

152 FERC ¶ 62,053
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Blue Heron Hydro, LLC

Project Nos. 13226-009
13368-007

ORDER MODIFYING AND APPROVING DOWNSTREAM FISH PASSAGE
EFFECTIVENESS STUDY PLANS

(Issued July 23, 2015)

1. On May 18, 2015, Blue Heron Hydro, LLC (licensee), filed its Downstream Fish Passage Effectiveness Study Plans pursuant to the license for the Townshend Dam Hydroelectric Project (FERC No. 13368)¹ and the license for the Ball Mountain Hydroelectric Project (FERC No. 13226),² as amended.³ The Ball Mountain Project is located at the U.S. Army Corps of Engineers' (Corps) Ball Mountain Dam and occupies approximately 3.59 acres of federal land under the jurisdiction of the Corps. The Townshend Dam Project is located at the Corps' Townshend Dam and occupies approximately 2.86 acres of federal land under the jurisdiction of the Corps. Both projects are located on the West River in Windham County, Vermont.

BACKGROUND

2. The licensee is required to comply with the conditions of the Vermont Department of Environmental Conservation's (DEC) Water Quality Certificate (WQC) pursuant to Ordering Paragraph (B) and Article 411 of the amended Ball Mountain license⁴ and Ordering Paragraph (E) and Article 401 of the Townshend Dam license.⁵ Specifically,

¹ Order Issuing Original License. 138 FERC ¶ 62,316 (issued March 29, 2012).

² Order Issuing Original License. 139 FERC ¶ 62,038 (issued April 12, 2012).

³ Order Granting Rehearing and Amending License. 140 FERC ¶ 61,049 (issued July 19, 2012).

⁴ The WQC was issued on July 14, 2010, and is attached to the amended license as Appendix A.

⁵ The WQC was issued on July 14, 2010, and is attached to the license as Appendix A.

WQC Condition J for Ball Mountain and Condition I for Townshend require the licensee to develop a plan to study the effectiveness of the downstream fish passage facilities. The plans are to be developed in consultation with DEC, Vermont Department of Fish and Wildlife (DFW), the U.S. Fish and Wildlife Service (FWS), and are subject to approval from the DEC prior to implementation. Based on the outcomes of the studies, the DEC may require modification or replacement of the downstream fish passage facilities in order to assure safe passage.

3. The approved downstream fish passage facilities for the Ball Mountain⁶ and Townshend⁷ projects provide surface bypasses positioned above the turbine arrays at each project and would operate from April 1 to June 15 in the spring, and September 15 through November 15 in the fall.

4. Since issuance of the licenses, the FWS has ceased its involvement in Atlantic salmon restoration programs in the Connecticut River basin. Consequently, the state agencies that had been participating in Atlantic salmon restoration must decide whether or not to proceed with the programs without federal resources, oversight, and support. Although the development of downstream passage facilities is intended to protect all life stages of Atlantic salmon during migration through the project, in years when Atlantic salmon are not present above the dam, the licensee has proposed to keep the fish bypass operational during the spring and fall passage seasons to provide downstream passage for wild brown trout and wild brook trout.

LICENSEE'S PLAN

5. The licensee proposes to conduct an evaluation of fish survival through the bypass in spring of 2016 using marked hatchery brown trout or brook trout. Following this, the licensee would conduct bypass efficiency studies by using passive integrated transponder tags (PIT tags) and wild brown trout and or brook trout captured upstream of the Townshend Project. The licensee proposes to conduct the bypass efficiency evaluation in the fall of 2016 and spring of 2017.

6. Due to the similarities between the design and operation of the bypass systems at the two projects, the licensee proposes to conduct field evaluations at the Ball Mountain Project and use the results of bypass survival and efficiency to extrapolate results for the Townshend Project.

⁶ Order Approving Downstream Fish Passage Plan. 148 FERC ¶ 62,217 (issued September 19, 2014).

⁷ Order Approving Downstream Fish Passage Plan. 148 FERC ¶ 62,218 (issued September 19, 2014).

Bypass Survival

7. The licensee proposes to evaluate bypass survival by releasing marked treatment fish directly into the bypass and releasing marked control fish downstream of the tailwater sluice gates. All fish would be recaptured at a location downstream of the tailwater sluice gate. The licensee would try to release test and control fish at the same time, or within minutes of each other, to ensure that they experience the same conditions from the control release point to the recapture locations and are exposed to these conditions for a similar duration. The licensee would differentiate each test group by applying unique fin clips to the fish to allow for identification of treatment and control fish after recovery; test groups would be fin-clipped the day before testing. For this study, DFW would provide hatchery trout (either catchable sized brown trout or brook trout). The licensee proposes to release a total of 100 treatment and 100 control fish.

8. Fish would be recaptured using a seine-type collection net located in the receiving pool immediately downstream of the dam (the exact position would be determined based on accessibility, hydraulic conditions, and feasibility of maintaining the net in a fishing position). The licensee would account for flows in the area, so that velocities could carry fish to the net and prevent opportunities for fish to hold their positions upstream, but not be so strong that there would be net-related mortality or injury.

9. The licensee would conduct a preliminary trial with 10 treatment fish and 10 control fish to assess the release and recapture procedures, to determine how quickly both test groups enter the net following release, and whether net-related injury and mortality occur. If warranted based on the preliminary trial, the licensee would implement modifications to the test procedures and/or release and recapture systems. Additionally, the licensee proposes to release 10 dead fish into the bypass to determine if collection efficiency is the same for live and dead fish.

10. After recovery, the licensee would measure all of the recaptured fish and examine each for external injuries and scale loss. The licensee would return all recaptured live fish to the holding system for a 48-hour holding period. The licensee would estimate immediate (1 hour) and total (1 hour plus 48 hours) bypass survival rates using the maximum likelihood estimation model developed for paired release-recapture studies with a single recapture event.

11. The licensee proposes to conduct bypass survival testing in spring 2016. In April, the licensee would install a fish holding facility and obtain 200 hatchery trout from DFW. Bypass survival studies would be conducted in late April 2016. The licensee would prepare a draft report to DEC, DFW, Corps, and FWS for review and comment by June 12, 2017, and would provide a final report for the agencies and Commission by August 28, 2017.

Bypass Efficiency

12. The licensee would estimate bypass efficiency by releasing PIT-tagged fish approximately 200 feet upstream of the Ball Mountain turbine intakes and recording the number of fish passing by a location in the bypass pipe and in the project tailwater. Tagged fish that are detected in the tailwater that were not recorded passing through the bypass system would be assumed to have passed through the turbines. Bypass efficiency is calculated as the number of fish detected in the bypass divided by the total number of fish recorded passing through the tailwater. The licensee would position the PIT tag antennas in the bypass and tailwater in a way that maximizes tag detection efficiency. The licensee would test the system after installation by releasing up to five tagged fish directly into the bypass. This detection test would be conducted prior to starting the study in fall 2016, and again when the array is re-installed for the spring of 2017 studies.

13. The licensee's goal is to tag 100 total fish, with a split between the two trout species as close to 50:50 as possible. The test fish would be collected by electrofishing in the West River upstream of the Townshend Project on one or more days during the first two weeks of September 2016 (the licensee stated that DFW staff would provide assistance in obtaining fish). After collection, the licensee would transport study fish to holding tanks installed at the Ball Mountain Project. The licensee would allow fish 24 hours to recover from capture prior to tagging. The licensee would immobilize fish with CO₂ to minimize injury and stress during the tagging process, and would record information about the fish's fork length and general physical condition. Using a hypodermic needle, the licensee would insert PIT tags into the gut cavity of each fish. Fish would have another 24 hours to recover from tagging prior to release. Tagged fish would be released from a boat into the reservoir in line with and approximately 200 feet upstream of the turbine intake. If possible, the licensee would release all the test fish on the same day.

14. The licensee would record information about project operation, including date, time, number of turbines operating, total generation flow, water temperature, and reservoir elevation, for each tag detection in the bypass and in the tailwater. The licensee would download tag detection data on a regular basis (weekly or more frequently with remote access) during both the fall 2016 and spring 2017 studies. Any tagged fish that are not detected during the fall or spring monitoring studies would be assumed to have remained upstream of the Ball Mountain Project. The licensee would report bypass efficiency for each species and for all test fish combined; if possible, the licensee would also evaluate the effect of fish length on bypass efficiency.

15. The licensee's schedule requires that the PIT-tag antennas and data loggers be installed by August 2016, so that a tag detection efficiency test may occur prior to the collection, tagging, and release of test fish in early- to mid-September 2016. The licensee would monitor the bypass and tailwater for PIT-tagged fish until November 15, 2016, then would remove the detection array for the winter. The array would be re-installed in

late March 2017 for spring monitoring from April 1 through June 15, and removed in late June 2017. By August 28, 2017, the licensee would provide a draft report to the DEC, DFW, Corps, and FWS (collectively, the agencies) for review and comment, and would provide a final report to the Commission and agencies by October 30, 2017.

Turbine Passage Survival

16. The licensee states that it would estimate turbine passage survival by using a theoretical model to predict blade strike probability and mortality for fish passing through turbines at the Ball Mountain and Townshend projects. Based on the equations and the particular turbine design and operation at each project, the licensee can estimate turbine passage survival for a range of fish lengths that are likely to be susceptible to entrainment through the turbines at both projects. The licensee proposes to complete estimates of turbine passage survival by December 31, 2015.

AGENCY CONSULTATION

17. The licensee consulted with the DEC, DFW, FWS, and Corps on development of the plan. Prior to development of the plan, the licensee and its consultant discussed the plan objectives, including the proposed methodologies and target species. During a conference call on October 9, 2014, both DEC and DFW stated their preference that bypass survival evaluations be conducted at both projects, and bypass efficiency be conducted at the Ball Mountain Project only (with estimates extrapolated for the Townshend Project). The agencies also made recommendations about the release location for PIT-tagged study fish, and about tagging fish for bypass survival testing. Further, DFW offered to assist the licensee in capturing wild trout upstream of the Townshend Project.

18. The licensee updated the plan based on the agency recommendations, except that the licensee proposed to only conduct the bypass survival studies at the Ball Mountain Project due to the similarity in design and operation to the Townshend Project, and since survival is not expected to vary considerably between the projects. The licensee provided a draft plan to the agencies on February 13, 2015.

19. On May 5, 2015, the licensee held a second conference call with DEC staff to discuss the need for bypass survival studies at both projects, the inclusion of desktop turbine survival estimates, and issues associated with the possibility that only a small number of tagged fish may move downstream past the Ball Mountain Project during the bypass efficiency study.

20. DEC issued a letter on May 15, 2015, stating that it accepted the licensee's proposal to use a theoretical blade strike model to estimate turbine survival of entrained fish, as the turbines installed at the projects have not been used at other locations and a desktop study

related to passage mortality would not be possible. DEC acknowledged that the designs of the passage facilities at both projects are similar and believes that the safe conveyance study plays an important role in demonstrating that the constructed passage facility performs as designed, indicates if any modifications are needed, and verifies that safe passage is provided. Therefore, DEC accepted the proposal to initially conduct a bypass efficiency and survival studies at Ball Mountain only, but reserved its right to require the safe passage study at the Townshend Project, based on the results of the Ball Mountain evaluation and an assessment of the as-built design and operation of the Townshend bypass facilities once operation begins. DEC stated that it would consider other data that the licensee provides to aid in the determination, such as a comparison of fish stress between the passage facilities of each project, and/or data verifying design specifications such as entrance and exit velocities. The DEC stated that the need for more than one year of bypass efficiency testing would be determined based on the study results from the initial study. Because the need to make appropriate modifications may be an iterative process, and the study should not be open-ended, DEC stated that the maximum length of the study would be three years.

21. In an email dated March 9, 2015, FWS stated that it would defer all comments to DFW. DFW did not provide comments beyond what was described in the conference calls. The Corps submitted comments in an email dated February 20, 2015, requesting that the licensee correct the schedule for testing.

DISCUSSION AND CONCLUSION

22. The licensee's Downstream Fish Passage Effectiveness Study Plan describes the studies that will occur at the Ball Mountain Project to evaluate passage efficiency and survival. The objective of the study is to determine if fish moving downstream locate and utilize the fish passage facility, and whether fish are safely conveyed through the facility to the river downstream of the dam. The licensee also proposes to complete a blade strike estimation for the projects in order to better understand the effect of the turbines on the trout species of interest.

23. The licensee's plan would be conducted at the Ball Mountain Project, with the results extrapolated to the Townshend Project. Reports would be provided to the agencies for review and comment prior to filing with the Commission, but the licensee does not specify that the consultation record would be included in the final reports. Therefore, the Commissions should require documentation of consultation and the licensee's response to any recommendations or comments provided by the agencies. The Commission should reserve the right to require additional studies of fish passage efficiency and survival at both projects, based on the results of the Ball Mountain evaluation. With these minor modifications, the licensee's plan should be approved.

The Director orders:

(A) Blue Heron Hydro LLC's (licensee) Downstream Fish Passage Effectiveness Study Plan, filed on May 18, 2015, pursuant to License Article 411 of the Ball Mountain Project, and Article 401 of the Townshend Project, as modified by ordering paragraphs (B) and (C), is approved.

(B) The licensee must file its bypass survival testing report with the Vermont Department of Environmental Conservation, Vermont Department of Fish and Wildlife, the U.S. Fish and Wildlife Service (collectively, the agencies) for a minimum 30 day review and comment period prior to filing the report with the Federal Energy Regulatory Commission (Commission). The monitoring reports must include any agency comments and the licensee's response to the comments or recommendations, and be filed with the Commission by August 28, 2016. The Commission reserves the right to require additional monitoring and/or changes to the plan, facilities, and/or project operation based on the results of the bypass survival testing report.

(C) The licensee must file its bypass efficiency testing report with the Vermont Department of Environmental Conservation, Vermont Department of Fish and Wildlife, the U.S. Fish and Wildlife Service (collectively, the agencies) for a minimum 30 day review and comment period prior to filing the report with the Federal Energy Regulatory Commission (Commission). The monitoring reports must include any agency comments and the licensee's response to the agencies' comments or recommendations, and be filed with the Commission by October 30, 2017. The Commission reserves the right to require additional monitoring and/or changes to the plan, facilities, and/or project operation based on the results of the bypass efficiency testing report.

(D) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8251 (2012), and the Commission's regulations at 18 C.F.R. § 385.713 (2014). The filing of a request for rehearing does not operate as a stay of the effective date of this order, or of any other date specified in this order. The licensee's failure to file a request for rehearing shall constitute acceptance of this order.

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and Compliance