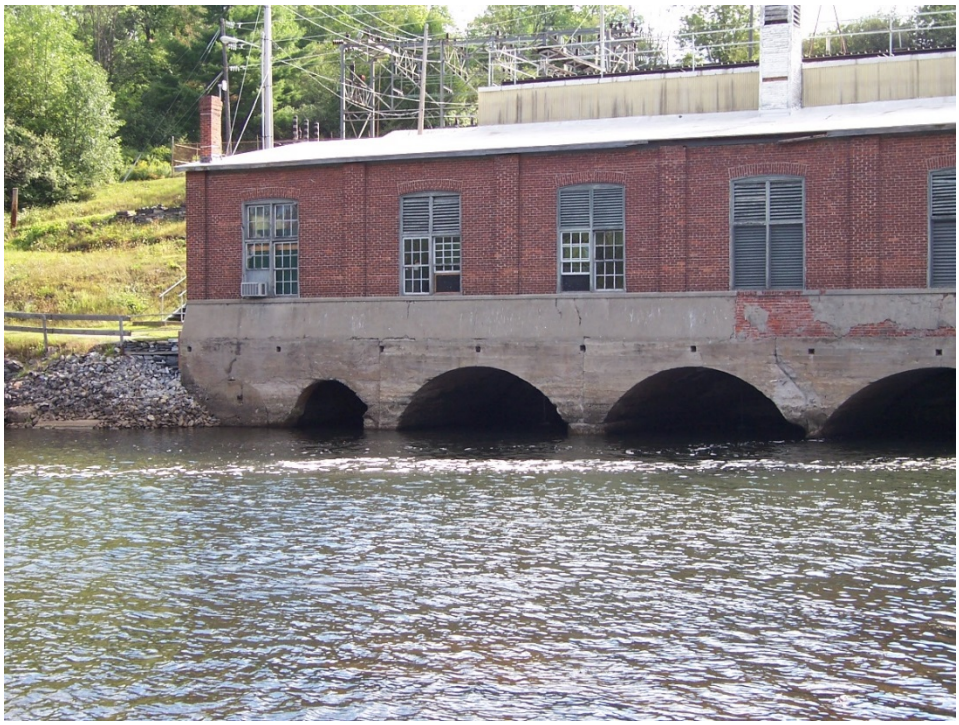
LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

MIDDLEBURY LOWER HYDROELECTRIC PROJECT
(FERC NO. 2737)



Prepared for:

Green Mountain Power Corporation
Rutland, Vermont

Prepared by:

Kleinschmidt

Pittsfield, Maine
www.KleinschmidtGroup.com

December 2018

LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

MIDDLEBURY LOWER HYDROELECTRIC PROJECT
(FERC NO. 2737)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOS

LIST OF APPENDICES

1.0 FACILITY DESCRIPTION

The Middlebury Lower Hydroelectric Project (FERC No. 2737) (Project) is located on the Lower Falls of the Otter Creek at river mile (RM) 24.7 and situated within the towns of Middlebury and Weybridge, Addison County, Vermont (Figure 1-Figure 3). The Project's hydroelectric facilities are owned and operated by the Green Mountain Power Corporation (GMP or Licensee), formerly Central Vermont Public Service Corporation. The Middlebury Lower Project is the fifth most downstream of eight dams located on the Otter Creek (Appendix B).

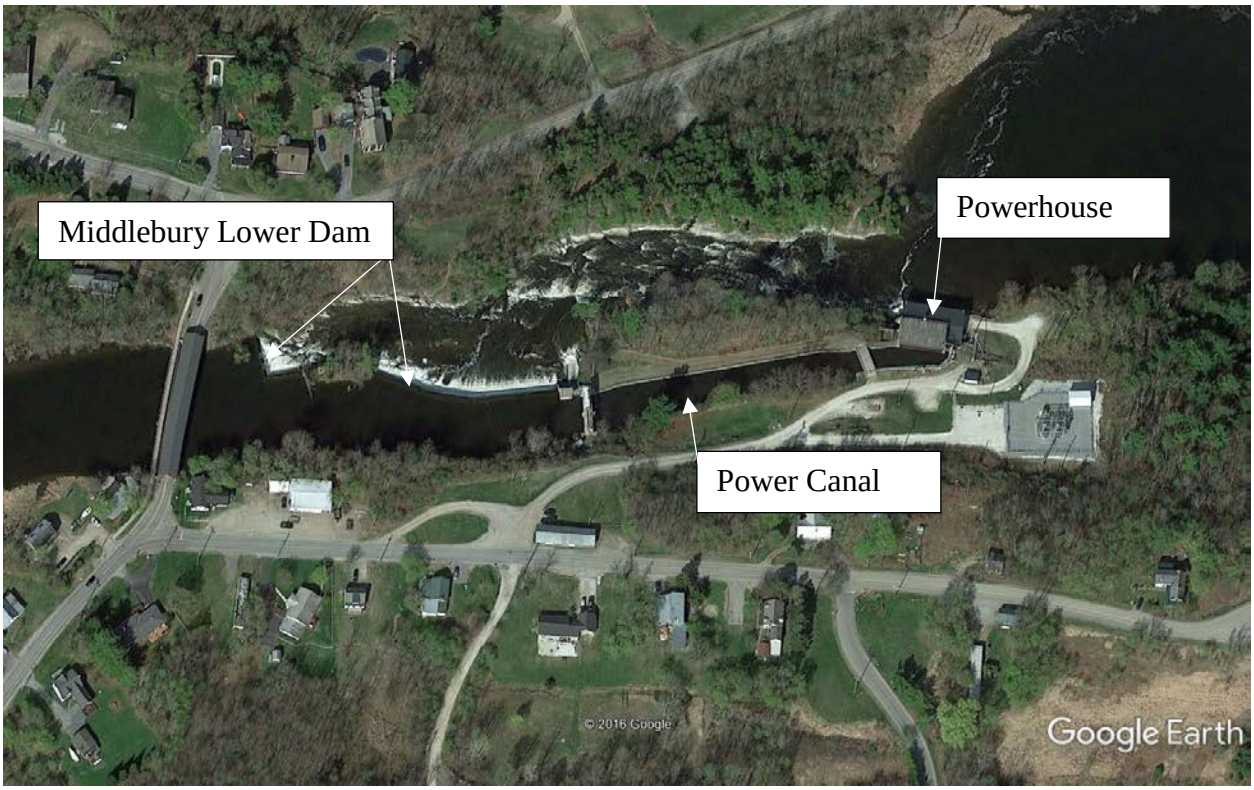


FIGURE 1 MIDDLEBURY LOWER HYDROELECTRIC PROJECT OVERVIEW

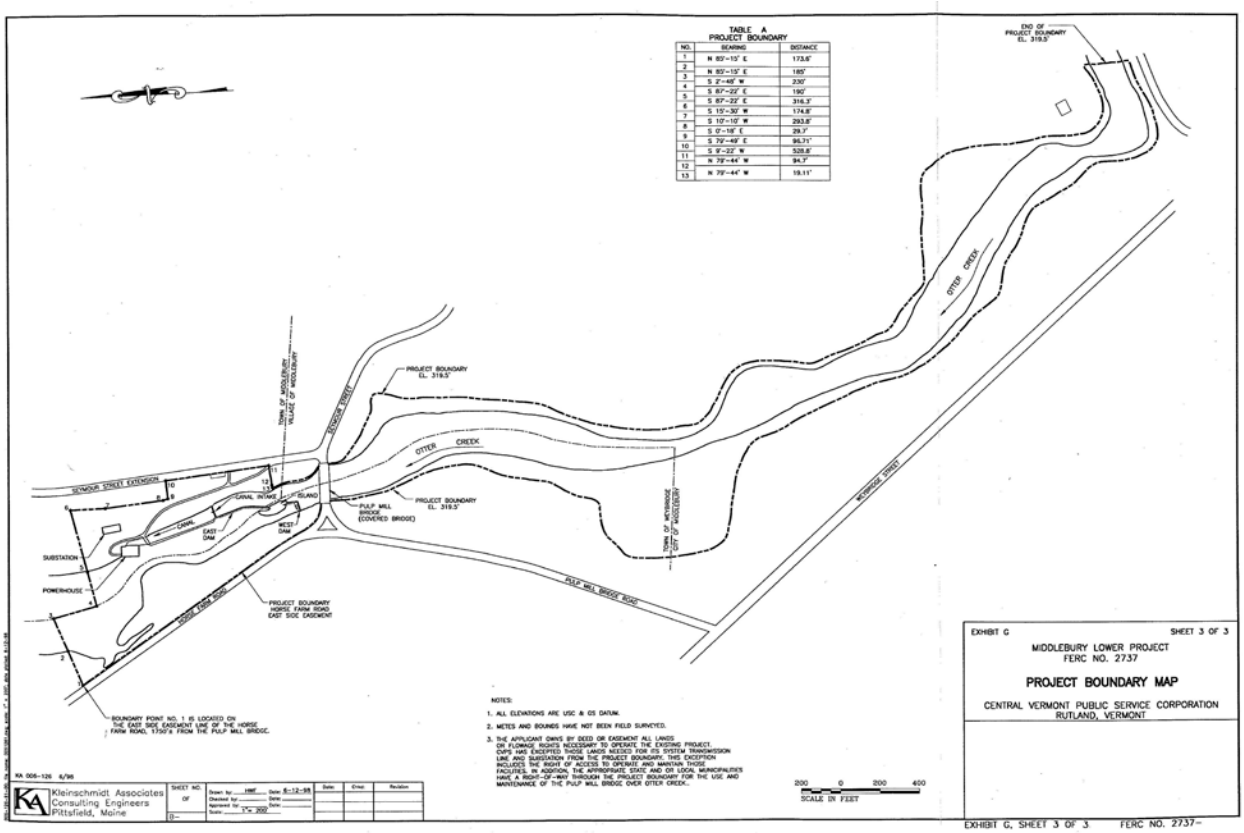


FIGURE 2 IDENTIFICATION OF PROJECT PARTS

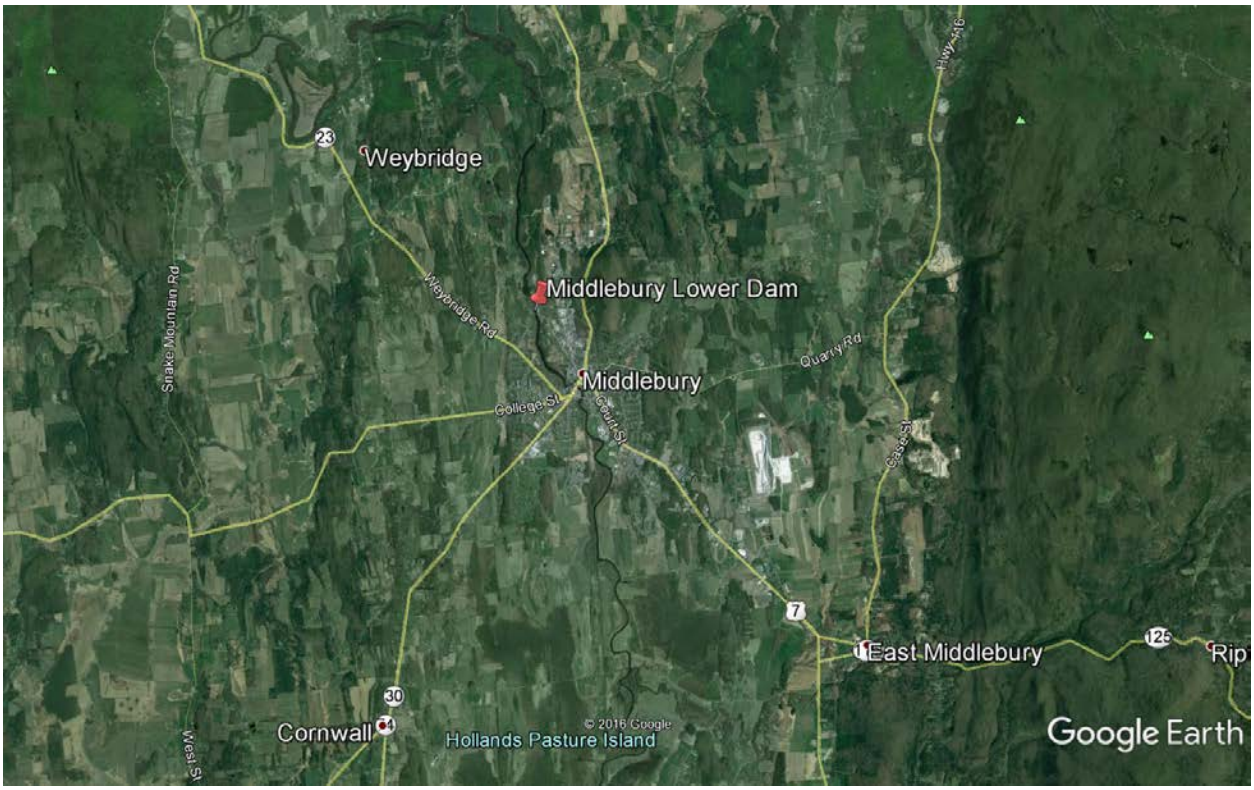


FIGURE 3 GEOGRAPHIC OVERVIEW OF GAGE HYDROELECTRIC PROJECT LOCATION

The Project first started generating power in 1917. The original powerhouse collapsed during the initial watering of the turbines, and it was rebuilt and placed in service by 1920.

The Project impounds a 16-acre reservoir that extends approximately 1 mile upstream, with a water surface elevation at 314.5 feet mean sea level (msl). The concrete gravity dam is 30-feet-high, 478-feet-long, and consists of two ogee spillway sections, including a 123-foot-long western spillway section and a 260-foot-long eastern spillway section.

A 400-foot-long, 40-foot-wide intake canal, controlled by a gate structure containing two 23-foot-wide, 13-foot-high gates, takes water from the impoundment to the powerhouse. The powerhouse contains three Francis turbine units for a total installed capacity of 2.04 MW[1], and an intake containing steel trashracks with a 1.75-inch clear spacing. The Project also includes appropriate generator leads and transformers used to connect the Project to the interconnected transmission/distribution system located at the Project switchyard 100-feet east of the powerhouse. The bypassed reach at the Middlebury Lower Project is 750-feet-long.

The Middlebury Lower Project is operated as a run-of-river facility to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows of the Otter Creek. The impoundment elevation fluctuates not more than 1-inch from the crest elevation of 314.74 feet NGVD during normal operation. The Licensee provides a minimum instantaneous flow of 157 cubic feet per second (cfs), or instantaneous inflow if less, spilled along the full spillway crest at all times, with all flows spilled at the dam when the Project is not generating. Project operation relies upon inflows from upstream developments and the 628 square miles of the Otter Creek drainage basin.

The Project operates under a 30-year FERC license issued on August 1, 2001. One license amendment (to Article 401) was issued on December 23, 2004, related to a change in normal impoundment elevation. This amendment changed the normal impoundment level from 314.5 ft NGVD to 314.74 ft NGVD so to ensure release of the required 157 cfs minimum flow.

[1] Project is licensed for up to 2.25 MW capacity.

TABLE 1 FACILITY DESCRIPTION INFORMATION FOR MIDDLEBURY LOWER HYDROELECTRIC PROJECT (LIHI # 99)

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
Name of the Facility	Facility name (use FERC project name if possible)	Middlebury Lower Hydroelectric Project (FERC No. 2737) (Project)
Location	River name (USGS proper name)	Otter Creek
	River basin name	Otter Creek Basin
	Nearest town, county, and state	Middlebury and Weybridge, Addison County, Vermont
	River mile of dam above next major river	RM 24.7
	Geographic latitude	44.0258
	Geographic longitude	-73.1778
Facility Owner	Application contact names (IMPORTANT: you must also complete the Facilities Contact Form):	Jason Lisai – Green Mountain Power Corporation John Greenan – Green Mountain Power Corporation Andy Qua – Kleinschmidt Associates Katie Sellers – Kleinschmidt Associates
	- Facility owner (individual and company names)	Green Mountain Power Corporation (GMP or Licensee)
	- Operating affiliate (if different from owner)	N/A
	- Representative in LIHI certification	John Greenan, GMP
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates	FERC No. 2737. A 30-year license was issued on August 1, 2001, and expires on July 31, 2031.
	FERC license type or special classification (e.g., "qualified conduit")	Major Project License
	Water Quality Certificate identifier and issuance date, plus source agency name	A Water Quality Certificate (WQC) was issued by the Vermont Department of Environmental Conservation (DEC) on June 2, 1999.
	Hyperlinks to key electronic records on FERC e-library website (e.g., most recent Commission Orders, WQC, ESA documents, etc.)	2001 License: http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=6006243 1999 WQC: http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=140203 Order approving report under Article 403 & Amending Article 401:

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10347794 Transfer of License to GMP: http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13064046
Power Plant Character-istics	Date of initial operation (past or future for operational applications)	The Project first started generating power in 1917. The original powerhouse collapsed during the initial watering of the turbines, and it was rebuilt and placed in service by 1920.
	Total name-plate capacity (MW)	Currently installed capacity: 2.04 MW Licensed capacity: 2.25 MW
	Average annual generation (MWh)	8,643 MWh. This is the five-year average taken from the 2009 to 2015 annual generation reports.
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	The powerhouse contains three horizontal Francis-type turbine units (Unit 1: 0.56 MW; Unit 2: 0.56 MW; Unit 3: 0.92 MW) that provide a total installed capacity of 2.040 MW[2]. Two turbines have a maximum capacity of 270 cfs and the third has a maximum capacity of 405 cfs. The minimum capacity for each unit is 100 cfs. The turbines drive General Electric generators with a capacity of 750 kW each.
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	The Project operates in a run-of-river mode to preserve water quality, aquatic and riparian habitats, and aesthetic and recreational flows in the Otter Creek. The Licensee provides a minimum instantaneous flow of 157 cfs, or instantaneous inflow if less. The minimum flow is spilled along the full spillway crest at all times and into the bypassed reach to enhance aquatic habitat.
	Dates and types of major equipment upgrades	N/A
	Dates, purpose, and type of any recent operational changes	N/A

[2] Project is licensed for up to 2.25 MW capacity.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
	Plans, authorization, and regulatory activities for any facility upgrades	There are no plans at this time for Project upgrades.
Character-istics of Dam, Diversion, or Conduit	Date of construction	The Project is part of an 1882 pulp mill which was removed in 1917. Twin penstocks and stone masonry and concrete walls were constructed about 1908 to serve the pulp mill. The west dam was originally built in 1920 and east dam built in 1920. Both were reconstructed in 1989.
	Dam height	Maximum height: 30-feet
	Spillway elevation and hydraulic capacity	The spillway crest elevation is 314.5 feet NGVD. The spillway's hydraulic capacity number is not readily available. The highest flow at Otter Creek at Middlebury, VT gage was 13,600 cfs on 11/4/1927. The Creek rise in the area was approximately 3.2 feet from normal pond level. The impoundment elevation was therefore at approximately 317.7 feet on 11/4/1927.
	Tailwater elevation	285.4 feet NGVD. There is no tailwater gage at the site and tailwater flow is not available.
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	A 400-foot-long, 40-foot-wide intake canal, controlled by a gate structure containing two 23-feet-wide, 13-feet-high gates.
	Dates and types of major, generation-related infrastructure improvements	No new infrastructure improvements have occurred since the 2012 LIHI submission.
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	The purpose of this facility is to generate power to be supplied to the local grid.
	Water source	Otter Creek
	Water discharge location or facility	Otter Creek
Characte-ristics of Reservoir and Watershed	Gross volume and surface area at full pool	At full pool of 314.74 feet msl, the Project has a gross storage capacity of approximately 46 acre-feet.
	Maximum water surface elevation (ft. MSL)	The maximum water surface elevation within the impoundment is 314.74 feet msl.
	Maximum and minimum volume and water surface elevations for designated power pool, if available	No power pool present. Run-of-river Project.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
	Upstream dam(s) by name, ownership, FERC number (if applicable), and river mile	Upstream of the Middlebury Lower Dam is Emerald Lake Dam located at RM 100 (non-FERC), Ripley Mills Dam located at RM 72 (Non-FERC), Center Rutland Project (FERC No. 2445) owned by GMP located at RM 71, and the Proctor Hydroelectric Development (Part of the Otter Creek Hydroelectric Project (FERC No 2558) owned by GMP is located at RM 64.2. See Appendix B for a map of Otter Creek Dam Locations.
	Downstream dam(s) by name, ownership, FERC number (if applicable), and river mile	GMP owns and operates four other projects downstream of the Middlebury Lower Project: Beldens Hydroelectric Development (Part of Otter Creek Project FERC No. 2558) at RM 23; Huntington Falls Hydroelectric Development (Part of Otter Creek Hydroelectric Project FERC No. 2558) located at RM 21; Weybridge Hydroelectric Project (FERC No. 2731) at RM 19.5; and Vergennes Hydroelectric Project (FERC No. 2674) at RM 7.4. See Appendix B for a map of Otter Creek Dam Locations.
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	No operating agreements are in effect with other surrounding facilities.
	Area inside FERC project boundary, where appropriate	The area inside the FERC Project boundary is approximately 20 acres.
Hydrologic Setting	Average annual flow at the dam	As identified within the 1991 WQC, the average annual flow is 1,000 cfs at the dam. This is estimated using the upstream U.S. Geological Survey (USGS) Gage 04282500 Otter Creek at Middlebury, VT. The Middlebury Lower dam is located approximately 1.1 river miles downstream from the gage. The drainage area at the gaging station is 628 square miles. A proration factor of 1.004286 is used to

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		calculate flow at the Middlebury Lower dam.
	Average monthly flows	Average monthly flows (1903-2015) as measured at USGS Gage 04282500 Otter Creek at Middlebury, VT. Jan: 941 cfs Feb: 861 cfs March:1520 cfs April: 2550 cfs May: 1540 cfs June: 874 cfs July:599 cfs Aug: 502 cfs Sept: 494 cfs Oct: 687 cfs Nov: 925 cfs Dec: 991 cfs
	Location and name of relevant stream gauging stations above and below the facility	USGS Gage 04282500 Otter Creek at Middlebury, VT is located upstream of the Project. No other USGS gages are located upstream of the Project.
	Watershed area at the dam	Of Otter Creek's 936 square mile watershed, the Project utilizes runoff from an area of 629 square miles.
Designated Zones of Effect	Number of zones of effect (ZOE)	There are three zones of effect: 1) impoundment, 2) bypassed reach, and 3) downstream. The Project impoundment inundates approximately 16 acres or approximately one mile of Otter Creek upstream of the Middlebury Lower dam. The impoundment influences the waters stretching from RM 25 (upstream non-FERC dam) to RM 24.7 (Middlebury Lower Project) of the Otter Creek. The Project bypassed reach ZOE is approximately 4 acres or approximately 750-feet from the dam and reconnects to the tailwater at the end of powerhouse.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
		The downstream ZOE starts at the powerhouse and stretches to the Beldens dam at RM 23. The acreage of the downstream ZOE is approximately 69 acres. See Appendix A for a depiction of the Project's ZOEs.
	Upstream and downstream locations by river miles	The impoundment ZOE includes the waters stretching from RM 25.7 to RM 24.7. The bypassed reach ZOE includes the waters stretching from RM 24.7 to approximately RM 24.5. The downstream ZOE includes waters stretching from RM 24.5 to RM 23.
	Type of waterbody (river, impoundment, by-passed reach, etc.)	The waters located within the impoundment ZOE, bypassed reach ZOE, and downstream ZOE are classified as Riverine by the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (USFWS 2016).
	Delimiting structures	The impoundment ZOE includes waters stretching from the upstream non-FERC dam to the Middlebury Lower Dam. The bypassed reach ZOE includes waters stretching from the Middlebury Lower Dam 750-feet downstream to the tailrace. The downstream ZOE includes waters from the tailrace to the downstream Beldens Project.
	Designated uses by state water quality agency	The Otter Creek is designated as Class B Waters. Designated uses as described in the WQC include public water supply with filtration and disinfection, irrigation and other agricultural uses, swimming, and recreation.
Additional Contact Information	Names, addresses, phone numbers, and e-mail for local state and federal resource agencies	Please see Section 4.0 for the Project Contacts Form.
	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	Please see Section 4.0 for the Project Contacts Form.

INFORMATION TYPE	VARIABLE DESCRIPTION	RESPONSE (AND REFERENCE TO FURTHER DETAILS)
Photographs and Maps	Photographs of key features of the facility and each of the designated zones of effect	Please see Appendix A for photographs of key features of the facility and identification of each ZOE, and for project drawings.
	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	Please see Appendix B for aerial photos of facility area and river basin.

2.0 STANDARDS MATRICES

IMPOUNDMENT ZOE

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**	***X***				
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**		***X***			
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			

BYPASSED REACH ZOE

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**		***X***			
B	**Water Quality**	***X***				
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**		***X***			
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			

DOWNSTREAM ZOE

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**	***X***				
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**		***X***			
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			

3.0 SUPPORTING INFORMATION

3.1 ECOLOGICAL FLOWS STANDARDS: IMPOUNDMENT ZOE

Criterion	*Standard*	*Instructions*
A	1	Not Applicable / De Minimis Effect: • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- The Impoundment ZOE does not have a bypassed reach.
- Vermont Department of Environmental Conservation (Vermont DEC) issued a Project WQC on June 2, 1999 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=140203). As prescribed within WQC Condition B (Article 401 of the 2001 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam.

  In accordance with License Article 403 and WQC Conditions D & E, the Licensee developed an Operations Plan which was filed on November 5, 2001 (not on FERC eLibrary), and was approved and modified by FERC Order dated February 5, 2002, (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=6012168). The licensee monitors run-of-river project operation through remote observation of the reservoir surface. A pressure transducer, located in a stilling well attached to the intake canal wall, senses reservoir water elevation. The Project's system control and data acquisition (SCADA) system records the elevation data every 15 minutes and transmits the data to a programmable logic controller (PLC). The collected data will document the licensee's compliance with the ROR reservoir elevation requirement. The PLC uses reservoir elevation data to trigger increases or decreases in generation, to maintain a consistent reservoir elevation.

  The February 5, 2002 Order directed the Licensee, to conduct field investigations in 2002 to assess leakage through the dam, to evaluate the potential for using sluice gates to provide a portion of the minimum flow, to calibrate the weir equation for the Project, and to determine the effects of project shutdown on spill rates and fish habitat, through consultation with the Vermont ANR. The field investigation was intended to verify the reservoir target elevation for providing a veiling flow over the dam. The Final report was

submitted to FERC on September 23, 2004 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10254588). The Licensee and resource agencies determined that maintaining the reservoir elevation at 314.74 feet NGVD would provide the necessary flows as required by the license. Article 402 requires the licensee to maintain a 157 cfs minimum flow as a veiling flow over the crest of the dam. At the 314.5 feet NGVD reservoir elevation required under article 401 or at the 314.733 feet NGVD elevation tested during 2002 and 2003, the Licensee determined it would not be able to meet the 157 cfs minimum flow. The Licensee's Report provides verification that a reservoir elevation of 314.74 feet NGVD is needed in order for it to release the required 157 cfs minimum flow as a veiling flow over the crest of the dam. The Report was approved by FERC Order dated December 23, 2004 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10347794). The December 23 FERC Order additionally amended License Article 401 so to include the correct impoundment surface elevation of 314.74 ft NGVD.

- On September 18, 2013, GMP submitted a notice of non-conformance that occurred on September 8, 2013 in regards to License Articles 401 and 402 of the FERC License and Condition B of the Vermont WQC (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13351122). On September 8, failure of the radio transmitting head pond levels to the SCADA system malfunctioned and the headpond water level reading froze at 314.80' while one of the generating units continued to operate. This caused the headpond level to be drawn below the dam crest elevation of 314.50' NGVD and a deviation from run-of-river operations and minimum flow requirements. Once the radio malfunction was identified a station operator was dispatched to the site and water levels and bypass flows were returned to normal. FERC responded on November 6, 2013, that the event was not a violation of Articles 401 and 402 (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13389539).

  On August 20, 2014, a GMP technician inspected and confirmed there was a partial failure of the water level transducer by providing frozen/erratic water elevation signals to the station PLC system. FERC responded on September 30, 2014, that the deviation was not considered to be a violation of Articles 401 and 402 (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13646471).

- This is not a conduit project.
- The Project's run-of-river operations create a stable impoundment environment.
- Project operations data was provided to Vermont DEC on December 28, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

3.2 ECOLOGICAL FLOWS STANDARDS: BYPASSED REACH ZOE

A	2	Agency Recommendation (see Appendix A for definitions): • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).

- Vermont DEC issued a Project WQC on June 2, 1999 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=140203). As prescribed within WQC Condition B (Article 401 of the 2001 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam.

  In accordance with WQC Condition B (Article 402 of 2001 License), GMP provides a minimum instantaneous flow of 157 cfs or instantaneous Project inflow, if less. This minimum flow is released as a veiling flow over the crest of the dam. If instantaneous inflow falls below the minimum hydraulic capacity of the turbine units plus this spillage requirement or if the Project is shutdown, all flows are spilled at the dam.

- In order to provide a base of information on the flow needs of aquatic life in the bypass, the Licensee and the Vermont Department of Fish and Wildlife (VDFW) conducted an instream flow study. The Vermont DEC examined the amount of habitat available at four test flows (77 cfs, 157 cfs (7Q10), 236 cfs, 314 cfs) by averaging the percent of maximum values for each target species and life stage. The targets were given equal weighting. The flow providing the best habitat conditions was found to be 236 cfs; however, that flow only provided 4 percent more total average habitat than a flow of 157 cfs. With the exclusion of macroinvertebrates, flow of 157 and 236 cfs provided the same level of habitat. Therefore, flow of 157 cfs was determined to provide the needs of aquatic life in the bypass.

- As stated within the 1999 WQC, Otter Creek is managed to support both coldwater and warmwater fish.

- Vermont DEC recommendations provide refugia and enhancement of habitat for local salmonid species including the brown trout, rainbow trout, smallmouth bass, and fallfish. The Vermont DEC additionally determined that set bypass flows also provide localized habitat improvement where highly oxygenated water will exist prior to mixing with the water below the bypass reach ledge drop. The entrained bubbles in the zone provide cover for fish.

- Project operations data was provided to Vermont DEC on December 28, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

3.3 ECOLOGICAL FLOWS STANDARDS: DOWNSTREAM ZOE

Criterion	*Standard*	*Instructions*
A	1	Not Applicable / De Minimis Effect: • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- The Downstream ZOE does not have a bypassed reach.
- Vermont DEC issued a Project WQC on June 2, 1999 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=140203). As prescribed within WQC Condition B (Article 401 of the 2001 License), the Project operates in a true run-of-river mode where instantaneous flows below the tailrace equal instantaneous inflows to the impoundment at all times. When the facility is not operating, all flows are spilled at the dam.

  In accordance with License Article 403 and WQC Conditions D & E, the Licensee developed an Operations Plan which was filed on November 5, 2001 (not on FERC eLibrary), and was approved and modified by FERC Order dated February 5, 2002, (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=6012168). The Licensee monitors run-of-river project operation through remote observation of the reservoir surface. A pressure transducer, located in a stilling well attached to the intake canal wall, senses reservoir water elevation. The Project's SCADA system records the elevation data every 15 minutes and transmits the data to a PLC. The collected data will document the Licensee's compliance with the ROR reservoir elevation requirement. The PLC uses reservoir elevation data to trigger increases or decreases in generation, to maintain a consistent reservoir elevation.

  The February 5, 2002 Order directed the Licensee, to conduct field investigations in 2002 to assess leakage through the dam, to evaluate the potential for using sluice gates to provide a portion of the minimum flow, to calibrate the weir equation for the Project, and to determine the effects of project shutdown on spill rates and fish habitat, through consultation with the Vermont ANR. The field investigation was intended to verify the reservoir target elevation for providing a veiling flow over the dam. The Final Report was submitted to FERC on September 23, 2004 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10254588). The Licensee and resource agencies determined that maintaining the reservoir elevation at 314.74 feet

NGVD would provide the necessary flows as required by the license. Article 402 requires the licensee to maintain a 157 cfs minimum flow as a veiling flow over the crest of the dam. At the 314.5 feet NGVD reservoir elevation required under article 401 or at the 314.733 feet NGVD elevation tested during 2002 and 2003, the Licensee determined it would not be able to meet the 157 cfs minimum flow. The Licensee's Report provides verification that a reservoir elevation of 314.74 feet NGVD is needed in order for it to release the required 157 cfs minimum flow as a veiling flow over the crest of the dam. The Report was approved by FERC Order dated December 23, 2004 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10347794). The December 23 FERC Order additionally amended License Article 401 so to include the correct impoundment surface elevation of 314.74 ft NGVD.

    - No added flow above the 157 cfs minimum flow is required in this ZOE.

- On September 18, 2013, GMP submitted a notice of non-conformance that occurred on September 8, 2013 in regards to License Articles 401 and 402 of the FERC License and Condition B of the Vermont WQC (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13351122). On September 8 failure of the radio transmitting head pond levels to the SCADA system malfunctioned and the headpond water level reading froze at 314.80' while one of the generating units continued to operate. This caused the headpond level to be drawn below the dam crest elevation of 314.50' NGVD and a deviation from run-of-river operations and minimum flow requirements. Once the radio malfunction was identified a station operator was dispatched to the site and water levels and bypass flows were returned to normal. FERC responded on November 6, 2013, that the event was not a violation of Articles 401 and 402 (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13389539).

  On August 20, 2014, a GMP technician inspected and confirmed there was a partial failure of the water level transducer by providing frozen/erratic water elevation signals to the station PLC system. FERC responded on September 30, 2014, that the deviation was not considered to be a violation of Articles 401 and 402 (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13646471).

- This is not a conduit project.
- Project operations data was provided to Vermont DEC on December 28, 2018 for verification of Project run-of-river and Water Quality Certificate compliance (see Appendix C for email exchange).

3.4 WATER QUALITY STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- The Otter Creek in the Project-affected reach is designated by the Vermont Water Resources Board as Class B waters. One area in the vicinity of the Middlebury Lower Project is identified by the State of Vermont in their 2016 Clean Water Act Section 303(d) List of Impaired Waters[3]. Specifically, the section of Otter Creek from the mouth of the Middlebury River to the Pulp Mill Bridge was identified as impaired due to *e. coli* from agricultural runoff and possible failed septic systems.
- The Project's WQC was issued on June 2,1999 (http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=140203).
- In an email dated March 22, 2017 (Appendix C), the Vermont DEC confirms that operations of the Middlebury Lower Project do not contribute to the impairment of the river reach. Project operations data was additionally provided to Vermont DEC on December 28, 2018 for verification of Project Water Quality Certificate compliance (Appendix C).

[3] http://www.vtwaterquality.org/mapp/docs/mp_2010_State_Lists_final.pdf

3.5 UPSTREAM FISH PASSAGE STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

Presently there are no migratory aquatic species located within the vicinity of the Project. Otter Creek is managed to support both coldwater and warmwater fish. Otter Creek upstream of the town of Middlebury has extensive and highly productive wild trout populations. Fishes found above and below the Middlebury Lower Project include northern pike, smallmouth bass, largemouth bass, brown trout, rainbow trout, perch, white sucker, brown bullhead, sunfish species and various minnow species which furnish a forage base for many predatory species. Both brown and rainbow trout are stocked in the impoundment above the dam.

Criterion	***Standard***	***Instructions***
C	1	Not Applicable/De Minimis Effect: • The facility does not create a barrier to upstream passage, or • There are no migratory fish in the vicinity of the facility and the facility is nor the cause of extirpation of such species if they had been present historically

- The Project does not create a barrier for migratory upstream fish passage. In the Project's Environmental Assessment (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=8033634), FERC reported that there are no migratory species in Otter Creek above the Vergennes Hydroelectric Project (FERC No. 2674), the most downstream dam on the river, and agencies have no active plans to introduce such species. This is evidenced within the Otter Creek Hydroelectric Project's (including upstream Proctor Dam and downstream Beldens Dam and Huntington Falls Dams) recent relicensing process. No fishway prescriptions were filed under Section 18 of the FPA in the 2014 License.
- Although there is no federal mandatory prescription for the upstream passage of fish at the Project, License Article 404 reserves future authority to order such fishways.

3.6 DOWNSTREAM FISH PASSAGE STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

Presently there are no migratory aquatic species located within the vicinity of the Project. Otter Creek is managed to support both coldwater and warmwater fish. Otter Creek upstream of the town of Middlebury has extensive and highly productive wild trout populations. Fishes found above and below the Middlebury Lower Project include northern pike, smallmouth bass, largemouth bass, brown trout, rainbow trout, perch, white sucker, brown bullhead, sunfish species and various minnow species which furnish a forage base for many predatory species. Both brown and rainbow trout are stocked in the impoundment above the dam.

Criterion	*Standard*	*Instructions*
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- The Project does not create a barrier for migratory downstream fish passage. In the Project's Environmental Assessment (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=8033634), FERC reported that there are no migratory species in Otter Creek above the most downstream dam (Vergennes Project FERC No. 2674); and agencies have no active plans to introduce such species. This is evidenced within the Otter Creek Hydroelectric Project's (including upstream Proctor Dam and downstream Beldens Dam and Huntington Falls Dams) recent relicensing process. No fishway prescriptions were filed under Section 18 of the FPA in the 2014 License.
- Although there is no federal mandatory prescription for the downstream passage of fish at the Project, License Article 404 reserves future authority to order such fishways. Condition F of the WQC, requires the implementation of trashracks at the Project.

  To meet the goals of the bistate plan for the development of Champlain Lake's salmonid fishery (a Strategic Plan for Development of Salmonid Fisheries in Lake Champlain, NYS Department of Environmental Conservation, October 4, 1977), upstream and downstream passage provisions were being sought at dams on certain Lake tributaries. In Vermont, the Winooski River and the Lamoille River are included in this effort; however,

this initiative has not been extended to Otter Creek as the other tributaries present a better opportunity for coldwater fish spawning.

- No recent fisheries studies have been conducted within the Otter Creek.
- Historically, migratory fish from Lake Champlain ascended many of its tributaries to access spawning waters. Atlantic salmon are naturally occurring potamodromous species that historically existed within the Lake Champlain Basin. Natural populations of Atlantic salmon were extirpated from the Lake Champlain Basin approximately 150 years ago due to the presence of dams and the degradation of riverine spawning areas (USFWS 2015). Today landlocked Atlantic salmon are stocked in the lower Otter Creek below the downstream the most downstream Vergennes Project by the VANR and USFWS.

  Atlantic salmon were extirpated from the Lake Champlain Basin before the Lower Weybridge dam was constructed in 1920. Although dams are considered one of the main causes for salmon extirpation in the Lake Champlain Basin, the Middlebury Lower dam was built after the fact and cannot be attributed to the cause of the salmon extirpation in the Lake Champlain Basin.

3.7 SHORELINE AND WATERSHED PROTECTION STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

Criterion	*Standard*	*Instructions*
E	1	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

- The area surrounding the Impoundment, Bypass Reach, and Downstream ZOEs consists of forested stretches along both sides of the river, with patches of wooded and emergent wetlands along the edges of the river. Mixed industrial, and commercial buildings, rural residential housing are spaced evenly on both sides of the river and increase in population upstream to the City of Middlebury. Land cover units identified in the vicinity of the project can be found in Table 2 as identified within the National Land Cover Database, 2011 (http://www.mrlc.gov/nlcd11_leg.php). Additionally, see Appendix A for a map depicting landcover units, as identified by the National Land Cover Database, located within the Project ZOEs.

TABLE 2 PROJECT LAND COVER CLASSIFICATION

CLASS/VALUE	CLASSIFICATION DESCRIPTION
11	Open Water- areas of open water, generally with less than 25% cover of vegetation or soil.
21	Developed, Open Space- areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
22	Developed, Low Intensity- areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.
23	Developed, Medium Intensity -areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.
41	Deciduous Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
42	Evergreen Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
43	Mixed Forest- areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

CLASS/VALUE	CLASSIFICATION DESCRIPTION
81	Pasture/Hay-areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
90	Woody Wetlands- areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
95	Emergent Herbaceous Wetlands- Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

- No shoreland management plans have been required for the Project.

3.8 THREATENED AND ENDANGERED SPECIES STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

F	2	Finding of No Negative Effects: • Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.

- Based on an official USFWS Species List populated on October 27, 2016, (Appendix D), the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened Northern long-eared bat (*Myotis septentrionalis*) may occur within the Project Vicinity. The bald eagle (*Haliaeetus leucocephalus*), protected under the federal Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, was additionally identified within the USFWS species list as a species that may have year round presence within the Project area.

  Under the Vermont Endangered Species Law, the Indiana bat and Northern long-eared bat are listed as state endangered species. Although the bald eagle was removed from the federal endangered species list in 2007, the bald eagle is still listed as a state endangered species in Vermont.

  Osprey *(Pandion haliaetus)* have also been observed in the vicinity of the Project, and the Vermont Fish and Wildlife Department installed at least one-pole mounted nesting platform nearby in the town of Middlebury in 1990. Osprey is listed as uncommon in Vermont and as a "species of greatest conservation need" in the Vermont Wildlife Action Plan, but that designation does not convey legal protection.

  Per email dated April 3, 2017 (Appendix D), the Vermont DEC verified the list of possible rare, threatened, and endangered species and determined that if the Project continued to operate in compliance with Water Quality Certification conditions, then the Project is not expected to negatively affect listed species located in the vicinity of the Project.

- A rare plant survey was completed in the Project area in 1996. Three "uncommon" species listed by the Vermont nongame and Natural Heritage Program were identified within the project area, including Frank's love-grass (S3[4]), cuckoo flower (S2[5]), and Gray's sedge (S3). Per VANR emails dated March 16, 2017 and April 3, 2017 (Appendix D), it was determined that the continued operation of the Project will not have negative impacts on identified plants and that no further plant inventories are required.

[4] State Rank – 3 - Uncommon (Vulnerable): Moderate risk of extinction/extirpation due to restricted range, relatively few populations or occurrences (often 80 or fewer), recent and widespread declines, or other factors
[5] State Rank – 2- Rare (Imperiled): At high risk of extinction or extirpation due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors

3.9 CULTURAL AND HISTORIC RESOURCES STANDARDS: IMPOUNDMENT, BYPASSED REACH, AND DOWNSTREAM ZOE

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- License Article 405 requires implementation of the February 21, 2001 "Programmatic Agreement" among FERC, the Advisory Council on Historic Preservation, and the Vermont State Historic Preservation Officer (SHPO) (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=10866151). The Agreement includes the development and implementation of a Cultural Resource Management Plan (CRMP) for the Project as infrastructure at the Project are considered eligible for inclusion in the National Register of Historic Places. A Project Historic Properties Management Plan (HPMP) was developed in consultation with the Vermont Division for Historic Preservation and filed with FERC on November 22, 2002. (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10615741). The HPMP was approved by FERC on March 11, 2004

  (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=10091485).

  Most built resources within the Project area are eligible for listing in the National Register. As directed under the HPMP, GMP operates the Project under the principle of "continuity of use," whereby the ongoing operation of the Project preserves the historic elements of the structures. The HPMP additionally addresses protective measures for the historic properties, including an evaluation of any site that will be impacted by an activity. Historic resources are evaluated during planning for any alterations to Project facilities, and in consultation with the Vermont SHPO if activities could impact those resources. Any archeological sites discovered during Project activities will also be subject to the HPMP.

- The HPMP includes a provision for annual shoreline monitoring. Annual reports associated with surveys of the Project shoreline are submitted to both the FERC and the Vermont SHPO. The below list includes links to the annual HPMP reports submitted to FERC e-Library from 2012 to present:
  - 2012 HPMP http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13040092
  - 2013 HPMP http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13385150
  - 2014 HPMP http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13606884
  - 2016 HPMP http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=14319708

- 2017 HPMP https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=14650723
- 2018 HPMP https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14990208

Within the 2012, 2013, 2014, 2016 and 2017 Annual CRMP Reports, it was recommended that due to the documented lack of potential threats to historic properties, the frequency of monitoring actions be reduced. Instead of conducting annual field inspections to inspect condition of archaeological properties as described in the CRMP, it was recommended that the field inspection schedule be altered to occur once every three years. GMP requested that the VT SHPO allow a decrease in monitoring frequency of the project shorelines. GMP inquired with the Vermont SHPO about this altered timeline on August 9, 2017 but has not received feedback (Appendix E). GMP plans to continue conducting Annual CRMP Reports unless it hears differently from Vermont SHPO.

3.10 RECREATIONAL RESOURCES STANDARDS: IMPOUNDMENT ZOE

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- In accordance with License Article 406 and WQC Conditions J & K, GMP developed and maintains recreation facilities including a canoe/kayak portage take-out in the Impoundment ZOE. The Recreation Plan was submitted to FERC on February 13, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=9054312) and approved by FERC on June 26, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=1042709).
- As evaluated in the August 24, 2005 FERC Environmental Inspection (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10991798), the Licensee filed an approved Recreation Plan in compliance with Article 406 of the license. The Licensee provides free access to the public for recreational opportunities along the left bank of Otter Creek. The Licensee has provided landscaping improvements and reforestation to enhance the natural and scenic character of the area surrounding the Project. The recreational facilities are in excellent condition and adequate for the degree of recreational usage for the area. The licensee filed a Recreation Report (Form 80) on January 5, 2004 and indicated moderate use of the recreational facilities. The 2005 Environmental Inspection Report concludes that GMP is operating in compliance with its requirements with regard to recreation resources.
- A Project Form 80 was submitted on April 1, 2015 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13826498).

3.11 RECREATIONAL RESOURCES STANDARDS: BYPASSED REACH ZOE

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- In accordance with License Article 406 and WQC Condition K, GMP developed and maintains recreation facilities including a scenic trail with picnic/overlook areas with benches for canoeists, hikers and fishermen, landscaping improvements and reforestation to enhance the natural and scenic character of the area surrounding the project, and a parking area in the Bypassed Reach ZOE. The Recreation Plan was submitted to FERC on February 13, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=9054312) and approved by FERC on June 26, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=1042709).
- In accordance to the August 24, 2005 Environmental Inspection (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10991798), the licensee has filed an approved Recreation Plan in compliance with Article 406 of the license. The licensee provides access to the public for recreational opportunities along the left bank of Otter Creek. The recreational facilities include canoe take-out/put-in areas and a scenic trail with picnic/overlook areas for canoeists, hikers and fishermen. The licensee has provided landscaping improvements and reforestation to enhance the natural and scenic character of the area surrounding the project. The recreational facilities appear to be in excellent condition and adequate for the degree of recreational usage for the area. The licensee filed a Recreation Report (Form 80) on January 5, 2004 and indicated moderate use of the recreational facilities. The licensee appears to be in compliance with its requirements with regard to recreation resources.
- A Project Form 80 was submitted on April 1, 2015 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13826498).

3.12 RECREATIONAL RESOURCES STANDARDS: DOWNSTREAM ZOE

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- In accordance with License Article 406 and WQC Condition K, GMP developed and maintains a footbridge and canoe/kayak portage put-in, in the Downstream ZOE. The Recreation Plan was submitted to FERC on February 13, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=9054312) and approved by FERC on June 26, 2002 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=1042709).
- In accordance to the 2005 Environmental Inspection (https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10991798), the licensee has filed an approved Recreation Plan in compliance with article 406 of the license. The licensee provides access to the public for recreational opportunities along the left bank of Otter Creek. The recreational facilities include canoe take-out/put-in areas and a scenic trail with picnic/overlook areas for canoeists, hikers and fishermen. The licensee has provided landscaping improvements and reforestation to enhance the natural and scenic character of the area surrounding the project. The recreational facilities appear to be in excellent condition and adequate for the degree of recreational usage for the area. The licensee filed a Recreation Report (Form 80) on January 5, 2004 and indicated moderate use of the recreational facilities. The licensee appears to be in compliance with its requirements with regard to recreation resources.
- A Project Form 80 was submitted on April 1, 2015 (http://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13826498).

4.0 CONTACTS FORMS

1. **All applications for LIHI Certification must include complete contact information to be reviewed.**

Project Owner:	
Name and Title	Jason Lisai, Generation Manager
Company	Green Mountain Power Corporation
Phone	(802) 655-8723
Email Address	Jason.Lisai@greenmountainpower.com
Mailing Address	163 Acorn Lane, Colchester, Vermont 05446
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	Andy Qua and Katie Sellers
Company	Kleinschmidt Associates
Phone	207-416-1246; 207-416-1218
Email Address	Andrew.Qua@KleinschmidtGroup.com, Katie.Sellers@KleinschmidtGroup.com
Mailing Address	P.O. Box 650, Pittsfield, Maine 04967
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	John Greenan, Environmental Engineer
Company	Green Mountain Power Corporation
Phone	(802) 770-3213
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	2152 Post Road, Rutland, Vermont 05701
Party responsible for accounts payable:	
Name and Title	John Greenan, Environmental Engineer
Company	Green Mountain Power Company
Phone	(802) 770-3213
Email Address	John.Greenan@greenmountainpower.com; invoices@greenmountainpower.com
Mailing Address	Accounts Payable Processor, 2152 Post Road, Rutland, Vermont 05701

2. Applicant must identify the most current and relevant state, federal, provincial, and tribal resource agency contacts (copy and repeat the following table as needed).

Agency Contact (Check area of responsibility: Flows_**X**_, Water Quality _**X**_, Fish/Wildlife Resources __, Watersheds _**X**_, T/E Spp. __, Cultural/Historic Resources __, Recreation _**X**_):	
Agency Name	Vermont Department of Environmental Conservation
Name and Title	Eric Davis, River Ecologist
Phone	802-490-6180
Email address	eric.davis@vermont.gov
Mailing Address	Watershed Management Division, Main Building - 2nd Floor, One National Life Drive, Montpelier, VT 05620

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _**X**_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Vermont Division of Fish and Wildlife
Name and Title	Mark Ferguson, Zoologist
Phone	802-279-3422
Email address	mark.ferguson@vermont.gov
Mailing Address	1 National Life Drive, Davis 2, Montpelier, VT 05620

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _**X**_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Vermont Division of Fish and Wildlife
Name and Title	Chet Mackenzie, Fisheries Program Manager
Phone	802-786-3864
Email address	chet.mackenzie@vermont.gov
Mailing Address	1 National Life Drive, Davis 2, Montpelier, VT 05620

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _**X**_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Vermont Division of Fish and Wildlife
Name and Title	Bob Popp, Department Botanist
Phone	(802) 476-0127
Email address	bob.popp@vermont.gov
Mailing Address	5 Perry St. Suite 40 Barre, VT. 05641

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Agency Name	U.S. Fish and Wildlife
Name and Title	Melissa Grader
Phone	(413) 548-8002 x 8124
Email address	Melissa_grader@fws.gov
Mailing Address	103 East Plumtree Road Sunderland, MA 01375

5.0 SWORN STATEMENT

SWORN STATEMENT AND WAIVER FORM

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

SWORN STATEMENT

As an Authorized Representative of Green Mountain Power's Middlebury Lower Hydroelectric Project, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

PLEASE INSERT ONLY FOR PRE-OPERATIONAL CERTIFICATIONS (See Section 4.5.3)**:**

For applications for pre-operational certification of a "new" facility the applicant must also acknowledge that the Institute may suspend or revoke the certification should the impacts of the project, once operational, fail to comply with the certification criteria.

Company Name: **Green Mountain Power Corporation**

Authorize Representative Name: John C. Greenan Title **Engineer**

State of **Vermont**

County of **Rutland**

On this, the **21st** day of **June**, 2018, before me a notary public, the undersigned officer, personally appeared **John Greenan**, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained. In witness hereof, I hereunto set my hand and official seal.

Notary Public Colleen A. Kelly

6.0 REFERENCES

USFWS (U.S. Fish and Wildlife Service). 2016. National Wetlands Inventory. https://www.fws.gov/wetlands/Data/Mapper.html. Accessed October 21, 2016.

U.S. Fish and Wildlife Service (USFWS). 2015. Fisheries Research. Restoring River-Run Landlocked Atlantic Salmon to Lake Champlain. July 8, 2015. [Online] URL: http://www.fws.gov/lcfwro/projects/research-salmon.html [Accessed October 12, 2015].

APPENDIX A

PROJECT ZOE, DRAWINGS, AND PHOTOGRAPHS

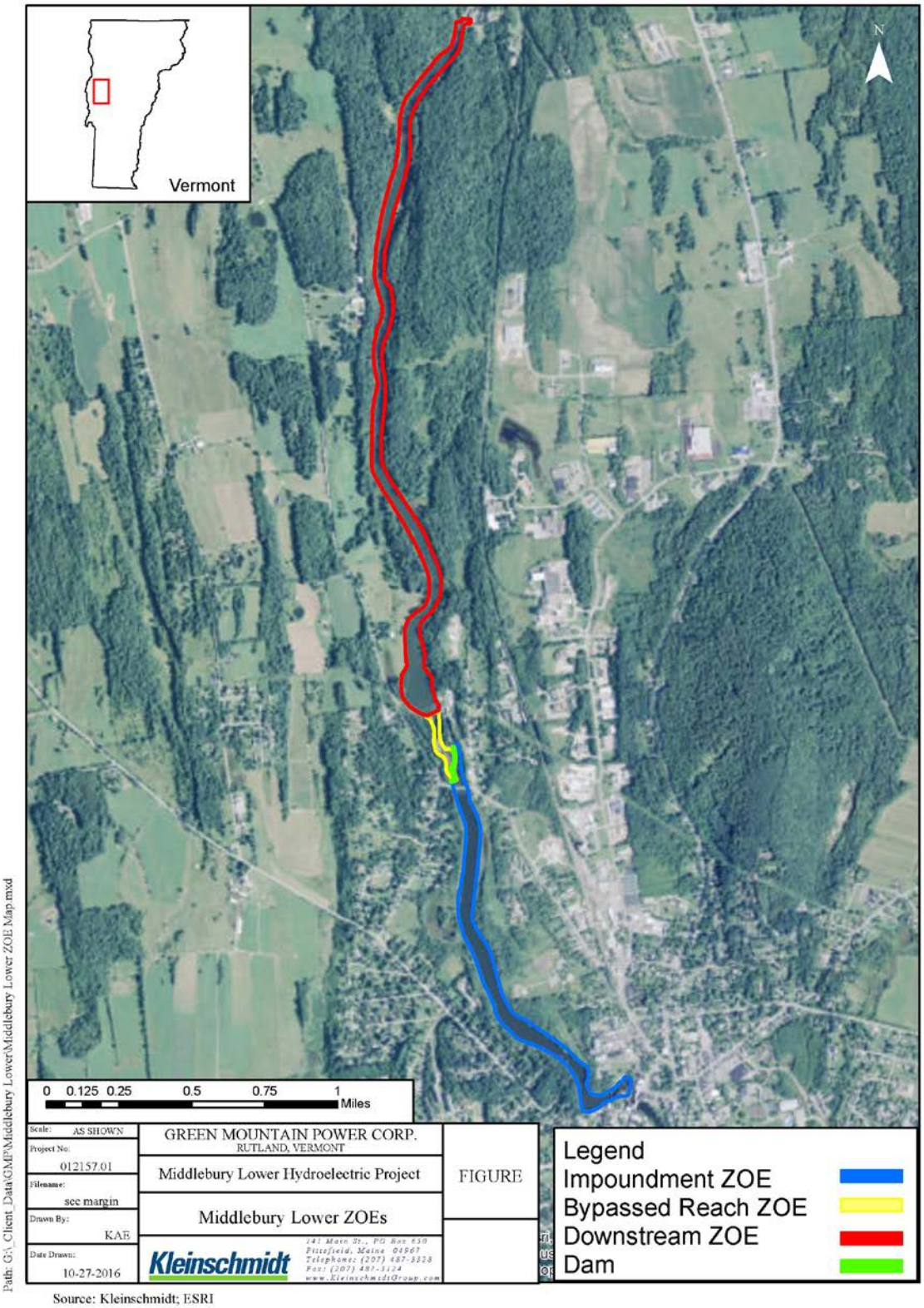
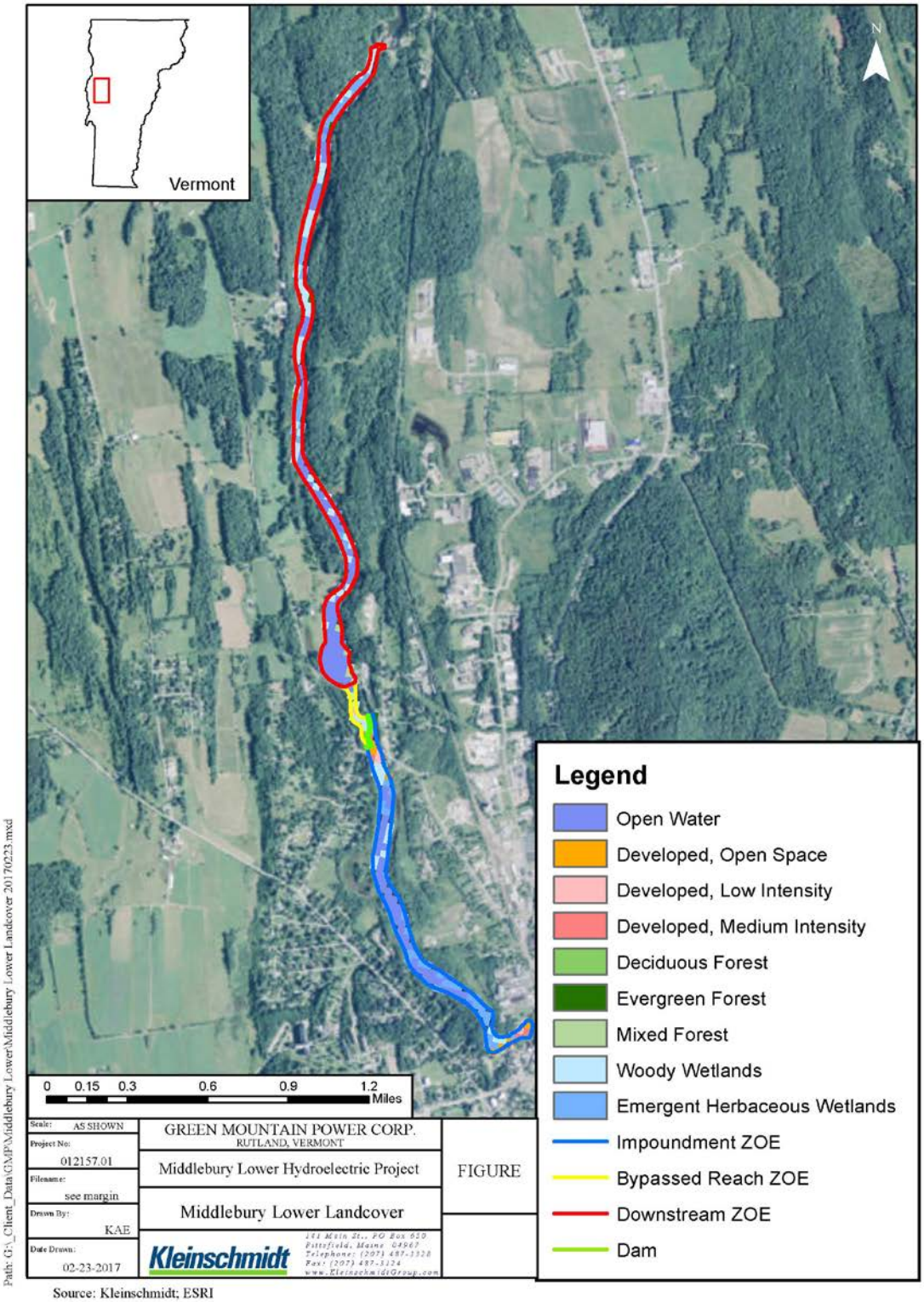


FIGURE 1 PROJECT ZONES OF EFFECT



Source: Kleinschmidt; ESRI

FIGURE 2 LAND COVER TYPES LOCATED WITHIN PROJECT ZOES

PHOTO 1 VIEW OF THE TAILRACE OF THE POWERHOUSE.

PHOTO 2 VIEW OF AN INTERPRETIVE SIGN AT THE OVERLOOK AREA DENOTING THE HISTORY AND THE CONTRIBUTIONS OF HYDROPOWER TO THE REGION.

PHOTO 3 **VIEW OF THE HEADPOND PRESSURE TRANSDUCER MOUNTED ON THE WALL AT THE ENTRANCE TO THE INTAKE CANAL. NOTE STAFF GAGE AT THE WATER SURFACE LEVEL.**

PHOTO 4 **VIEW OF THE TAILRACE PRESSURE TRANSDUCER (ARROW) MOUNTED ON THE WALL IN THE TAILRACE. THE POWERHOUSE IS THE RED BRICK BUILDING TO THE LEFT OF THE PHOTOGRAPH.**

PHOTO 5 **VIEW OF THE POND LEVEL READ-OUT ON THE CONTROL PANEL IN THE POWERHOUSE INDICATING A HEADPOND ELEVATION OF 314.81 FEET NGVD, WHICH IS WITHIN THE PRESCRIBED LIMITS.**

PHOTO 6 **VIEW OF THE 157 CFS MINIMUM FLOW RELEASED OVER THE CREST OF THE DAM AS A VEILING FLOW.**

PHOTO 7 **VIEW OF THE SIGN MOUNTED ON THE GATE AT THE ENTRANCE TO THE PROJECT. THERE IS NO PUBLIC ACCESS TO THE PROJECT HEADWORKS, POWERHOUSE AND TAILRACE.**

PHOTO 8 **VIEW OF THE ENTRANCE TO THE POWERHOUSE WITH "DANGER HIGH VOLTAGE" AND "DANGER NO TRESPASSING" SIGN POSTED. THERE IS NO PUBLIC ACCESS TO THIS AREA OF THE PROJECT.**

PHOTO 9 POWERHOUSE INTERIOR - THREE HORIZONTAL FRANCIS-TYPE TURBINE UNITS.

PHOTO 10 POWERHOUSE INTERIOR – SWITCHGEAR.

PHOTO 11 **VIEW OF THE "DANGER DAM AHEAD" SIGN (ARROW) MOUNTED ON THE PIER OF THE COVERED BRIDGE UPSTREAM OF THE PROJECT.**

PHOTO 12 **VIEW OF THE BOATER RESTRAINING BARRIER JUST DOWNSTREAM OF THE COVERED BRIDGE.**

PHOTO 13 **VIEW OF THE INFORMATION SIGN IN THE PARKING LOT IN COMPLIANCE WITH PART 8 OF THE COMMISSION'S REGULATIONS DENOTING THE RECREATIONAL OPPORTUNITIES AT THE PROJECT.**

PHOTO 14 **VIEW OF THE SIGN AT THE START OF THE CANOE PORTAGE TRAIL.**

PHOTO 15 **VIEW OF PICNIC TABLE AND BENCH AT THE SCENIC OVERLOOK ALONG THE PORTAGE TRAIL AT THE DAM AREA. NOTE THE INTERPRETIVE SIGN AS SEEN IN PHOTO NO. 2 IN THE BACKGROUND.**

PHOTO 16 **VIEW OF THE PORTAGE TRAIL. NOTE REFORESTATION EFFORTS TO PROVIDE A NATURAL AESTHETIC CHARACTER TO THE SETTING.**

PHOTO 17 VIEW OF OTTER CREEK AT THE CANOE PUT-IN AND FISHING AREA.

APPENDIX B

FACILITY AREA RIVER BASIN

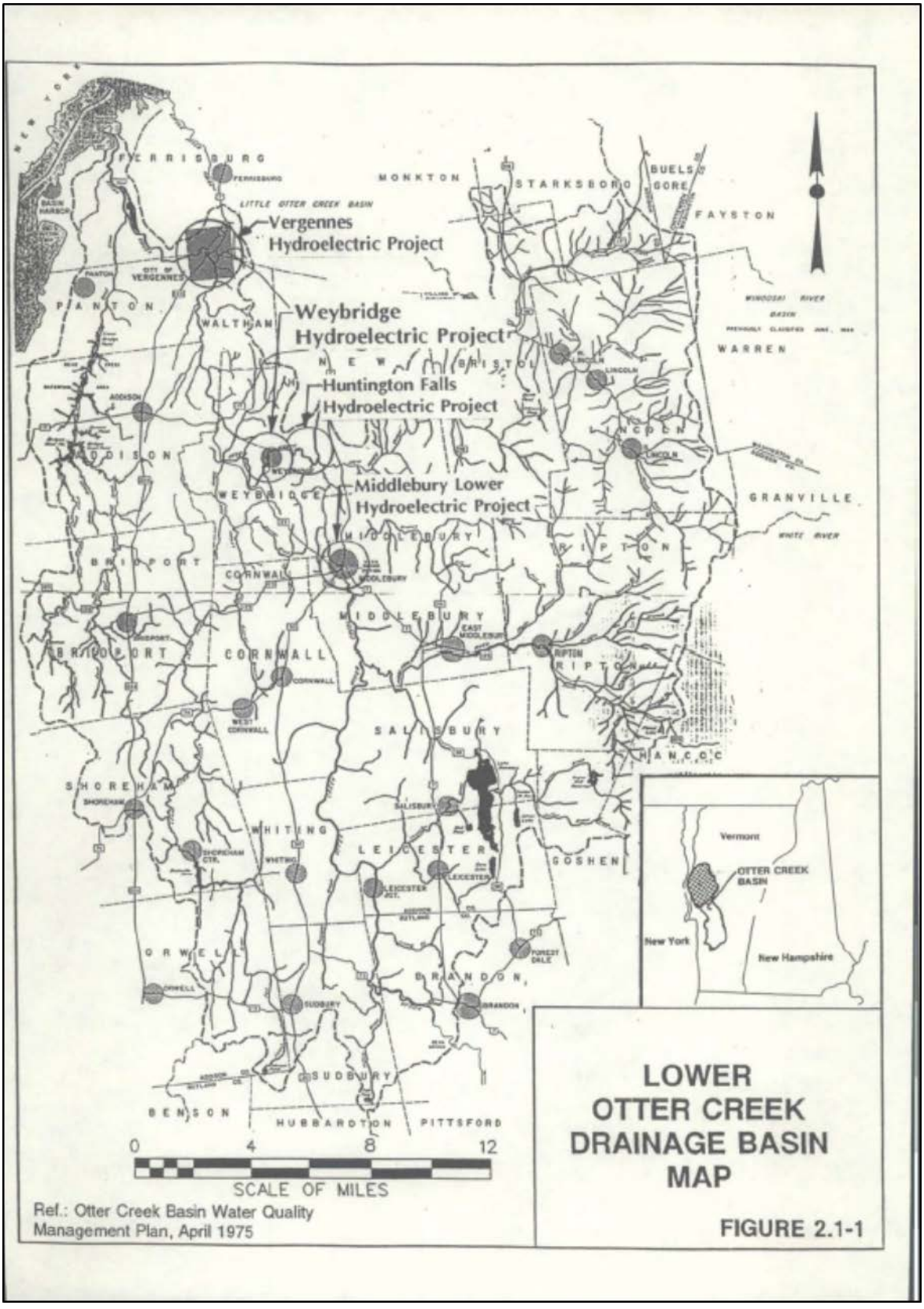


PHOTO 18 LOWER OTTER CREEK DRAINAGE BASIN MAP, APRIL 1975

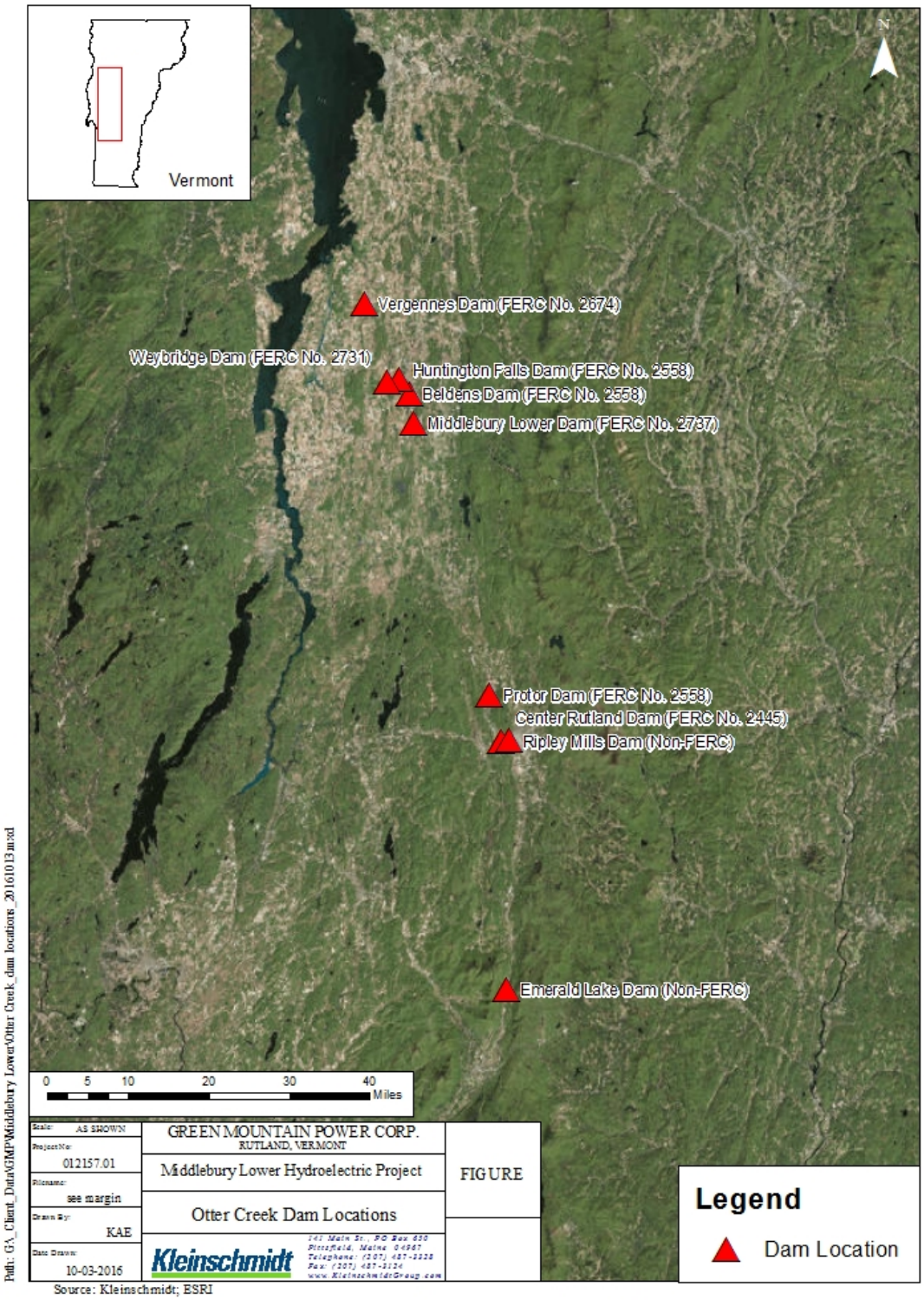


FIGURE 4 OTTER CREEK DAM LOCATIONS

APPENDIX C

WATER QUALITY

From:	Kayla Easler
To:	Katie Sellers
Subject:	FW: Middlebury LIHI Re-certification
Date:	Monday, April 03, 2017 8:46:34 AM

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From: Davis, Eric [mailto:Eric.Davis@vermont.gov]
Sent: Wednesday, March 22, 2017 3:07 PM
To: Kayla Easler <Kayla.Easler@KleinschmidtGroup.com>
Subject: RE: Middlebury LIHI Re-certification

Hi Kayla,

I apologize in my delay to your inquiry. We have quite a few complex projects on our plate at the moment.

You are correct that a four mile stretch of the Otter Creek from the mouth of Middlebury River to Pulp Mill Bridge has been identified as impaired due to agricultural runoff and possible failed septic systems. I can confirm that operations of the Middlebury Lower project do not contribute the impairment of the reach.

Thanks,
Eric

Eric Davis, *River Ecologist*

1 National Life Drive, Main 2
Montpelier, VT 05620-3522
802-490-6180 / eric.davis@vermont.gov
http://www.watershedmanagement.vt.gov/rivers
(Please note my new e-mail address, effective July 27, 2015)

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
RIVERS PROGRAM

See what we're up to on our Blog, Flow.

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]

Sent: Thursday, March 16, 2017 8:33 AM
To: Davis, Eric <Eric.Davis@vermont.gov>
Subject: FW: Middlebury LIHI Re-certification

Good morning Eric,

Just following up to see if you have reviewed my email from February 14, 2017, on Middlebury Lower and if you have any questions.

Thank you,

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From: Kayla Easler
Sent: Tuesday, February 14, 2017 2:48 PM
To: 'Eric.Davis@vermont.gov' <Eric.Davis@vermont.gov>
Cc: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Subject: Middlebury LIHI Re-certification

Hi Eric,

Katie and I are working on another LIHI re-certification application for Green Mountain Power: Middlebury Hydroelectric Project (FERC No. 2737) located on the Otter Creek.

The LIHI application asks that we gain your feedback on the following water quality information:

The Otter Creek in the project reach is designated by the Vermont Water Resources Board as Class B waters. Review of the 2016 Clean Water Act Section 303(d) List of Impaired Waters issued by the Vermont Agency of Natural Resources, Division of Water Quality identified the portion of the Otter Creek from the mouth of the Middlebury River to the Pulp Mill Bridge was identified as impaired due to e. coli from agricultural runoff and possible failed septic systems.

Could you please confirm, to your best abilities, that the Project's current operations continue to not be a contributing cause to the river's water quality limitations?

When you have a moment to review, could you please provide us with your feedback on this

topic?

Thank you,

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From:	Katie Sellers
To:	"Davis, Eric"
Cc:	"Greenan, John"; Andy Qua
Subject:	Operations Data Submission for Middlebury Lower LIHI Application
Date:	Friday, December 28, 2018 9:41:00 AM
Attachments:	Middlebury Lower Theoretical Turbine Curves_2018.pdf

This message contains attachments delivered via ShareFile.

- 2016-2017 Middlebury Lower Operations Data_FINAL.xlsx (23.4 MB)

Download the attachments by clicking here.

Hi Eric,

Kleinschmidt, on behalf of GMP, herein provides one-year (2016-2017) of Middlebury Lower Hydroelectric Project (FERC No. 2737) operations data via ShareFile for review. This operations dataset is being supplied to the Vermont Department of Environmental Conservation (VDEC) for verification of Project compliance with Water Quality Certificate conditions, as requested for Low Impact Hydropower Institute application review.

The attached 2016-2017 data depicts project generation, headpond level, and river flow data to display operations occurring at the Middlebury Lower Project. As depicted in the spreadsheet cover page, flow data was obtained from USGS gage 04282500 – Otter Creek at Middlebury, VT, located upstream of the Project. Compliant operations are represented well across the dataset. Please note that the station does not have flashboards.

In addition, please find theoretical turbine rating curves attached for the Middlebury Lower plant. The curves were developed using a combination of the attached operations data and standard factory information on the individual turbines. The theoretical curves have an accuracy range of approximately +5% to -10%.

Please note that the attached operational data is considered provisional by GMP, but has been vetted with operations staff. Should you have any questions upon review, please do not hesitate to make contact with John or myself as GMP staff are available to provide background information or further explanation as needed.

Thank you!
Katie

*To access ShareFile documents, select the “clicking here” link, fill in your name, email, and organization name when prompted (no passwords required). You will then be allowed to download the documents.

Katie E. Sellers, M.S.
Regulatory Coordinator

Kleinschmidt
Office: 207-416-1218
www.KleinschmidtGroup.com
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

APPENDIX D

THREATENED AND ENDANGERED SPECIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
PHONE: (603)223-2541 FAX: (603)223-0104
URL: www.fws.gov/newengland

Consultation Code: 05E1NE00-2017-SLI-0149 October 27, 2016
Event Code: 05E1NE00-2017-E-00182
Project Name: Middlebury Lower Hydroelectric Project

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

To Whom It May Concern:

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

United States Department of Interior
Fish and Wildlife Service

Project name: Middlebury Lower Hydroelectric Project

Official Species List

Provided by:

New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
(603) 223-2541
http://www.fws.gov/newengland

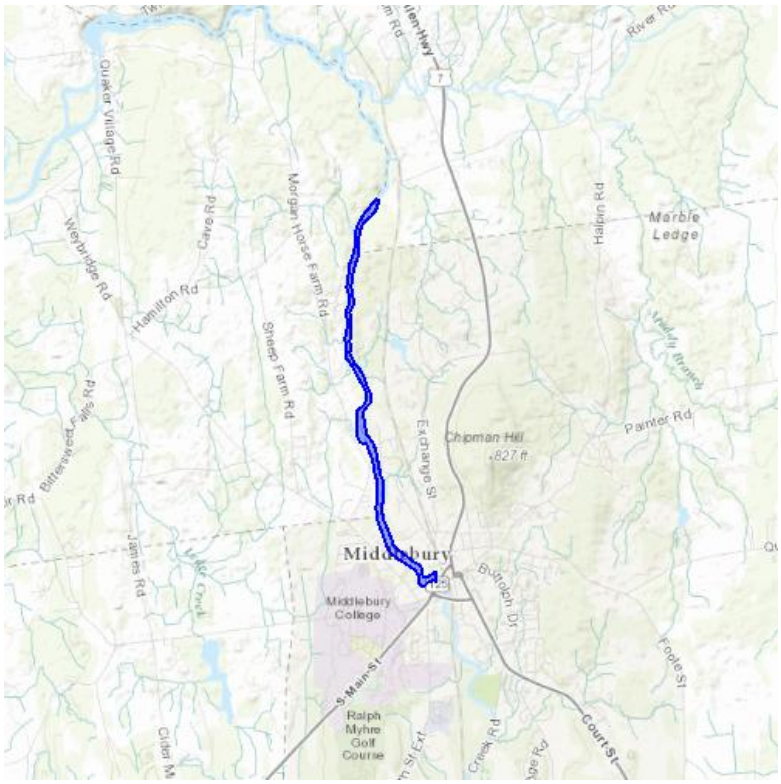
Consultation Code: 05E1NE00-2017-SLI-0149
Event Code: 05E1NE00-2017-E-00182

Project Type: DAM

Project Name: Middlebury Lower Hydroelectric Project
Project Description: Middlebury Lower LIHI Re-certification

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Addison, VT

Endangered Species Act Species List

There are a total of 2 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
Indiana bat *(Myotis sodalis)* Population: Wherever found	Endangered		
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

From:	Davis, Eric
To:	Kayla Easler
Cc:	Katie Sellers
Subject:	RE: Middlebury LIHI Re-certification
Date:	Monday, April 03, 2017 12:35:14 PM
Attachments:	image006.png

Good morning Kayla,

I have consulted with the Department of Fish and Wildlife regarding listed species in the vicinity of the Lower Middlebury hydroelectric project, as well as the potential for adverse effects due to project operations.

Our Natural Heritage Program has identified the presence of the following rare, threatened and endangered species in the vicinity of the project:

- Indiana Bat (federally and state threatened)
- Northern Long-eared Bat (federally and state endangered)
- Bald Eagle (state endangered)
- Osprey ("uncommon"/ "species of greatest conservation need")
- Cuckoo flower (S2-Rare) – Cardamine dentata (syn. Cardamine pratensis var. palustris)
- Frank's love-grass (S3-Uncommon) - Eragrostis frankii
- Gray's sedge (S3-Uncoomon) – Carex grayi

While the last three plant species were documented in a 1996 survey, our natural heritage program notes that while they have reports of these species in the area, but would welcome the results from the 1996 survey, if available.

Regarding potentially negative effects of project operations, if operated in compliance with certification conditions, the project would not be expected to negatively affect listed species in the vicinity of the project.

Thank you,
Eric

Eric Davis, *River Ecologist*

1 National Life Drive, Main 2
Montpelier, VT 05620-3522
802-490-6180 / eric.davis@vermont.gov
http://www.watershedmanagement.vt.gov/rivers
(Please note my new e-mail address, effective July 27, 2015)

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION
RIVERS PROGRAM

See what we're up to on our Blog, Flow.

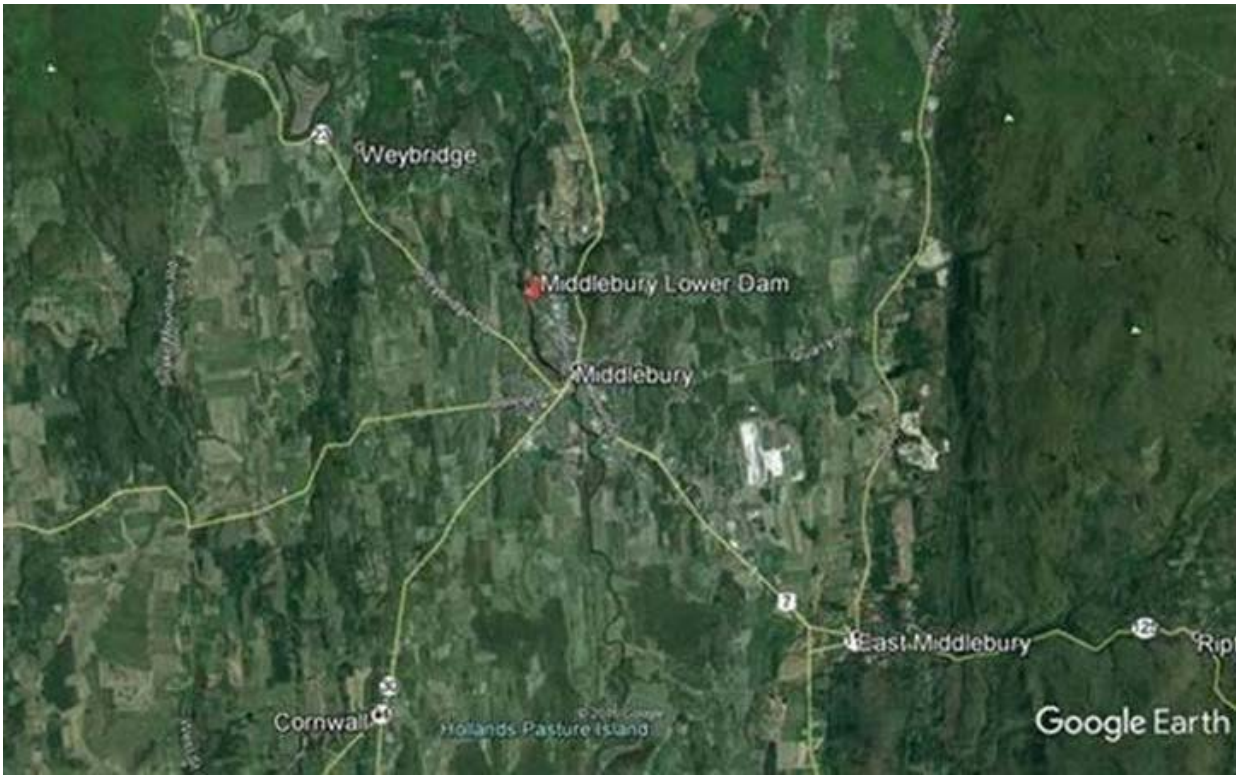
From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Thursday, February 16, 2017 2:01 PM
To: Popp, Bob <Bob.Popp@vermont.gov>
Cc: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Subject: RE: Middlebury LIHI Re-certification

Hi Bob,

Thank you for getting back to me so quickly.

The Middlebury Lower Hydroelectric Project (FERC No. 2737) (Project) is located on the Lower Falls of the Otter Creek at river mile (RM) 24.7 and situated within the towns of Middlebury and Weybridge, Addison County, Vermont (44.0258, -73.1778). The Project operates in a run-of-river mode. Based on requirements of LIHI application, the project boundary includes the impoundment which inundates approximately 16 acres or approximately one mile of Otter Creek upstream of the Middlebury Lower dam; the bypassed reach which is approximately 750-feet from the dam and reconnects to the tail water at the end of powerhouse; and the downstream section which starts at the powerhouse and stretches to the Beldens dam at RM 23 (PDF attached).

At this time no changes are planned for the project.



Kayla A. Easler

Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From: Popp, Bob [mailto:Bob.Popp@vermont.gov]
Sent: Thursday, February 16, 2017 9:14 AM
To: Kayla Easler <Kayla.Easler@KleinschmidtGroup.com>
Subject: RE: Middlebury LIHI Re-certification

Kayla, we would need to know the boundary of the project if we are to provide updated information re. the project. Also if there were to be any change that might create some impact, a rare plant inventory would be warranted since the previous one was done more than 3 yrs. Ago.
Thanks
Bob

Bob Popp
Department Botanist
VT. Dept of Fish & Wildlife
5 Perry St. Suite 40
Barre, VT. 05641

(802) 476-0127
bob.popp@vermont.gov

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Tuesday, February 14, 2017 2:51 PM
To: Ferguson, Mark <Mark.Ferguson@vermont.gov>; Mackenzie, Chet <Chet.Mackenzie@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>
Cc: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Subject: Middlebury LIHI Re-certification

Good afternoon,

Katie and I have another LIHI application in need of threatened and endangered species review. This is for the Middlebury Hydroelectric Project (FERC No. 2737) a run-of-river project located on Otter Creek.

Upon reviewing the USFWS IPAC Report and FERC's 2000 Environmental Assessment for this Project, a list of potential threatened and endangered species that may occur within this project area has been developed. Could you a) review the below species list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the

Project continues to not negatively affect any of the currently listed species that may occur within the Project area?

Species List:
Indiana Bat (federally and state threatened)
Northern Long-eared Bat (federally and state endangered)
Bald Eagle (state endangered)
Osprey (“uncommon”/ “species of greatest conservation need”)

In addition, a rare plant survey was completed in 1996, three “uncommon” species listed by the Vermont nongame and Natural Heritage Program were identified within the project area. These include the Frank’s love-grass (S3), cuckoo flower (S2), and Gray’s sedge (S3).

No changes to the project or tree cutting are planned at this time. Do let me know if you have any follow-up questions.

Thank you,

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From: Popp, Bob
To: Kayla Easler
Subject: RE: Middlebury LIHI Re-certification
Date: Thursday, March 16, 2017 9:07:13 AM
Attachments: image005.png

Sorry Kayler, I thought that I had responded. If none of the operating conditions are proposed to change, then you are all set and no further inventory is warranted.
Thanks,
Bob

Bob Popp
Department Botanist
VT. Dept of Fish & Wildlife
5 Perry St. Suite 40
Barre, VT. 05641

(802) 476-0127
bob.popp@vermont.gov

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Thursday, March 16, 2017 8:37 AM
To: Popp, Bob <Bob.Popp@vermont.gov>
Subject: FW: Middlebury LIHI Re-certification

Morning Bob,

Just checking in to see where you are with the project review and if you need anything else.

Thank you,

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

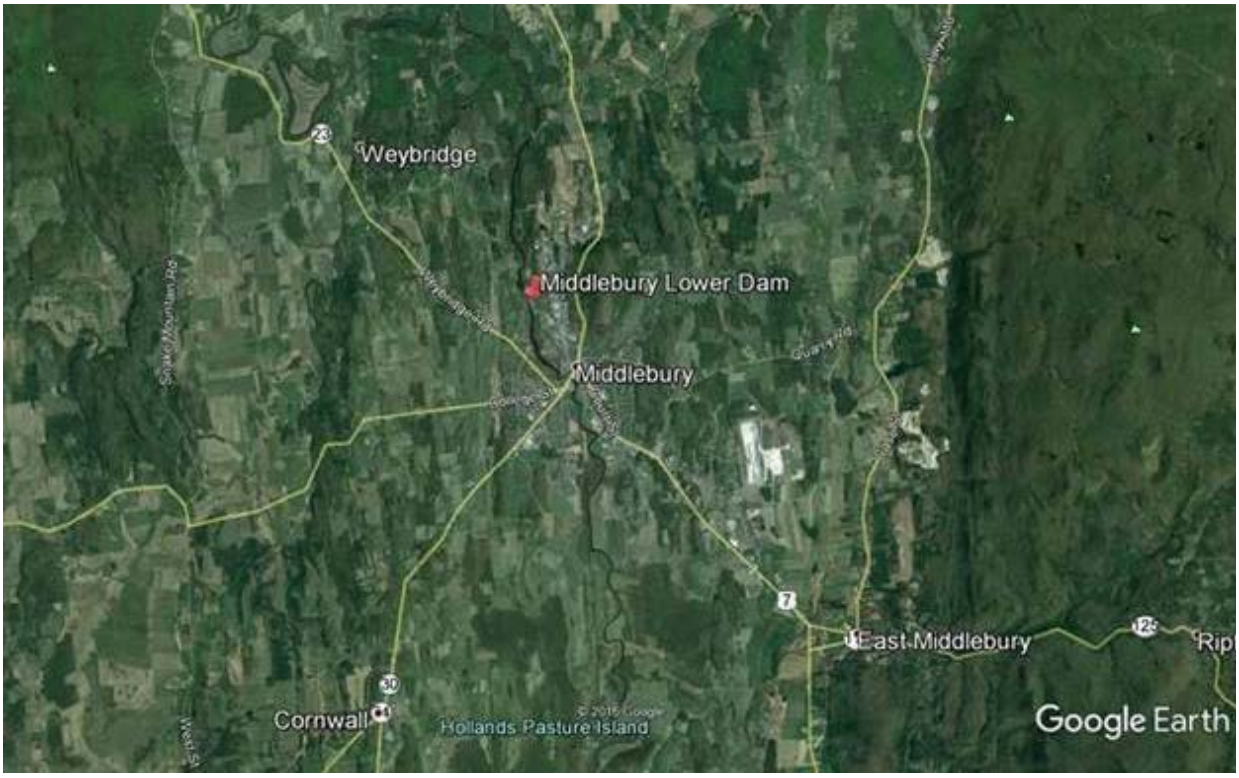
From: Kayla Easler
Sent: Thursday, February 16, 2017 2:01 PM
To: 'Popp, Bob' <Bob.Popp@vermont.gov>
Cc: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Subject: RE: Middlebury LIHI Re-certification

Hi Bob,

Thank you for getting back to me so quickly.

The Middlebury Lower Hydroelectric Project (FERC No. 2737) (Project) is located on the Lower Falls of the Otter Creek at river mile (RM) 24.7 and situated within the towns of Middlebury and Weybridge, Addison County, Vermont (44.0258, -73.1778). The Project operates in a run-of-river mode. Based on requirements of LIHI application, the project boundary includes the impoundment which inundates approximately 16 acres or approximately one mile of Otter Creek upstream of the Middlebury Lower dam; the bypassed reach which is approximately 750-feet from the dam and reconnects to the tail water at the end of powerhouse; and the downstream section which starts at the powerhouse and stretches to the Beldens dam at RM 23 (PDF attached).

At this time no changes are planned for the project.



Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

From: Popp, Bob [mailto:Bob.Popp@vermont.gov]
Sent: Thursday, February 16, 2017 9:14 AM
To: Kayla Easler <Kayla.Easler@KleinschmidtGroup.com>
Subject: RE: Middlebury LIHI Re-certification

Kayla, we would need to know the boundary of the project if we are to provide updated information re. the project. Also if there were to be any change that might create some impact, a rare plant inventory would be warranted since the previous one was done more than 3 yrs. Ago.
Thanks
Bob

Bob Popp
Department Botanist
VT. Dept of Fish & Wildlife
5 Perry St. Suite 40
Barre, VT. 05641

(802) 476-0127
bob.popp@vermont.gov

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Tuesday, February 14, 2017 2:51 PM
To: Ferguson, Mark <Mark.Ferguson@vermont.gov>; Mackenzie, Chet <Chet.Mackenzie@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>
Cc: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Subject: Middlebury LIHI Re-certification

Good afternoon,

Katie and I have another LIHI application in need of threatened and endangered species review. This is for the Middlebury Hydroelectric Project (FERC No. 2737) a run-of-river project located on Otter Creek.

Upon reviewing the USFWS IPAC Report and FERC's 2000 Environmental Assessment for this Project, a list of potential threatened and endangered species that may occur within this project area has been developed. Could you a) review the below species list to make sure it is accurate and/or suggest updates as appropriate; and b) review this list to confirm that the Project continues to not negatively affect any of the currently listed species that may occur within the Project area?

Species List:
Indiana Bat (federally and state threatened)

Northern Long-eared Bat (federally and state endangered)
Bald Eagle (state endangered)
Osprey (“uncommon”/ “species of greatest conservation need”)

In addition, a rare plant survey was completed in 1996, three “uncommon” species listed by the Vermont nongame and Natural Heritage Program were identified within the project area. These include the Frank’s love-grass (S3), cuckoo flower (S2), and Gray’s sedge (S3).

No changes to the project or tree cutting are planned at this time. Do let me know if you have any follow-up questions.

Thank you,

Kayla A. Easler
Regulatory Coordinator
KLEINSCHMIDT
Office: (207) 487-3328
Direct: (207) 416-1271
www.KleinschmidtGroup.com

APPENDIX E

CULTURAL RESOURCES

From:	Katie Sellers
To:	"Dillon, Scott"
Cc:	"Greenan, John"
Subject:	Middlebury Lower Hydroelectric Project - LIHI Application
Date:	Wednesday, August 09, 2017 2:53:00 PM
Attachments:	2016 Middlebury Lower Report.pdf

Hi Scott,

Want to touch base with you in regards to the Annual CRMP Report for the Middlebury Lower Hydroelectric Project (FERC No. 2737).

Green Mountain Power is applying to the Low Impact Hydropower Institute (LIHI) for re-Certification of the Middlebury Lower Project. After reading through the Annual CRMP Reports for this facility, it appears that Charity Baker recommended an altered 3-year CRMP Reporting timeline in the last several years of Annual Reports. Seeing no commentary from the Division on this topic, would you be able to comment as to whether or not this altered reporting timeline would be approved by the Division within the next 5-years (approximate LIHI certification term)? The 2016 CRMP Report is attached for your reference.

Any thoughts you have on this topic would be much appreciated.

Thank you,
Katie

Katie E. Sellers, M.S.
Regulatory Coordinator
Kleinschmidt
Office: 207-416-1218
www.KleinschmidtGroup.com
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*