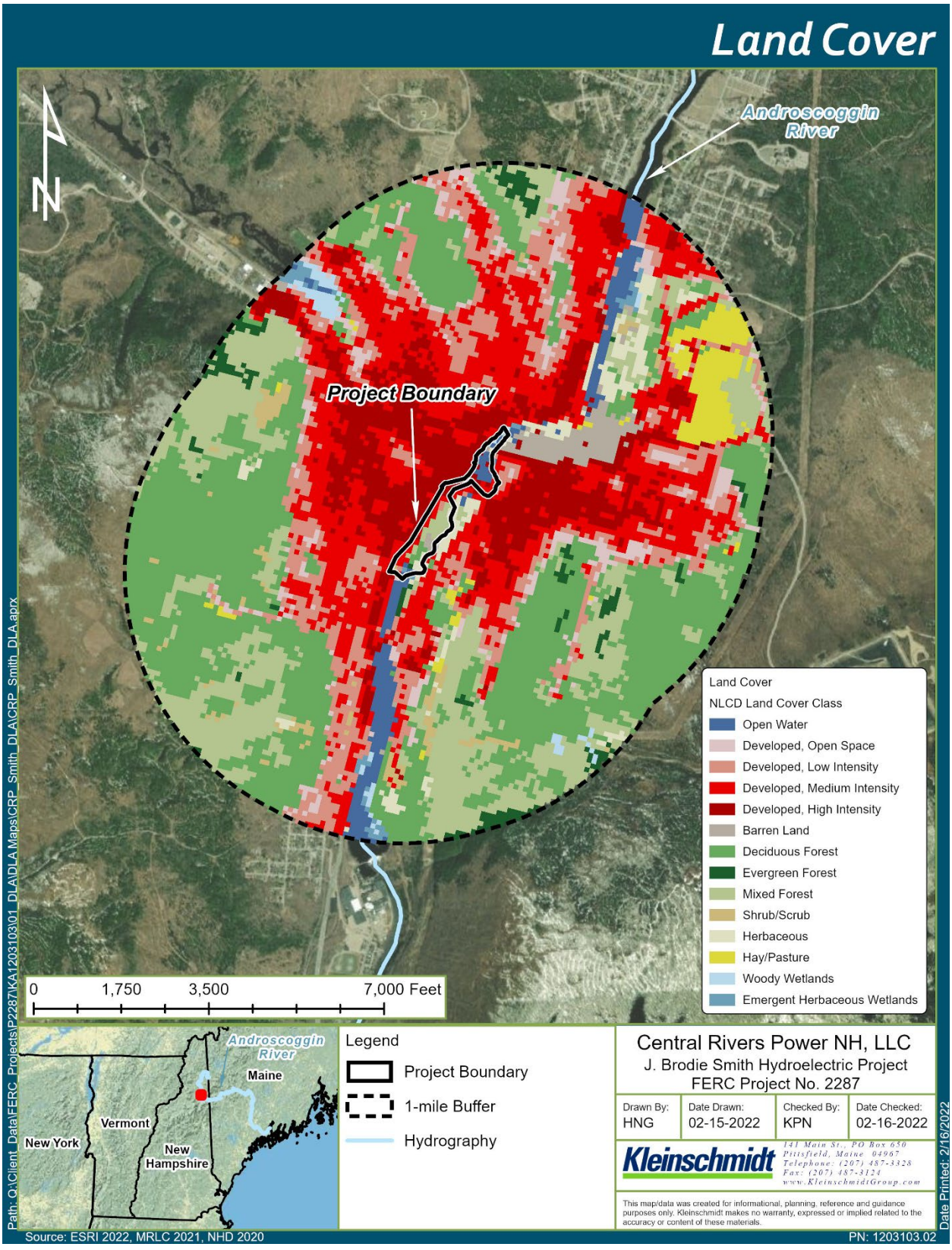

Figure 3.14 NLCD Land Cover Types within a 1,000-foot buffer around the Smith Project.

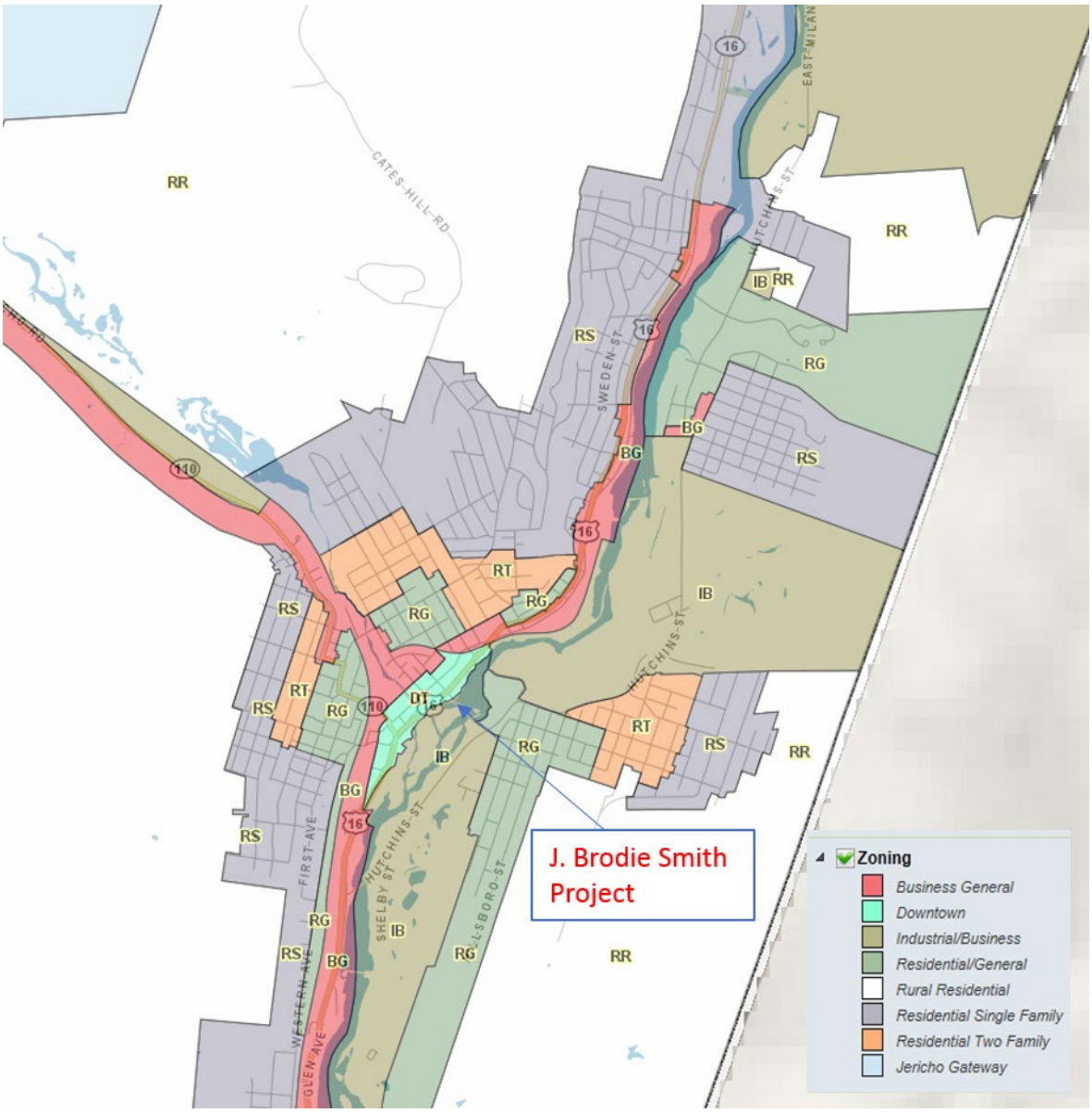

Figure 3.15 Zoning in the City of Berlin near the J. Brodie Smith Project. (Source: City of Berlin 2018b).

3.11.1.2 Land Use and Management of Project Lands

Operations and maintenance are the primary activities that occur on J. Brodie Smith Project lands.

3.11.1.3 Land Use Patterns

The J. Brodie Smith project is located in Coos County NH, just outside of the City of Berlin. Coos County NH is the most northeast county in New Hampshire. Coos county is made up of an estimated 31,563 people according to the 2019 census (U.S. Census 2019a). The City of Berlin is the Northern most city in New Hampshire and contains approximately 61.5-square-miles of land and 0.7-square-miles of inland waters, with approximately 41 percent of its land being in the White Mountains National Forest (Severance and Lawson 2005). In 2010 the City of Berlin consisted of about 163 people per square mile (US Census 2019b), while Coos County consisted of 18.4 people per square mile (U.S Census 2019a). Although the City of Berlin is fairly heavily populated, the surrounding areas are quite rural, with the White Mountain National Forest to the West and is heavily wooded to the north. The largest industries in the area are health care and social assistance, retail and trade, and accommodations and food services. These industries employ 2,602, 2,084, and 1,317 people respectively (DataUSA).

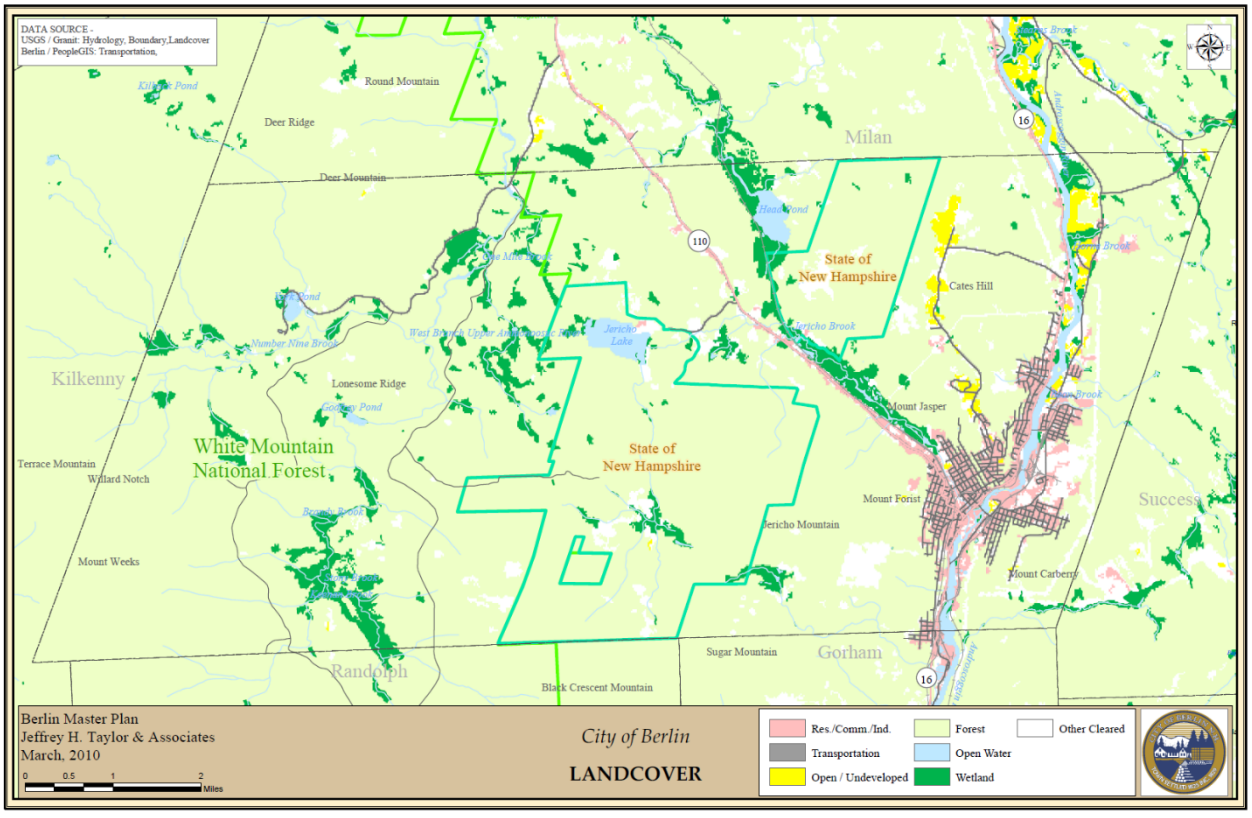

Figure 3.16 City of Berlin Landcover

(Jeffery H. Taylor & Associates)

3.11.1.4 Population Patterns

The City of Berlin was made up of 10,122 people in 2019, which is a very slight increase from the 2010 census (U.S. Census 2019b). Coos County has shown a different pattern, showing 31,563 people in the 2019 census, which is down from the 2010 census showing 33,055 people (U.S. Census 2019a). These decreases in population in the area is partially accredited to the loss of mills that were the predominant employer in the county. A report by New Hampshire Employment Security in 2007 projected that the closure of the mill would equate to a loss of about 300 people in the County by 2018 (NHES). In the City of Berlin, 4.1 percent of people are under 5 years old, 16.4 percent of people are under 18 years old, 18.6 percent of people are 65 years old and over (U.S. Census 2019b). Coos County has similar numbers with 4 percent of people being under the age of 5, 16.1 percent of people are under the age of 18, and 24.2 percent of people are over the age of 65. 47.4 percent of the population in Coos County is female (U.S. Census 2019a)

Household/Family Distribution and Income

Presently, educational services, and health care and social assistance are the biggest employment industry, followed by retail, then public administration and manufacturing. The median household income in Coos county is $47,117, while the City of Berlin has a median household income of $39,130. The percentage of the population in poverty in Coos county and City of Berlin are 13.9 percent and18.5 percent respectively (U.S. Census 2019a, U.S. Census 2019b). The closures of paper mills in the County has had major impacts on the area. In a 2007 report from New Hampshire Employment Security it is stated that the closure of the Wausau paper mill caused a reduction of 72.36 million in the gross regional product. Based on a REMI model this report also states that by 2018 average annual compensation will drop by more than $1,000 than if the mill had stayed open (NHES).

Coos county has 21,723 housing units in 2019, and between 2015 and 2019 had a 70.7 percent owner occupied housing rate. Between 2015 and 2019 there was 13,768 households, with 2.14 persons per household (US Census 2019a). In the City of Berlin had 56 percent owner-occupied housing unit rate between 2015 and 2019. There were 3,977 households, with an average of 2.12 persons per households.

3.11.1.5 Health and Safety

In Coos County 8.7 percent of people under the age of 65 do not have health insurance, while in the city of Berlin 13.5 percent of people under the age of 65 do not have health insurance (U.S Census 2019a, U.S. Census 2019b).

3.11.1.6 Diversity

In Coos County, 96.4 percent of people are White, 0.9 percent of people are Black or African American, 1.9 percent are Hispanic or Latino, and 1.5 percent of people are two or more races. There are less than 1 percent of Asian people, and American Indian and Alaskan Natives (U.S. Census 2019a). The predominant race in in the City of Berlin is White at 89.1 percent with Black or African American people making up 6.7 percent of the population, and 5.7 percent Hispanic or Latino. There were less than 1 percent of American Indian and Alaskan natives, Asian, and Native Hawaiian and other Pacific Islanders (U.S. Census 2019b).

3.11.1.7 Education

From 2015 to 2019 in Coos County, 87.8 percent of people over the age of 25 graduated high school or had a higher level of education, while 18.2 percent of people had a bachelor's degree or higher (U.S. Census 2019a). In the City of Berlin 84.7 percent of people over the age of 25 are high school graduates or higher, and 12.4 percent of people have a bachelor's degree or higher (U.S. Census 2019b).

3.11.2 Environmental Effects

There is no redevelopment potential identified for the Project that would contribute to project operations or boundary changes, and CRP proposes continued run-of-river operations with compliance monitored through an updated OCMP. CRP has not identified any issues relative to socioeconomic resources.

3.11.3 Proposed Environmental Measures

There are no existing PM&E measures in place regarding socioeconomic resources, and none are proposed.

3.11.4 Unavoidable Adverse Effects

Continued operation and relicensing of the J. Brodie Smith Project as proposed is not expected to have unavoidable adverse effects on socioeconomic resources.

3.11.5 References

DataUSA. Coos County, NH. Available online: https://datausa.io/profile/geo/coos-county-nh/ . (Accessed 2/14/2022)

Jeffery H. Taylor & Associates. March 2010. City of Berlin New Hampshire. Berlin Master Plan. Available online: https://www.berlinnh.gov/sites/g/files/vyhlif2811/f/uploads/landcover.pdf. (Accessed 2/14/2022)

New Hampshire Employment Security (NHES). December 2007. Coos County Perspectives, The Groveton Mill Closures. Available online: https://www.nhes.nh.gov/elmi/products/documents/cooscounty-groveton.pdf . (Accessed 2/14/2022)

Severance, C. John and Lawson, K. Elise. Natural Resource Inventory. City of Berlin, New Hampshire. October 2005. Watershed to Wildlife, Inc. Natural Resource Consultants.

U.S. Census Bureau. 2019a. Coos County NH, Available online: https://www.census.gov/quickfacts/fact/table/cooscountynewhampshire/PST045218 (Accessed 2/14/2022).

U.S. Census Bureau. 2019b. Berlin NH, Available online: https://www.census.gov/quickfacts/fact/table/berlincitynewhampshire/PST045218 (Accessed 2/14/2022).

4.0 ECONOMIC ANALYSIS

4.1 Cost and Value of Operating and Maintaining the License

CRP is proposing no changes to the project facilities. The overall cost and value of the licensed J. Brodie Smith Project is presented in Exhibit A to this DLA.

4.1.1 Costs of Proposed Protection, Mitigation and Enhancement Measures

CRP proposes to continue to implement the Shoreland Protection as adopted from the New Hampshire Shoreland Water Quality Protection Act (SWQPA) to serve as the Shoreland Protection Plan for the J. Brodie Smith Project (PSNH 1995; FERC 1999; NHDES 2022).

CRP proposes to update the existing Cultural Resources Management Plan (CRMP) for continued protection of potential cultural resources.

CRP proposes to implement an updated Operations Compliance Plan, which is not expected to add to the annual cost of operating the project.

Any additional measures and associate costs identified in comments on the DLA will be incorporated into the Final License Application, as appropriate.

4.1.2 References

Public Service of New Hampshire (PSNH). 1995. Final Shoreland Projection Plan Gorham Project. Project No. 2288. Filed July 31, 1995.

Federal Energy Regulatory Commission (FERC). 1999 Order Modifying and Approving Shoreland Protection Plan. Project No. 2288-015. 87 FERC ¶ 62,076. Issued· April 19, 1999.

New Hampshire Department of Environmental Services (NHDES). 2022. Shoreland Program. https://www.des.nh.gov/land/waterfront-development/protected-shoreland. Accessed February 8, 2022.

5.0 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the Federal Power Act (FPA), 16 U.S.C. section 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 or waterways affected by the project. On April 27, 1988, the Commission issued Order No. 481-A, revising Order No. 481, issued October 26, 1987, establishing that the Commission will accord FPA section 10(a)(2)(A) comprehensive plan status to any Federal or state plan that: (1) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (2) specifies the standards, the data, and the methodology used; and (3) is filed with the Secretary of the Commission. FERC currently lists 43 comprehensive plans for the State of New Hampshire. Within the Scoping Document 2, FERC identified 20 relevant plans for the Androscoggin River. Exhibit H provides a review of the plans that CRP has determined that current and proposed operations of Project facilities are consistent with Commission approved comprehensive management plans.

APPENDIX A

CONSULTATION DOCUMENTATION

From: Williams, Chris
To: Kayla Hopkins
Subject: RE: CZMA Applicability of Coastal Program (CRP)
Date: Tuesday, January 18, 2022 11:47:46 AM
Attachments: image004.png

Hello Kayla,

Both the J. Brodie Smith Hydroelectric Project in Berlin and the Gorham Hydroelectric Project in Gorham, are located well outside of New Hampshire's coastal zone. As a result, the relicensing of these projects by FERC is not subject to CZMA federal consistency review by the New Hampshire Coastal Program.

Please feel free to contact me should you have any additional questions.

Regards,

Chris

Christian Williams|Program Coordinator
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From: Kayla Hopkins <Kayla.Hopkins@KleinschmidtGroup.com>
Sent: Tuesday, January 18, 2022 11:23 AM
To: Williams, Chris <CHRISTIAN.P.WILLIAMS@des.nh.gov>
Subject: CZMA Applicability of Coastal Program (CRP)

Hello Chis,

I have two other hydroelectric projects that are going through the relicensing process with FERC. Central Rivers Power NH, LLC (CRP) is the licensee for the J. Brodie Smith Hydroelectric Project (FERC Project No. 2287) and Gorham Hydroelectric Project (FERC Project No. 2288) located on the Androscoggin River in Belin and Gorham, New Hampshire (see attached map).

CRP is looking for a response to provide FERC that the projects are not within the coastal zone and that the Projects are not subject to CZMA federal consistency review. If you could reply to this email that would be much

appreciated.

Thank you,

Kayla A. Hopkins
Regulatory Coordinator
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*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

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APPENDIX B

INFORMATION FOR PLANNING AND CONSULTATION (IPAC)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: January 20, 2022
Consultation Code: 05E1NE00-2022-SLI-1267
Event Code: 05E1NE00-2022-E-04469
Project Name: J. Brodie Smith Hydroelectric Project (FERC No. 2287

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
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Project Summary

Consultation Code: 05E1NE00-2022-SLI-1267
Event Code: Some(05E1NE00-2022-E-04469)
Project Name: J. Brodie Smith Hydroelectric Project (FERC No. 2287
Project Type: DAM
Project Description: This is re-review for the 2018 consultation Code 05E1NE00-2019-SLI-0052. The J. Brodie Smith Project is going through the relicensing process with FERC. The Project consists of a 500-foot-high masonry and concrete gravity U-shaped dam, a spillway, a power canal, a powerhouse containing one generating unit, located on the Androscoggin River in Coos County, New Hampshire. No project changes are proposed for this relicensing.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.4683318,-71.18126699985223,14z

Counties: Coos County, New Hampshire

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX C

LIST OF SPECIES POTENTIALLY OCCURRING IN THE PROJECT AREA

Table C-1 List of Mammals Potentially Occurring in the Vicinity of the Berlin Project

Species	Scientific Name	Habitat
Moose	Alces alces	Emergent wetlands, waterbodies edges, forest
Short-tailed shrew	Blarina brevicauda	Variety of open wooded habitats
Coyote	Canis latrans	Forest edge, existing ROW
Beaver	Castor canadensis	Slow moving waterbodies, wetlands
Star-nosed mole	Condylura cristata	Moist, open areas
Big brown bat	Eptesicus fuscus	Wooded areas, tree cavities
Lynx	Felis lynx	Extensive forest
Northern flying squirrel	Glaucomys sabrinus	Deciduous and mixed forest above 1,000 feet
Porcupine	Hystricomorph hystricidae	Mixed or coniferous forest
Silver-haired bat	Lasionycteris noctivagans	Wooded areas with loose bark near watercourses
Red bat	Lasiurus borealis	Edge of wooded areas
Hoary bat	Lasiurus cinereus	Wooded coniferous areas
Snowshoe hare	Lepus americanus	Woodlands with dense cover, clear cuts, regeneration
River otter	Lontra canadensis	Riparian areas and wetlands
Bobcat	Lynx rufus	Mixed and deciduous forest, brushy fields, swamps
Woodchuck	Marmota monax	Woodland edges, open areas
Pine marten	Martes americana	Deciduous and coniferous forest
Fisher	Martes pennanti	Mixed and coniferous forest
Striped skunk	Mephitis mephitis	Open woodlands, meadows
Meadow vole	Microtus pennsylvanicus	Open areas such as fields, marshes and clear cuts
House mouse	Mus musculus	Buildings, fields, corncribs
Ermine	Mustela erminea	Variety of brushy, wooded habitats, close to waterbodies
Long-tailed weasel	Mustela frenata	Open areas, forest edge, existing ROW
Southern red-backed Vole	Myodes gapperi	Cool, moist forest with mossy rocks, clear cuts
Eastern small-footed bat	Myotis leibii	Caves and mines, tree cavities

Species	Scientific Name	Habitat
Little brown bat	Myotis lucifugus	Near waterbodies and wetlands, tree cavities
Northern long-eared bat	Myotis septentrionalis	Mixed forested landscapes
Woodland jumping mouse	Napaeozapus insignis	Meadows, marshes, clear cuts and wooded areas
Mink	Neovison vison	Riparian and wetland areas
White-tailed deer	Odocoileus virginianus	Forest edge, coniferous swamps
Muskrat	Ondatra zibethicus	Marshes and slow waterbodies with cattail
Hairy-tailed mole	Parascalops breweri	Open wooded areas, fields
Tri-colored bat	Perimyotis subflavus	Wooded areas, caves and mines, tree cavities
Deer mouse	Peromyscus maniculatus	Coniferous or mixed forests, edges and clear cuts
Raccoon	Procyon lotor	Wooded areas along waterbodies
Norway rat	Rattus norvegicus	Industrial, farm and residential areas
Gray squirrel	Sciurus carolinensis	Deciduous and mixed forest
Red squirrel	Sciurus vulgaris	Coniferous forests
Masked shrew	Sorex cinereus	Damp woodlands with structures
Long-tailed shrew	Sorex dispar	Deep coniferous/mixed forests, with moss covered rocks
Smoky shrew	Sorex fumeus	Moist, bouldery upland areas with moss, clear cuts
Pygmy shrew	Sorex minutus	Variety of wooded habitats
Water shrew	Sorex palustris	Riparian and wetland areas in coniferous areas
Eastern chipmunk	Tamias striatus	Deciduous woodlands, ROW edge
Black bear	Ursus americanus	Mixed Forest and swamps
Red fox	Vulpes vulpes	Forest edge, existing ROW, meadows
Meadow jumping mouse	Zapus hudsonius	Moist, open meadows, shrub swamps and wooded uplands

Table C-2 List of Reptiles and Amphibians Potentially Occurring in the Vicinity of the J. Brodie Smith Project

Species	Scientific Name	Habitat
Blue-spotted salamander	Ambystoma laterale	Moist areas such as vernal pools and forested wetlands
Spotted salamander	Ambystoma macultaum	Moist forested areas, vernal pools, marshy areas, mixed woods
Fowler's toad	Anaxyrus fowleri	Sandy areas such as river valleys, floodplains, lakeshores, and agricultural areas. Also, in pine forests, fields, and lawns
Eastern/red-spotted newt	Notophthalmus viridescens	Juveniles (red efts) in moist forested areas, adults in slow moving waters
Northern dusky salamander	Desmognathys fuscus	Cool running waters at forest margin
Ring-necked snake	Diadophis punctatus	Warm, exposed areas, often near water with abundant bark, log, or rock cover
Northern redback salamander	Plethodon cinereus	Mixed deciduous woodlands; under decaying logs, rocks and litter
Four-toed salamander	Hemidactylium scutatum	Wet forested areas with sphagnum moss, bogs
Northern two-lined salamander	Eurycea bislineata	Floodplains, moist forests near seeps
Eastern American toad	Bufo a. americanus	Forested habitats, existing ROW
Spring peeper	Pseudacris crucifer	Wetlands such emergent and scrub-shrub, edges of waterbodies
Gray tree frog	Hyla versicolor	Forested areas, scrub-shrub swamps
Bullfrog	Rana catesbeiana	Shorelines of large waterbodies
Green frog	Rana clamitans melanota	Riparian areas along waterbodies and shallow pools
Mink frog	Rana septentrionalis	Margins of ponds, waterbodies
Wood frog	Rana sylvatica	Forested areas, vernal pools
Northern leopard frog	Rana pipiens	Wet open fields, emergent wetlands
Pickerel frog	Rana palustris	Wet open areas, waterbodies and pond margins
Snapping turtle	Chleydra serpentina	Permanent waterbodies
Wood turtle	Glyptemys insculpta	Slow-moving sandy/gravel bottom waterbodies, fields and woods
Eastern painted turtle	Chrysemys picta	Slow, quiet waterbodies

Species	Scientific Name	Habitat
Northern water snake	Nerodia sipedon	Permanently flooded wetlands, waterbodies
Northern redbelly snake	Storeria occipitomaculata occipitomaculata	Moist woodlands, bogs with sphagnum
Eastern garter snake	Thamnophis sirtalis	Variety of terrestrial habitats
Northern ringneck snake	Diadophis punctatus edwardsii	Shady woodlands and under logs, rocks
Eastern smooth green snake	Opheodrys vernalis vernalis	Upland areas, scrublands, existing ROW
Eastern milk snake	Lampropeltis tiangulum	Variety of habitats such as scrublands, woodlands and ROW edge
Eastern Newt	Notophthalmus viridescens	Forests but requires large mosaics of interconnected hardwoods and wetlands

Table C-3 List of Birds Potentially Occurring in the Vicinity of the Berlin Projects

Species	Scientific Name	Habitat
Cooper's hawk	Accipiter cooperii	Extensive forests
Northern goshawk	Accipiter gentilis	Extensive forests
Sharp-shinned hawk	Accipiter striatus	Isolated forested areas, edges
Spotted sandpiper	Actitis macularius	Edges of lakes and rivers
Northern Saw-whet owl	Aegolius acadicus	Woodlands, edges
Boreal owl	Aegolius funereus	Dense coniferous and mixed hardwood forests
Red-winged blackbird	Agelaius phoeniceus	Marshes, sloughs, dry fields, woodlands
Wood duck	Aix sponsa	Shallow water ponds, lakes and wetlands near wooded areas
Green-winged teal	Anas carolinensis	Ponds, lakes and marshes
Mallard	Anas platyrhynchos	Emergent and shrub wetlands, rivers and lakes
American black duck	Anas rubripes	Emergent and shrub wetlands, flowages, rivers and lakes
Ruby-throated hummingbird	Archilochus colubris	Woodlands, edges, swamps
Great blue heron	Ardea Herodias	Shallow shores of marshes and waterbodies

Species	Scientific Name	Habitat
Long-eared owl	Asio otus	Dense (usually coniferous) forests or groves
Redhead	Aythya americana	Marshes, ponds, lakes
Ring-necked duck	Aythya collaris	Marshes, bogs, and flowages
Cedar waxwing	Bombycilla cedrorum	Open woodlands, open orchards, towns
Ruffed grouse	Bonasa umbellus	Forested areas with herbaceous openings, ROW edges
American bittern	Botaurus lentiginosus	Marshes, bogs, and waterbodies
Canada goose	Branta canadensis	Wetlands and waterbodies
Great horned owl	Bubo virginianus	Interior woodlands, forest edges, wetlands
Common goldeneye	Bucephala clangula	Ponds, lakes and rivers near wooded areas
Red-tailed hawk	Buteo jamaicensis	Woodlands, ROW corridors, old fields
Rough-legged hawk	Buteo lagopus	Open fields, marshes
Red-shouldered hawk	Buteo lineatus	Woodlands, forested wetlands
Broad-winged hawk	Buteo platypterus	Woodlands, forested wetlands
Green heron	Butorides virescens	Waterbodies and shrub wetlands
Northern cardinal	Cardinalis cardinalis	Woodland edges, swamps, streamside thickets, gardens
American goldfinch	Carduelis tristis	Weedy fields, open second-growth woodlands, roadsides
Veery	Catharus fuscescens	Moist deciduous woodlands
Hermit thrush	Catharus guttatus	Wooded swamps, coniferous edges
Swainson’s thrush	Catharus ustulatus	Coniferous forest, near water
Brown creeper	Certhia Americana	Dense woodlands
Killdeer	Charadrius vociferous	Barren areas, pastures, gravel pits
Common nighthawk	Chordeiles minor	Open woodlands, railroad beds, clearings
Northern harrier	Circus cyaneus	Meadows, emergent wetlands, bogs
Marsh wren	Cistothorus palustris	Marshes
Black-billed cuckoo	Coccyzus erythropthalmus	Brushy areas, open woodlands
Northern flicker	Colaptes auratus	Open woodlands, edges, clear cuts
Rock dove	Columba livia	Near human dwellings
Olive-sided flycatcher	Contopus cooperi	Spruce forests, bog edges
Eastern wood pewee	Contopus virens	Forest interior
American crow	Corvus brachyrhynchos	Woodlands, ROW corridors

Species	Scientific Name	Habitat
Common raven	Corvus corax	Open woodlands, clear cuts
Blue jay	Cyanocitta cristata	Woodlands, towns
Black-throated blue warbler	Dendroica caerulescens	Mixed or deciduous forests with dense undergrowth
Bay-breasted warbler	Dendroica castanea	Coniferous forest, coniferous shrub areas
Yellow-rumped warbler	Dendroica coronate	Coniferous forest, edges
Palm warbler	Dendroica palmarum	Bogs and bog edges
Chestnut-sided warbler	Dendroica pensylvanica	Regeneration areas, clear cuts, ROW corridors
Yellow warbler	Dendroica petechial	Shrub and emergent wetlands, brushy areas along waterbodies
Pine warbler	Dendroica pinus	Pine forests, mixed woodlands
Black-throated green warbler	Dendroica virens	Mixed forest, forested wetlands
Pileated woodpecker	Dryocopus pileatus	Interior second growth forest, forested wetlands
Gray catbird	Dumetella carolinensis	Brushy edges, shrub wetlands, clear cuts
Alder flycatcher	Empidonax alnorum	Shrub wetlands with openings
Least flycatcher	Empidonax minimus	Deciduous woodlands, edges, forested wetlands
Horned lark	Eremophila alpestris	Open areas, fields, pastures
Spruce grouse	Falcipennis Canadensis	Dense interior coniferous forest, cedar bogs
Merlin	Falco columbarius	Open forests adjacent to open areas for foraging
Peregrine falcon	Falco peregrinus	Rocky cliffs with ledges overlooking waterbodies, lakes, with a abundance of birds
American kestrel	Falco sparverius	ROW edges, old fields near tree cavities
Common snipe	Gallinago gallinago	Marshes, emergent bogs
Common loon	Gavia immer	Large waterbodies
Common yellowthroat	Geothlypis trichas	Grassy fields, shrubs, marshes
Bald eagle	Haliaeetus leucocephalus	Near large waterbodies
Barn swallow	Hirundo rustica	Near farms, pastures
Wood thrush	Hylocichla mustelina	Swamps and moist deciduous or mixed forest
Dark-eyed junco	Junco hyemalis	Forest, clearings, ROW edges

Species	Scientific Name	Habitat
Northern shrike	Lanius excubitor	Open woodlands, brushy areas
Herring gull	Larus argentatus	Large waterbodies
Hooded merganser	Lophodytes cucullatus	Wooded ponds, lakes and rivers
Belted kingfisher	Megaceryle alcyon	Waterbodies, banks of waterbodies
Swamp sparrow	Melospiza georgiana	Shrub and emergent wetlands, waterbodies edges
Song sparrow	Melospiza melodia	Brushy fields, shrub wetlands, towns
Common merganser	Mergus merganser	Rivers and lakes
Red-breasted merganser	Mergus serrator	Rivers and lakes
Northern mockingbird	Mimus polyglottos	Near towns in brush
Black-white warbler	Mniotilta varia	Forest and second growth
Great crested flycatcher	Myiarchus crinitus	Woodlands, forested swamps
Mourning warbler	Oporornis Philadelphia	ROW corridors, clear-cuts
Tennessee warbler	Oreothlypis peregrine	ROW edges, open woodlands, dense shrubs
Osprey	Pandion haliaetus	Near large waterbodies
Northern waterthrush	Parkesia noveboracensis	Forested wetlands near waterbodies
Savannah sparrow	Passerculus sandwichensis	Meadows, fields
Indigo bunting	Passerina cyanea	Forest edges and openings, ROW corridors
Gray jay	Perisoreus Canadensis	Coniferous forest, cedar bogs
Rose-breasted grosbeak	Pheucticus ludovicianus	Deciduous forest
Black-backed woodpecker	Picoides arcticus	Coniferous forest, clear cuts with dead timber
Three-toed woodpecker	Picoides dorsalis	Coniferous forest, clear cuts with dead timber
Downy woodpecker	Picoides pubescens	Forests
Hairy woodpecker	Picoides villosus	Forests
Rufous-sided Towhee	Pipilo erythrophthalmus	Forest edges and openings, ROW corridors
Pied-billed grebe	Podilymbus podiceps	Ponds, marshes with heavy emergent vegetation
Black-capped chickadee	Poecile atricapillus	Woodlands, towns
Boreal chickadee	Poecile hudsonicus	Coniferous forest, spruce bogs
Common grackle	Quiscalus quiscula	Open fields, marshes, parks
Ruby-crowned kinglet	Regulus calendula	Coniferous forest, edges

Species	Scientific Name	Habitat
Golden-crowned kinglet	Regulus satrapa	Coniferous forest
Bank swallow	Riparia riparia	Riverbanks, gravel pits
Eastern phoebe	Sayornis phoebe	Wooded or shrub areas near waterbodies
American woodcock	Scolopax minor	Moist woodlands, alder thickets
Ovenbird	Seiurus aurocapillus	Mature deciduous forest, no undergrowth
Northern parula warbler	Setophaga Americana	Mix forest with old man's beard, forested wetlands
American redstart	Setophaga ruticilla	Deciduous woodlands, forested wetlands
Eastern bluebird	Sialia sialis	Open woodlands, clearings, edges
Red-breasted nuthatch	Sitta Canadensis	Coniferous Forest
White-breasted nuthatch	Sitta carolinensis	Deciduous woodlands
Yellow-bellied sapsucker	Sphyrapicus varius	Woodlands, edges
Chipping sparrow	Spizella passerine	Towns, farms, fields
Barred owl	Strix varia	Forested wetlands, bottomlands
European starling	Sturnus vulgaris	Towns, farms and fields
Tree swallow	Tachycineta bicolor	Open areas near water, beaver flowages
House wren	Troglodytes aedon	Near human dwellings, brushy clearings
Winter wren	Troglodytes hiemalis	Dense coniferous undergrowth, bog edges
American robin	Turdus migratorius	Open woodlands, clearings pastures
Eastern kingbird	Tyrannus tyrannus	Open woodlands, shrub wetlands
Nashville warbler	Vermivora ruficapilla	Moist deciduous forest, edges
Warbling vireo	Vireo gilvus	Open woodlands
Red-eyed vireo	Vireo olivaceus	Open deciduous forest
Philadelphia vireo	Vireo philadelphicus	Forests, edges, ROW corridors
Solitary vireo	Vireo solitaries	Mixed woodlands with dense understory
Canada warbler	Wilsonia Canadensis	Moist forest with undergrowth, forested wetlands
Wilson's warbler	Wilsonia pusilla	Bogs, shrub wetlands
Mourning dove	Zenaida macroura	ROW corridors, open woodlands, backyards
White-throated sparrow	Zonotrichia albicollis	Brushy areas, clear-cuts, bogs

J. Brodie Smith Hydroelectric Project

FERC No. 2287

Exhibit F

General Design Drawings

This Material is Critical Energy/Electric Infrastructure Information (CEII).
Members of the Public may Obtain Nonpublic or Privileged Information
by Submitting a Freedom of Information Act (FOIA) Request.

[Note: Exhibit F Drawings and Supporting Design Report are currently being developed to current FERC standards under 18 CRF §4.51 and will be provided in the Final License Application.]

J BRODIE SMITH HYDROELECTRIC PROJECT

FERC NO. 2287

DRAFT EXHIBIT G

PROJECT MAPS

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1.0 PROJECT MAP

The attached (Appendix A) Exhibit G map denotes the J. Brodie Smith Hydroelectric Project boundary. Table 1 provides a summary of the drawing number and title for the Exhibit G map. The Project Boundary Map shows the Project vicinity, location, and boundary in sufficient detail to provide a full understanding of the Project. The Exhibit G map was prepared in accordance with the requirements of 18 C.F.R. § 4.41(h).

Table 1 J. Brodie Smith Project Boundary Maps

Exhibit	FERC Drawing No.	Title
G-1	P-2287-X	Project Boundary Map

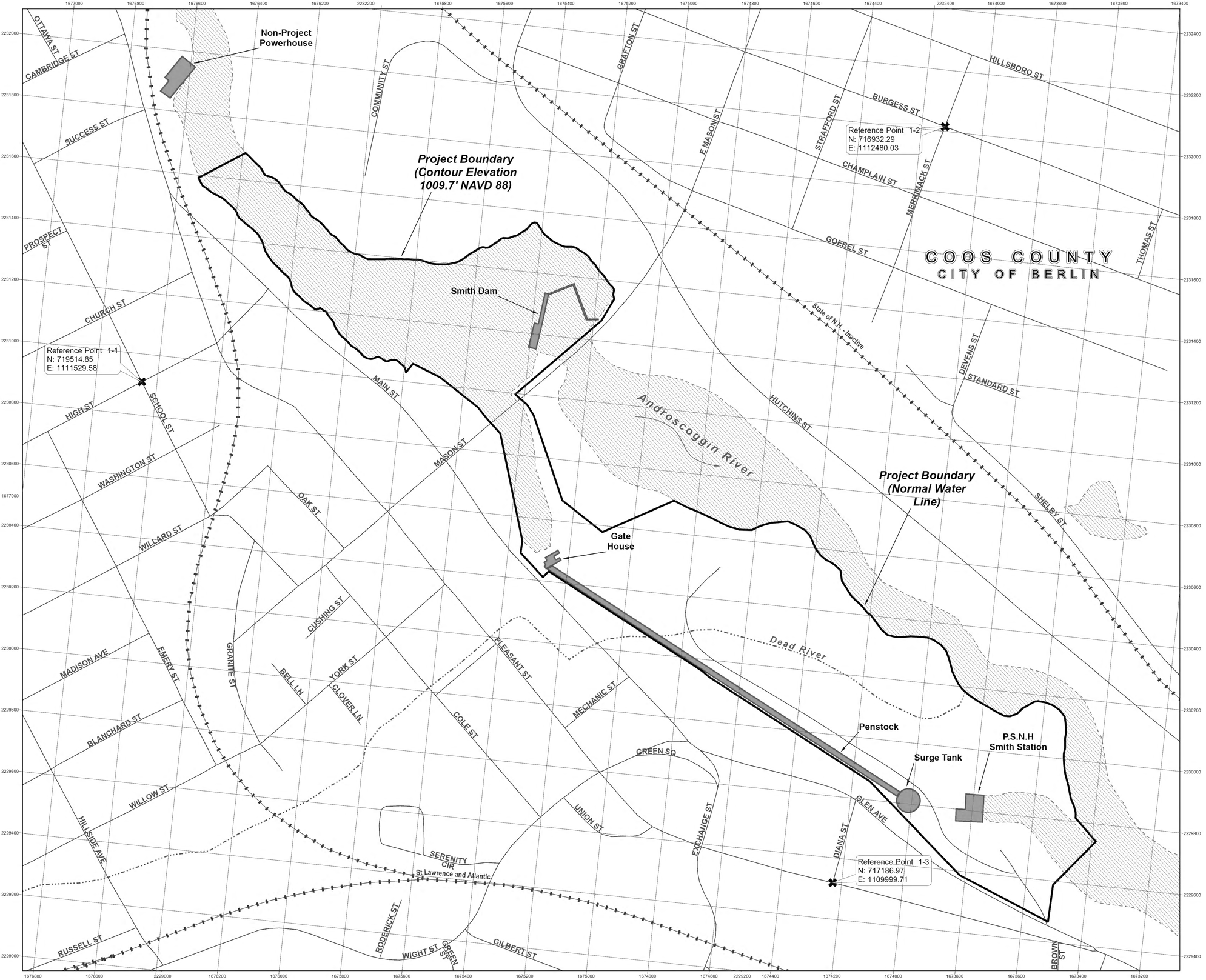
CRP is not proposing modifications to the Project boundary. Associated electronic files (e.g., GIS shapefiles) will be provided with the Final License Application.

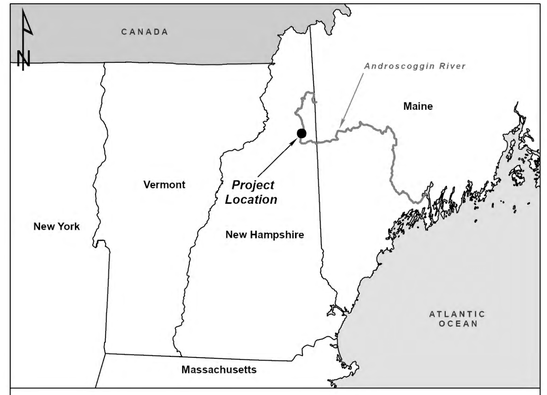
2.0 FEDERAL LANDS

There are no public lands or reservations of the United States within the J. Brodie Smith Project boundary.

APPENDIX A

EXHIBIT G DRAWING





14.73°W
1/24/2022

- Project Boundary (Draft)
- Reference Point
- Features
- Road
- Railroad
- Hydrography
- Waterbody

Map notes:

1. The J. Brodie Smith Project is located in the State of New Hampshire in Coos County.
2. Reference Point coordinates are shown in NAD 1983 2011 StatePlane New Hampshire FIPS 2800 Ft US.
3. Elevations shown are referenced to NAVD 88, where MSL = NAVD 88 + 0.052 ft. Conversion factor was determined from NOAA tidal benchmark Phipps Pt., Hockomock Bay, ME, Station ID 8417087.
4. Licensee has acquired all flowage rights and title in fee or the right to use in perpetuity all lands necessary or appropriate for the construction, maintenance, and operation of the Project. All property records are kept on file with the licensee.
5. There are no federal lands within the Project boundary.
6. The Project boundary description, as required by 18 CFR 4.41, is represented here by a grid of Northings and Eastings around, and graticules within, the map frame. Any position in Northings and Eastings along the Project boundary can be determined using these references.
7. The Project boundary, in part, was digitized from contour elevations derived from USGS NH Umbagog LiDAR data (USGS 2016).

PUBLIC SERVICE OF NEW HAMPSHIRE

J. BRODIE SMITH HYDROELECTRIC PROJECT
FERC NO. 2287

DRAFT PROJECT BOUNDARY MAP

EXHIBIT G | SCALE: 1" = 150' | SHEET NO. 1 OF 1

0 100 200 400 600 800 Feet

FERC DWG. NO. 2287-

J. BRODIE SMITH HYDROELECTRIC PROJECT

PROJECT NO. 2287

EXHIBIT H

DESCRIPTION OF PROJECT MANAGEMENT AND NEED FOR PROJECT POWER

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1.0 INTRODUCTION

The J. Brodie Smith Hydroelectric Project (Project) (FERC Project No. 2287) is an existing generating facility licensed to CRP NH Smith, LLC (CRP). Exhibit H provides information pursuant to 18 CFR § 5.18(c), including CRP's ability to operate and maintain the project, any plans to modify the project, CRP's safety management, operation and maintenance of the Project, and other applicable information to be provided by existing applicants pursuant to 18 CFR § 5.18(c)(1)(ii).

2.0 INFORMATION TO BE SUPPLIED BY ALL LICENSEES

2.1 Plans and Ability of the Applicant to Operate and Maintain the Project

2.1.1 Plans to Increase Capacity or Generation

The Licensee has no current plans to increase the capacity or generation of the Project. However, as economic conditions change, CRP routinely performs periodic evaluations of generating facilities regarding potential upgrades and will continue to do so into the future. Normal routine maintenance will be performed as needed during the remainder of the license term and during any new license term.

2.1.2 Plans to Coordinate the Operation of the Project with Other Water Resource Projects

The Licensee proposes to maintain existing project operations as described in Exhibit A. The project is operated as run-of-river, and therefore is operate independently of other facilities.

2.1.3 Plans to Coordinate the Operation of the Project with Other Electrical Systems

Power generated by the J. Brodie Smith Project is sold to the regional grid at prevailing market rates.

2.2 Need for Project Electricity

2.2.1 The Reasonable Costs and Availability of Alternative Sources of Power

The Project provides renewable power without the emissions of air pollutants or greenhouse gases that marginal fossil fuel plants produce. This is an increasingly important fact in New England, where all six New England states have enacted legislation to reduce the dependence on fossil-fired generation through the introduction of Renewable Portfolio Standards (RPS), or similar legislation, that encourages and requires the use of renewable power sources in each individual state's total resource output. Many of these RPS programs include an annual escalating supply requirement to further encourage reliance on renewable power sources. These enacted legislations are designed to increase the amount of renewable power supply in the region's mix of generation resources or, alternatively, reduce the amount of fossil-fired generation as a percentage

of the total resource output. If the Project would not provide this variable output generation, replacement energy would be replaced by other sources within the ISO New England. Alternative sources are likely to be generating units powered by fossil fuels, whose fuel and other variable costs may be significantly higher than those of the Project.

2.2.2 Increase in Costs if the Licensee is not Granted a License

If the Licensee is not granted a license, this Project would cease to provide affordable, clean electricity to the watershed. Consequently, an unquantified increase in costs would likely occur to New England electric consumers if a license for continued operation of the Project was not granted.

2.3 Effects of Alternative Sources of Power

2.3.1 Effects on Customers

This section is not applicable to CRP, because CRP is a wholesale supplier.

2.3.2 Effects on the Licensee's Operating and Load Characteristics

The Licensee is an independent power producer and, as such, does not maintain a separate transmission system which could be affected by replacement or alternative power sources.

2.3.3 Effects on Communities Served

See the discussion above in *Section 2.2, Need for Electricity Generated by the Project*, regarding the loss of the Project's generation. Because the Licensee cannot predict with any certainty the actual type or location of a potential alternative facility providing replacement power, it cannot specifically discuss potential effects of an alternative source of power on any particular community.

2.4 Need for Project Power, Reasonable Cost and Availability of Alternative Sources of Power

The Licensee is an independent power producer and, as such, does not have an obligation or need to prepare load and capability forecasts in reference to any particular group or class of customers.

2.5 Effect of Power on Applicant's Industrial Facility

This section is not applicable as the Licensee does not use the power generated for its own industrial operations.

2.6 Need of the Tribe for Electricity Generated by the Project

The Licensee is not an Indian Tribe; therefore, this section is not applicable.

2.7 Impacts on the Operations and Planning of the Licensee's Transmission System of Receiving or Not Receiving the License

Because the Licensee is an independent power producer and does not own the local transmission system, this section is not applicable to the Licensee. Power generated by the J. Brodie Smith Project is sold to the regional grid at prevailing market rates. The Single Line Diagrams for the Project can be found in Exhibit A of this Draft License Application.

2.8 State of Need for Modification to Existing Project Facility Operations

CRP has no plans to construct new facilities or to alter operations of the Project. CRP is seeking authorization to continue operating the Project in its current configuration and as it is currently licensed to operate.

2.9 Consistency with Comprehensive Plans

Section 10(a)(2)(A) of the Federal Power Act (FPA), 16 U.S.C. section 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 or waterways affected by the project. On April 27, 1988, the Commission issued Order No. 481-A, revising Order No. 481, issued October 26, 1987, establishing that the Commission will accord FPA section 10(a)(2)(A) comprehensive plan status to any Federal or state plan that: (1) is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; (2) specifies the standards, the data, and the methodology used; and (3) is filed with the Secretary of the Commission. FERC currently lists 43 comprehensive plans for the State of New Hampshire. Within the Scoping Document 2, FERC identified 20 relevant plans for the Androscoggin River. The following is a review of the plans that may be applicable to the Project. Based on a review of these plans, CRP has determined that

current and proposed operations of Project facilities are consistent with these Commission approved comprehensive management plans.

Interstate Fishery Management Plan for American eel (Anguilla rostrata) (Report No. 36). – April 2000. Atlantic States Marine Fisheries Commission. Addendum I-IV

The natural range of migratory, anadromous fish does not extend to the upper Androscoggin River. Three major cascades in the lower Androscoggin River drainage (Great Falls, Lewiston Falls, and Rumford Falls) are natural barriers for anadromous fishes (MDMR and MDIFW 2017). Exhibit E describe the existing fish resource and recreational opportunities the Project provides.

Atlantic States Marine Fisheries Commission. 1999. Amendment 1 to the Interstate Fishery Management Plan for shad and river herring (Report No. 35). April 1999 and Amendments 2-4 (2000, 2009, 2010)

The natural range of migratory, anadromous fish does not extend to the upper Androscoggin River. Three major cascades in the lower Androscoggin River drainage (Great Fall, Lewiston Falls, and Rumford Falls) are natural barriers for anadromous fishes (MDMR and MDIFW 2017). Atlantic sturgeon, shortnose sturgeon, and rainbow smelt likely did not pass beyond Great Falls (MDMR and MDIFW 2017) in Brunswick, Maine. Lewiston Falls prevented the upstream migration of sea-run alewives, American shad, blueback herring, striped bass, and sea lamprey, while Rumford Falls was a barrier to Atlantic salmon (MDMR and MDIFW 2017). The J. Brodie Smith Project is approximately 70 RMs upstream of Lewiston Falls and 50 RMs upstream of Rumford Falls, which are historic barriers to migratory species.

Exhibit E further discusses anadromous fishes and native species assemblage in the project vicinity.

National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

The Nationwide Rivers Inventory (NRI) is a listing of more than 3,200 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be at least regionally significant (NPS 2021). As required under the Wild and Scenic Rivers Act section 5(d)(1) and related

guidance, federal agencies are required to avoid or mitigate actions that would adversely affect NRI river segments.

The Project is not located in a NRI section of the Androscoggin River; therefore, this does not apply to the Project.

New Hampshire Office of State Planning. 1977. Wild, scenic, and recreational rivers for New Hampshire. Concord, New Hampshire. June 1977.

The five rivers listed as wild, scenic, and recreational in New Hampshire are Lamprey, Nashua, Squannacook, Nissitisssit, and Wildcat.

The Project is located on the Androscoggin River; therefore, this does not apply to the Project.

New Hampshire Office of State Planning. 1989. New Hampshire Wetlands Priority Conservation Plan. Concord, New Hampshire.

The Plan is an addendum to the NH State Comprehensive Outdoor Recreation Plan. The plan documents other existing regulations and programs protecting wetlands in New Hampshire and provides additional recommendations to protect wetlands.

Pursuant to the revised study plan, CRP conducted a reconnaissance level survey to document botanical communities and rare, threatened, and endangered (RTE) botanical species in the J. Brodie Smith Project study area during the fall of 2020. Wetlands are rare within the Project boundary and account for less than one percent of the overall study area.

The Project is operated in a run-of-river mode with no new impacts to water quality or wetlands and vegetation communities. Exhibit E describe the wetlands and riparian and littoral habitat represented in the Project vicinities.

New Hampshire Office of Energy and Planning. New Hampshire Statewide Comprehensive Outdoor Recreation Plan (SCORP): 2013-2018. Concord, New Hampshire. December 2013.

The 2013-2018 New Hampshire Statewide Comprehensive Outdoor Recreation Plan (NH SCORP) serves to qualify New Hampshire for funding from the federal Land and Water Conservation Fund (LWCF) and provides guidance on prioritizing the allocation of LWCF grants. Goals of the NH SCORP include identifying outdoor recreation trends, needs, and

issues; evaluating the supply and demand of recreation resources; and providing a strategic plan for addressing recreation issues in the state (NH DNCR 2013). The strategic priorities for the state of New Hampshire from the 2013-2018 SCORP are connecting people to the outdoors to promote healthy lifestyles, consistent and wise stewardship and conservation of natural resources, economic vitality through the promotion of outdoor recreation and tourism, and education of recreation users, partners, and agencies (NH DNCR 2013).

Exhibit E of the DLA further explains how CRP is complying with this plan.

New Hampshire Office of State Planning. 1991. Public Access Plan for New Hampshire's Lakes, Ponds, and Rivers. Concord, New Hampshire. November 1991.

Exhibit E of the DLA provides in detail the existing public access provided at each of the J. Brodie Smith Project and CRP's effort in surveying the existing facilities and reviewing the potential use and need of public access in the Project boundary.

U.S. Fish and Wildlife Service. 1989. Atlantic salmon restoration in New England: Final environmental impact statement 1989-2021. Department of the Interior, Newton Corner, Massachusetts. May 1989.

The USFWS, in participation with the fishery agencies of the New England states and other Federal agencies, proposes to restore self-sustaining populations of Atlantic salmon by the year 2021 to the species' historical range in New England. The historical range of Atlantic salmon includes the Penobscot River among others. To accomplish the goal, USFWS will:

- Utilize USFWS hatcheries and Fisheries Assistance field stations to reestablish and evaluate salmon populations;
- Consider the needs of salmon restoration in the process of reviewing Federal projects, permits, and licenses;
- Provide funding to state agencies for salmon restoration through the administration of the Federal Aid programs; and
- Conduct research on the biology of the Atlantic salmon.

USFWS states that effective upstream and downstream fish passage is a fundamental requirement of the goal of restoring self-sustaining populations of Atlantic salmon by the

year 2021. No anadromous or catadromous fish are known to occur in the Project Boundary. Exhibit E further explains the aquatic species present at the Project.

U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

This policy, under the auspices of the 1988 National Recreational Fisheries Policy (National Policy), encompasses the guiding principles, goals, and objectives set forth by the National Policy. The Policy defines the USFWS's stewardship role in management of the Nation's recreational fishery resources, which include not only angling, but fish watching and photographing. With the Fisheries USA, USFWS committed to accomplish three goals:

- Usability – to optimize the opportunities for people to enjoy the Nation's recreational fisheries.
- Sustainability – to ensure the future of quality and quantity of the Nation's recreational fisheries; and
- Action – to work in partnership with other Federal governmental agencies, states, tribes, conservation organizations, and the public to effectively manage the Nation's recreational fisheries.

The Licensee is proposing to operate as run-of-river with no new impacts to water quality or fisheries. Exhibit E describe the existing fish resource and recreational opportunities the Project provides.

Based on a review of these plans, CRP has determined that current and proposed operations of Project facilities are consistent with these Commission approved comprehensive management plans.

2.10 Financial and Personnel Resources

CRP has considerable experience operating not only the Project but other licensed hydroelectric and water storage projects in the region as well. As a corporation with multiple hydroelectric plants located throughout the region and in the State of New Hampshire and the State of Maine, CRP either has or can acquire the necessary resources to continue the operation and maintenance of the Smith Project.

CRP has a complete staff of engineers, biologists, operators, mechanics, and electricians that are trained and experienced in the operation of hydroelectric projects. Additionally,

staff can also be utilized from other nearby CRP facilities, or contractors can be retained to undertake larger scale maintenance or upgrade projects. In addition, the Licensee has available the administrative, licensing, and support personnel that are needed to maintain compliance with the terms of the license.

Information regarding the Project's expected annual costs and value is provided in Exhibit D of the License Application.

2.11 Notification of Affected Landowners

CRP is not proposing any modifications to the Project boundary that would encompass additional lands of others. Therefore, notification of adjacent landowners is not applicable.

2.12 Applicant's Electricity Consumption Efficiency Improvement Program

Because the Licensee is an independent power producer, this section is not applicable to the Project.

2.13 Tribes Affected By the Project

There are no Native American lands, known Native American TCPs or religious properties, or NRHP-eligible or -listed sites associated with Native American Nations within the Project boundary or which would likely be affected by the Project relicensing.

3.0 INFORMATION TO BE PROVIDED BY AN APPLICANT WHO IS AN EXISTING LICENSEE

3.1 Measures Planned to Ensure Safe Management, Operation, and Maintenance of the Project

3.1.1 Safe Management, Operation and Maintenance

CRP has developed, according to FERC's Guidelines for Public Safety at Hydropower Projects, Public Safety Plans for the J. Brodie Smith Project, which are revised on a regular basis as conditions warrant. These plans (and revisions) are reviewed and accepted by the FERC New York Regional Office. CRP operates the Project consistent with its commitment to public and employee safety. CRP attains its safety goals by:

- Providing an in-depth management and technical support organization;
- Establishing and implementing specific operating procedures including standard bulletins;
- Training operations and maintenance personnel;
- Inspecting all Project facilities regularly and monitoring indicators of Project condition and safety;
- Implementing a rigorous inspection and maintenance program for operating equipment and facilities vital to safety;
- Limiting public access and providing warning signs and other public safety devices where Project operations or Project features could endanger the public consistent with FERC's Guidelines for Public Safety at Hydropower Projects (FERC 2011[1]), and Security Program for Hydropower Projects (FERC 2016[2]); and
- Complying with all applicable local, state, and federal laws and regulations regarding the safe operation of industrial and electric facilities.

The J. Brodie Smith Project is remotely monitored and operated 24 hours a day, 7 days a week. In addition, plant staff visit the site daily during the week. Plant staff are generally within 30 minutes of the Project at all times. J. Brodie Smith is classified as a high hazard

[1] FERC. 2011. Guidelines for Public Safety at Hydropower Projects. updated November 29, 2011.
[2] FERC. 2016. Division of Dam Safety and Inspections FERC Security Program for Hydropower Projects Revision 3A.

dam. The 11th Part 12 Dam Safety Inspection was filed with FERC in December 2017 and has completed a Potential Failure Mode Analysis for the dam. Section 10(c) of the Federal Power Act (FPA) authorizes FERC to establish regulations requiring licensees to operate and properly maintain their Projects for the protection of life, health, and property. FERC Part 12 regulations include such safety measures as signage and exclusion devices.

CRP was required by FERC to file a public safety plan for the Project, which depicts the public safety devices installed at the Project and their location (filed September 29, 2004). The Commission approved the Public Safety Plan on November 10, 2004.

These measures have been consistently applied and expanded as appropriate to ensure the safe, continued operation and maintenance of the Project. As described in the Project Public Safety Plan, CRP implements public safety and security measures, such as signage, fencing, alert/warning devices, and boat barriers to protect public safety and for Project security purposes.

FERC's New York Regional Office conducts an environmental inspection every few years. CRP completes all necessary corrective actions to address comments and recommendations arising from FERC inspections in a timely manner. The Project's dam is inspected annually by CRP's Engineering and Operations staff, as well as after floods in the Project vicinity. In addition, routine repairs are performed as needed.

3.1.2 Description of Operation During Flood Conditions

A description of operations during flood conditions is provided in Exhibit B of this Draft License Application.

3.1.3 Description of Warning Devices Used to Ensure Downstream Public Safety

CRP has developed a Public Safety Plan for the Project that illustrates the location of safety signs, sirens, barriers, and other safety devices; the Public Safety Plan also includes measures required by FERC, or installed by CRP on its own initiative, to warn and/or protect the public in its use of Project lands and waters.

CRP's Public Safety Plans for the Project is considered CEII in accordance with the Commission's regulations; thus, it is not being distributed with this DLA.

All safety-related devices and features are inspected and tested annually. During inspections, signs are checked for damage, fences are inspected for stability, and other warning devices are tested to ensure they are audible and in working order.

3.1.4 Discussion of Any Proposed Changes to the Operation of the Project or Downstream Development Affecting the Emergency Action Plan

CRP is not proposing any changes to the operation of the Project that would affect the individual Emergency Action Plan (EAP). CRP is not aware of any proposed downstream development that would be affected by the Project. CRP submitted the most recent annual update to the Project EAP on January 31, 2022.

3.1.5 Description of Monitoring Devices and Description of Maintenance and Monitoring Programs

Headpond and tailwater elevations are monitored by electronic instrumentation and visual staff gages. Additional information regarding dam safety and monitoring is provided in the individual Safety and Surveillance Monitoring Plan (DSSMP), filed as Critical Energy Infrastructure Information (CEII) with the Commission last filed on December 21, 2021.

3.1.6 Project's Employee Safety and Public Safety Record

No lost-time accidents have occurred at the Project within the period of recordkeeping for the facility. There have been no project-related deaths or serious injuries to members of the public within the Project Boundary during the past 10 years. No accidents attributable to Project operations have occurred within the period of recordkeeping for the facility.

3.2 Current Project Operation

A description of Project operations is provided in Exhibit A of this Draft License Application.

3.3 Project History

Exhibit H provides a summary of Project construction history.

3.4 Lost Generation Due to Unscheduled Outages

Table 3.1 summarizes available unscheduled outage and lost generation data during previous years (2016-2021). This table does not include periodic brief unit outages.

Table 3.1 Project Unscheduled Outages and Lost Generation, 2016-2021

Unit	Outage Start Time	Outage End Time	Duration	Reason for Unit Unavailability
1	9/12/2016 9:45:00 AM	9/22/2016 3:48:00 PM	246.05 hours	Completed required Black Start testing at the end of the Annual Inspection
1	9/11/17 7:26:00 AM	9/22/2017 6:51:00 PM	275.42	Annual Inspection
1	June 2021		190 minutes	An upstream station tripped offline and Smith was taken offline accidentally
1	September 2021		3.53 hours	Loss of transmission in East side substation
1	November 2021		17.52 days	Planned outage for unit

3.5 Record of Compliance

A review of the Licensee's records indicates no violations of the terms and conditions of the license. In addition, CRP has not received any communication from the Commission indicating possible noncompliance.

3.6 Actions Affecting the Public

CRP has strong ties with the communities in the region, as a generator of electric power and as a major employer and taxpayer in the region. The J. Brodie Smith Project is important locally as a clean and reliable energy source.

CRP provides extensive public access to the Project at the Smith Peninsula Park, as discussed in Exhibit E.

3.7 Ownership and Operating Expenses that would be Reduced if the license were transferred

This section is not applicable because there is no competing application to take over the Project and no proposal to transfer the license.

3.8 Annual fees for use of federal or Native American lands

This does not apply to the Project because there are no federal or native American lands in the Project boundaries.

4.0 REFERENCES

Maine Department of Marine Resources (MDMR) and Maine Department of Inland Fisheries and Wildlife (MDIFW). 2017. Draft Fisheries Management Plan for the Lower Androscoggin River, Little Androscoggin River and Sabattus River. September 2017. Accessed January 11, 2021.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2013. 2013-2018 New Hampshire Statewide Outdoor Recreation Plan. http://www.nhstateparks.org/about-us/division/reports.aspx. Accessed June 15, 2018.

Public Service Company of New Hampshire (PSNH). 1996. Cultural Resource Management Plan for the Gorham Hydroelectric Facility, in Gorham Township, Coos County, New Hampshire. Santa Fe, NM 87505.