

Hydropower Project License Summary

OTTER CREEK, VERMONT

OTTER CREEK HYDROELECTRIC PROJECT (P-2558)



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Hydropower Reform Coalition

and

River Management Society

OTTER CREEK, VT

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DESCRIPTION:

Otter Creek is approximately 100 miles long and flows northeasterly from the headwaters of Emerald Lake to its confluence with Lake Champlain. The Otter Creek watershed drains an area of 1,106 square miles and is located in the Champlain Valley, which is a sub-unit of the larger Lake Champlain Basin. The three facilities at the Otter Creek of the Otter Creek hydroelectric project were developed in the early twentieth century to provide power to the marble mills in Proctor, Middlebury, and Weybridge, Vermont. While the previous license was held by Vermont Marble Power, Green Mountain Power acquired the project in September 2012.

A. SUMMARY

1. License application filed: March 31, 2010
2. License Issued: October 23, 2014
3. License expiration: September 30, 2054
4. Capacity: 22.807 MW
5. Waterway: Otter Creek
6. Counties: Addison and Rutland Counties
7. Licensee: Green Mountain Power Corporation
8. Licensee Contact: Michael Scarzello
Green Mountain Power
2152 Post Road, Rutland, VT 05701
Tel: 802.770.0130
Email: Michael.Scarzello@greenmountainpower.com
9. Project Facilities:
The project consists of the following three developments:
 - a) Proctor Development
 - 128-foot-long, 13-foot-high masonry, concrete-capped dam with a 3-foot-high inflatable flashboard system
 - Dam located at river mile 64.2
 - Impoundment with surface area of 95 acres 6,700-foot-long bypassed reach
 - a 100-foot-long by 17 foot-high by 45-foot-wide gated-forebay intake structure
 - a 33-foot by 100-foot concrete and brick masonry powerhouse
 - the powerhouse contains four vertical Francis turbine-generator units rated at 2,245 kW, 1,715 kW, 1,719 kW, and 1,714 kW, respectively, and an attached 28-foot by 48-foot steel structure containing one 2,840-kW vertical Francis turbine-generator unit for a total authorized installed capacity of 10,233 kW
 - a 0.48/46-kV step-up transformer
 - a 265-foot-long, 14 foot wide bridge located 760 feet downstream of the Proctor dam that is used to access the Proctor powerhouse
 - a 1,200 foot long access road;

- a 680-foot-long bypassed reach (i.e., Sutherland Falls), and
 - appurtenant facilities
- b) Beldens Development
- a 15-foot-high, 56-foot-long dam section (Beldens west dam)
 - a 24-foot-high, 57-foot-long dam section (Beldens east dam)
 - a 22 acre reservoir with a usable storage capacity of 253 acre-feet
 - two intakes and two penstocks
 - a 40-foot by 44-foot concrete and masonry powerhouse containing a 800-kW horizontal Francis turbine-generator unit and a 949-kW horizontal Francis turbine-generator unit and a 40 foot by 75-foot concrete powerhouse containing one 4,100-kW horizontal Kaplan turbine-generator unit for a total authorized installed capacity of 5,849 kW;
 - two bypassed reaches- a 150 foot long bypassed reach extending from the base of the Beldens east dam to the tailrace and a 450-foot-long bypassed reach extending from the base of the Beldens west dam to the tailrace; and
 - appurtenant facilities
- c) Huntington Falls Development
- a 31-foot-high, 187 foot long concrete dam with a 2.5-foot-high inflatable flashboard system
 - a 23 acre reservoir with a storage capacity of 234 acre-feet
 - two intakes
 - two, 10-foot-diameter, 30 foot-long steel penstocks leading to a 42-foot by 60-foot concrete and masonry powerhouse containing two horizontal Francis turbine-generator units with a combined installed capacity of 2,625 kW
 - a 12-foot-diameter, 75-foot long concrete penstock leading to a 40 foot by 75-foot concrete powerhouse containing one 4,100-kW horizontal Kaplan turbine-generator unit for a total authorized installed capacity of 6,725 kW
 - a 215-foot-long bypassed reach ; and
 - appurtenant facilities

B. IMPORTANT PROVISIONS AND REQUIREMENTS IN LICENSE

The license includes the following conditions and provisions.

1. Flows [Reference: Water Quality Certification Condition B]

The Water Quality Certification for the project as determined by VT Department of Environmental Conservation (DEC) requires the operation of the three facilities as described below.

Proctor Development

The bypassed reach shall have flow of 60 cfs at all times.

| Timeframe | Description of operations | Release in cfs (cubic feet per second) |
|--------------------------|---|--|
| May 1 through June 30 | Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis. | <400 |
| | Operate in peaking mode with total turbine discharge no more than 1.5 times inflow over 24 hours. | ≥ 400 |
| July 1 through July 15 | Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis. | <200 |
| | Operate in peaking mode with total turbine discharge no more than 1.5 times inflow over 24 hours. | 200-399 |
| | Operate in peaking mode with total turbine discharge no more than 2.0 times inflow over 24 hours. | ≥ 400 |
| July 16 through April 30 | Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis. | <200 |
| | Operate in peaking mode with total turbine discharge no more than 2.5 times inflow over 24 hours. | 200-399 |
| | Operate in peaking mode with total turbine discharge no more than 3.0 times inflow over 24 hours. | ≥ 400 |

Beldens Development

The facility shall be operated in a true run-of-river mode where instantaneous inflows to the impoundment at all times. A bypass conservation flow of 35 cfs, with 10 cfs spilled over the east dam and 25 cfs over the west dam, shall be released at all times. The impoundment target elevation shall be 283.0 feet msl.

Huntington Falls Development

The facility shall be operated in a true run-of-river mode where instantaneous inflows to the impoundment at all times. A bypass conservation flow of 66 cfs shall be released at all times through a gate located at the dam. The impoundment target elevation shall be 217.8 feet msl.

2. Submission of Plans [Reference: License Article 401]

The license requires Green Mountain to submit the following plans

| Plan Name | Required by | Consulting Agencies | Date Due to Commission |
|-------------------------------------|---------------------------------------|-----------------------------------|------------------------|
| Flow Management and Monitoring Plan | Water Quality Certification Condition | Vermont DEC and the U.S. Fish and | By March 2015 |

| | | | |
|----------------------|---|------------------------|--|
| | D | Wildlife Service (FWS) | |
| Recreation Plan | Water Quality Certification Condition H | Vermont DEC | By September 2015 and updated every 10 years thereafter. |
| Debris Disposal Plan | Water Quality Certification Condition I | Vermont DEC | By March 2015 |

3. Spill Prevention Control [Reference: License Article 402]

By March 2015 or at least 90 days before the start of any land-disturbing, land-clearing, or project facility upgrade activities, whichever occurs first, Green Mountain must file with the Commission a spill prevention control and countermeasures plan. The purpose of this plan is to minimize the potential for hazardous material spills and ensure that procedures are in place to minimize the extent and adverse effects of hazardous materials spills that occur during project construction and enhancement of project and recreation facilities.

4. Trashrack Design at Huntington Falls Facility [Reference: License Article 403]

At least 90 days before the start of any project facility upgrades at the Huntington Falls Development, Green Mountain must file with the Commission for approval, detailed design drawings of the licensee’s proposed trashrack to reduce debris loading and ice buildup at the Huntington Falls Development’s turbine-generator unit 3 intake.

5. Terrestrial Monitoring and Management Plan [Reference: License Article 404]

At least 90 days before the start of any land-disturbing, land-clearing, or project facility upgrade activities, Green Mountain must file with the Commission for approval, a terrestrial monitoring and management plan. The purposes of this plan are to re-vegetate areas disturbed by construction activities authorized under this license, prevent the spread of invasive plants, and protect federally-protected wildlife species and their respective habitats within the project area.

6. Recreation [Reference: License Article 405, Water Quality Certification Condition H]

As requires by the Water Quality Certification Condition H, Green Mountain must prepare a recreation plan that must include, among others, the following provisions:

- install a gravel parking area for two to three vehicles at the Proctor Development’s tailwater access site
- final design drawings for the Proctor Development’s tailrace gravel parking lot
- install directional signage at the Proctor and Beldens developments
- install interpretative signage at the Proctor Development’s tailrace access area that provides information about the Otter Creek Project and how it affected the marble industry in the Otter Creek Valley;

C. MAP

There are two convenient ways to become familiar with this project on the Hydropower Reform Coalition website, www.hydroreform.org.

- Go directly to the project <http://www.hydroreform.org/projects/otter-creek-p-2558>
- To understand the geographical context of the project, visit the *On Your River* section of the site. This link (<http://www.hydroreform.org/on-your-river/East>) will take you to the section for rivers in the East. Zoom in toward Burlington, Vermont. Locate the four markers south of Burlington and just east of Lake Champlain. Otter Creek project is the marker third from top and north of the Weybridge Cave Natural Area State Park.