

# Relicensing Study 3.5.1

## **BASELINE INVENTORY OF WETLAND, RIPARIAN AND LITTORAL HABITAT IN THE TURNERS FALLS IMPOUNDMENT, AND ASSESSMENT OF OPERATIONAL IMPACTS ON SPECIAL-STATUS SPECIES**

### **Initial Study Report Summary**

**Northfield Mountain Pumped Storage Project (No. 2485)  
and Turners Falls Hydroelectric Project (No. 1889)**

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## 1.1 Study Summary and Consultation Record to Date

This study contains multiple elements. In addition to conducting an inventory of wetlands, riparian and littoral zone resources in the Turners Falls Impoundment (Impoundment), this study contains provisions for assessing Project impacts on state-listed plant species in the Impoundment, bypass reach and downstream of Cabot Station to the Sunderland Bridge, and assessing Project impacts on state-listed invertebrate species that utilize riparian areas downstream of Cabot Station.

The study goals are to characterize and describe the wildlife and botanical resources within the Project Area and assess the potential impacts of Project-related water level fluctuations on identified resources. 2014 field studies are ongoing and field data collected to date (August 15, 2014) have included:

- Field verification of National Wetland Inventory (NWI) mapped wetland types;
- Field data collection on submerged aquatic vegetation (SAV) and emergent aquatic vegetation (EAV) beds;
- Field data collection on the presences, abundance and extent of invasive species;
- Initial field visits and collection of baseline information on the locations and population parameters of Massachusetts state-listed rare plant species in the Impoundment and the 13+ miles of riverine habitat below Cabot Station to the Route 116 Bridge in Sunderland;
- Initial data collection on suitable habitat locations for state-listed invertebrate species including the cobblestone tiger beetle and the Puritan tiger beetle.

The Study Areas that have been investigated to date include the following:

- Impoundment: survey areas within the river and areas up to 200 feet from shore where the Project boundary is along the shoreline, extending from the base of Vernon Dam to the Turners Falls Dam.
- The approximate 13+ miles of shoreline and riverine habitat below the Turners Falls Dam to the Route 116 Bridge in Sunderland. Riparian areas are being surveyed up to the top of bank in this segment of the study area.
- From the base of the Vernon Dam to the Turners Falls Dam, and from the confluence of the Deerfield River to just downstream of the vicinity of Rainbow Beach is being investigated for potential cobblestone and Puritan tiger beetle habitat.

To the extent possible, field surveys have been conducted under low flow and low water level conditions. Field surveys are scheduled to be completed by mid October, 2014.

Biologists consulted via telephone with Jessie Leddick, Endangered Species Review Biologists with Natural Heritage and Endangered Species Program (NHESP) on sensitive plant survey efforts to date (August 15, 2014) and proposed survey methods and schedule to complete Task 3. NHESP approved and lead RTE project botanists, Steve Johnson PhD, discussed via telephone survey parameters (i.e., survey windows and time per unit area) and methods with NHESP Conservation botanists Karro Frost.

## 1.2 Study Progress Summary

### Task 1: Literature Review

Prior to the field reconnaissance surveys, biologists reviewed existing information to identify areas of representative communities and potentially suitable habitat for protected species of interest. Using GIS

and other available sources of information, preliminary field maps were produced to assist field surveys. Pre-survey, biologists will review life histories of wildlife and phenology of listed plants for known listed species at the Project.

#### Task 2: Riparian and Littoral Zone Botanical Survey

Botanical assessments are being completed to determine the species composition, structure, and distribution of vegetative communities. Botanical field inventories have included timed-meander surveys, which involved walking a meandering path parallel to the shoreline through each representative habitat type and recording species present until a period of time (typically 30 to 60 minutes in non state-listed RTE habitats) passes where no new species were added to the vegetation list. SAV and EAV beds are being surveyed from a boat and kayaks. SAV and EAV bed perimeters are being surveyed or are being located with a center GPS point with a radius that encompasses the entire bed.

Surveyors are compiling a census list of plants found within each habitat and are collecting an overall list of all plant species identified within the Project Area. General health of communities and overall site quality conditions are also being assessed during the meander surveys. Vegetation communities have been classified using NHESP Classification of the Natural Communities of Massachusetts ([Swain & Kersey, 2011](#)). Sample vegetation plots are being established to collect quantitative information at the different habitats and provide species composition of habitat types. A Massachusetts NHESP Quantitative Community Characterization Form (Massachusetts NHESP Form 3) is being completed for each representative habitat, and geo-referenced photographs have been taken to document site conditions at the time of the survey.

#### Task 3: Sensitive Plant Survey

A sensitive-plant survey and biological evaluation of the locations and population parameters of 10 state-listed rare plant species are being completed in the Impoundment and from the Turners Falls Dam downstream to the Route 116 Bridge in Sunderland, MA. NHESP approved botanist Steven Johnson PhD, is assisting with field surveys and providing technical expertise with this task. A data release agreement (DRA) with NHESP was completed in November 2013 to gather initial environmental occurrence (EO) of sensitive plants within the study area.

Initial river reconnaissance to identify potential suitable habitat for state-listed species at both NHESP historic EO's and at new sites that have potential habitat for these 10 targeted state-listed plant species (but were otherwise unoccupied at the time of the survey) was completed in June 2014. An application for a scientific collection permit was submitted to the Massachusetts Wildlife Division of Fisheries and Wildlife (MDFW) on June 30, 2014.

Table 1.2 illustrates identification periods of the NHESP targeted species based on each plants specific phenology.



Task 5: Mapping Wetlands and Waters of the United States

Within the Impoundment and up to 200 feet from the Impoundment shoreline, NWI mapped wetlands are being field verified and described. A team of wetland scientists is completing the field assessments and mapping. Information collected is being transferred to the GIS database to provide the foundation for the development of a map of the location, type, extent and photo of each wetland feature within the study area.

Task 6: Project Water Level Fluctuation Assessment

Data collected during this study, along with the results of hydraulic modeling (Study 3.2.2), will be used to evaluate the effect of Project-related water level fluctuations on known populations of Puritan and cobblestone tiger beetles habitat.

Task 6a: Tiger Beetle Habitat Field Evaluation

High river flows inundated historic tiger beetle habitat for prolonged periods of time during the 2014 survey period. As a result of higher than average flows, Tiger beetle surveys have been delayed from an original projected survey window of early July 2014 to mid -late August 2014. Initial site reconnaissance is scheduled to be completed by August 22, 2014. Once initial tiger beetle habitat reconnaissance is completed FirstLight will consult with Tiger beetle expert, and NHESP approved biologist Chris Davis, as to the number and placement of transects needed to collect fine scale data to analyze Project operations effects on tiger beetle habitat. Following initial surveys, and consultation with Mr. Davis, FirstLight will provide NHESP and the United States Fish and Wildlife Service (USFWS) with a period to comment on transect data locations. It is anticipated that initial habitat reconnaissance and presence/absent surveys will be completed between August 15 and September 5, 2014. Following the initial surveys and consultation with agencies on the placement of transects, biologist will collect fine scale information as outlined in the Modified Revised Study Plan (RSP).

Task 6b: Water Level Fluctuation Evaluation

The fine-scale needed to enable analysis of the localized flow velocity and dynamics within near-bank habitats is being assessed using field data collection and hydraulic modeling to measure water level fluctuations, velocity and other factors across a range of flows. Hydraulic modeling will include a combination of models at key locations including a HEC-RAS model, IFIM-related hydraulic model, and water level loggers. The HEC-RAS modeling is in process.

Task 7: Data Analysis

As field studies will not be completed until mid October, 2014, data analysis is in development.

Task 8: Reporting

A report will be completed in the 2<sup>nd</sup> quarter of 2015.

**1.3 Variances from Study Plan and Schedule**

Higher than normal river flows inundated habitats for prolonged periods of time during the 2014 survey period. Because of the high spring river flow, field studies originally scheduled to begin in early May were delayed until early June when river flows were both safer and low enough to expose habitats. As a result of higher than average flows, Tiger beetle surveys have been delayed from an original projected survey window of early July 2014 to mid -late August 2014.

#### **1.4 Remaining Activities**

Field data collection is scheduled to be completed by mid October 2014. Following the completion of field work a technical report will be completed.