



Reservoir Brook Instream Strategic Wood Addition Project

Meredith, NH

Review Completed by: Gabriel Winant

Major Catchment: Lake Waukewan

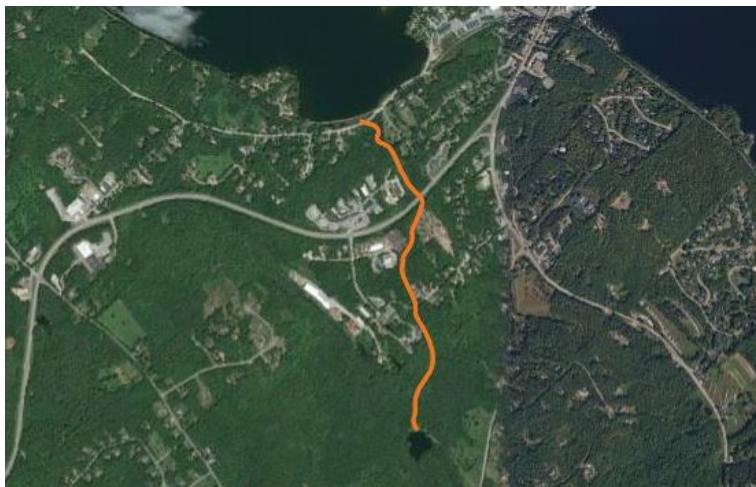
Project Completion Summary:

During the 2022 field season, Trout Unlimited field staff completed construction of strategic wood additions on Reservoir Brook in Meredith, NH. This project was initiated by the Belknap County Conservation District (BCCD) with the assistance of grants provided by The National Fish and Wildlife Foundation and the New Hampshire Conservation & Heritage License Plate Program (Moose Plate). We would like to thank all the landowners who participated in this project and provided access for the field crew. We would also like to thank NH Fish & Game for their support of this project and for their efforts monitoring the fish populations in Reservoir Brook prior to this project.

Approximately 1 mile of Reservoir Brook was included within the project reach, beginning downstream of the outflow of Reservoir Pond (43.632619°N, 71.506203°W), and extending to a point just upstream of the Waukewan Road crossing (43.645881°N, 71.508907°W). A total of 78 strategic wood installations were constructed along the project reach of Reservoir Brook, with the goal of enhancing instream habitat, slowing water velocity, and increasing sediment and nutrient retention.

Included in this report are a description of the methods used for this project, as well as a selection of photographs of instream large-wood structures that were installed along the 1-mile project reach of Reservoir Brook. Maps included in this report indicate the locations where strategic wood addition structures were installed along this reach.

Project Area Map:



Trout Unlimited's mission: To conserve, protect, and restore North America's coldwater fisheries and their watersheds.

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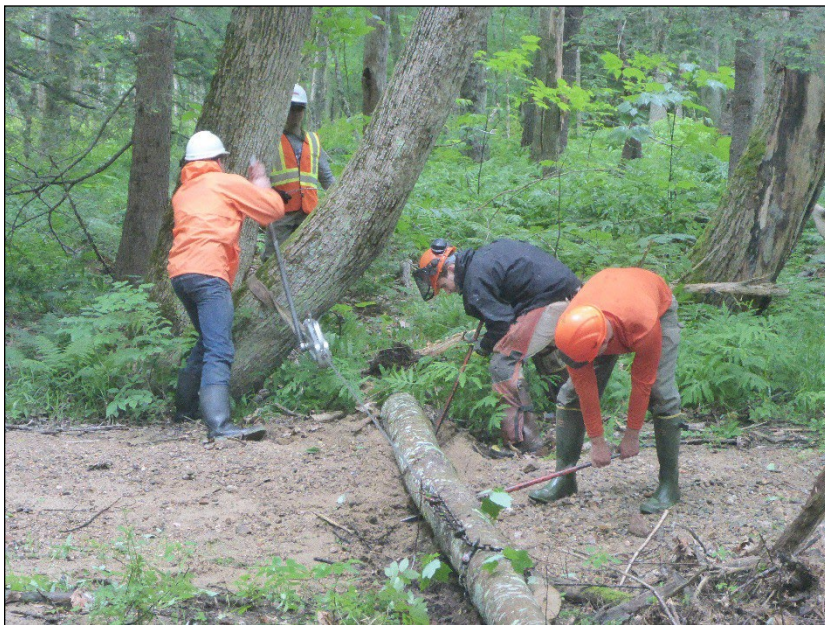
Methods & Strategies

Restoration work began on Reservoir Brook on September 12th, 2022 and was completed on September 22nd, 2022. For this project, Trout Unlimited employed a field team of two (2) crew members, consisting of two (2) sawyers. To construct instream large-wood structures, trees within the riparian area were felled by team sawyers directly into the stream channel using Husqvarna 550xp chainsaws. No trees with rootwads forming/securing the streambanks were felled; the purpose of this was to maintain bank integrity and to prevent bank erosion. After trees were felled, team field technicians used hand hauling to move and maneuver trees into position. This was done to secure added wood into the stream channel and prevent wood mobility during high flow events.



As mentioned earlier, the goal of this project was to enhance aquatic habitat for eastern brook trout and other native fish species by increasing the hydraulic and morphologic complexity of Reservoir Brook. Constructed instream large-wood structures have the ability to control flow energy expenditure, sediment transport, and channel

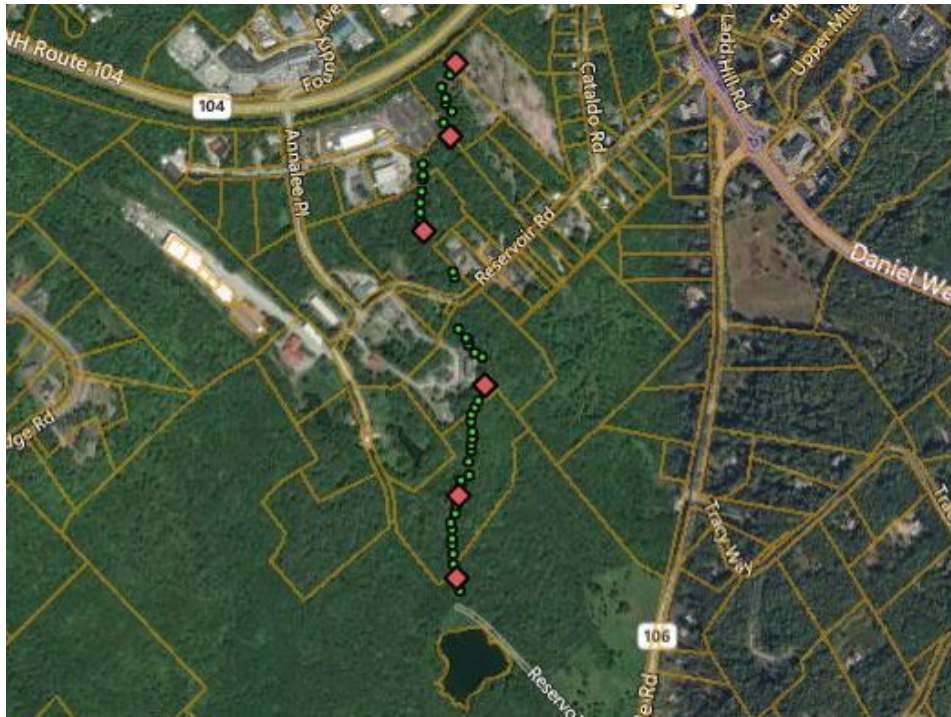
morphology, creating greater habitat diversity. A lack of instream large-wood can result in increased flow energy, which moves sediment out of the system and has the potential to erode the streambed and streambanks. This can lead to channel incision, which interrupts floodplain connectivity, and poor habitat conditions.



Added instream large-wood structures are not intended to act as impervious/non-porous barriers. Wood was added to the stream channel with the intention of allowing for the passage of both water and aquatic organisms. As these structures develop over time, they will sequester sediment and organic matter, which may create a step/pool hydraulic and encourage the formation of downstream riffle reaches but should not prevent aquatic organism passage (AOP).

Field technicians Ivon Clough, Drew Dunlap, Jacob Green, & Sam Burnham using the griphoist to move a felled tree into position.

Upper Reach: Reservoir outlet to Route 104



The above map shows the upper reach of Reservoir Brook extending from the reservoir outlet to the Route 104 crossing. Strategic wood additions 1-54 are represented by the green circles and photo locations represented by the red diamonds.

Photo 1:



Installation site 3: N 43.632901°, W 71.506279°. America elm added to this location.

Photo 2:



Installation site 13: N 43.634310°, W 71.506223°. Sugar maple added to this location.

Photo 3:



Installation site 26: N 43.636152°, W 71.505605°. Sugar maple added to this location.

Photo 4:



Installation site 36: N 43.638813°, W 71.507077°. White ash added to this location.

Photo 5:



Installation site 56: N 43.640430°, W 71.506423°. Sugar maple added to this location.

Photo 6:

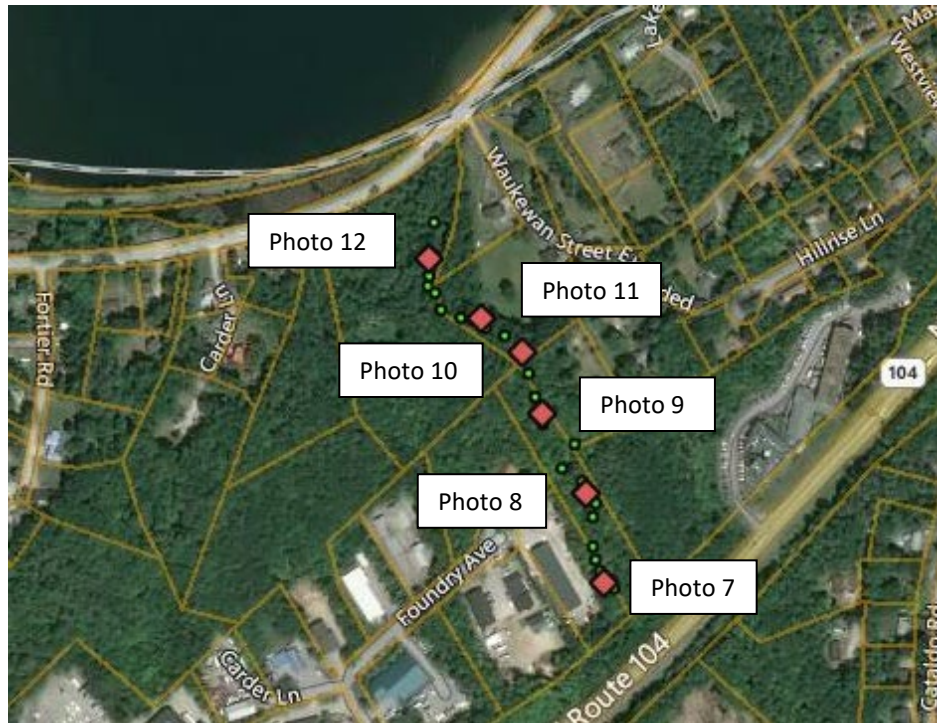


Installation site 54: N 43.641663°, W 71.506299°. Eastern hemlock added to this location.

Upper Reach Summary:

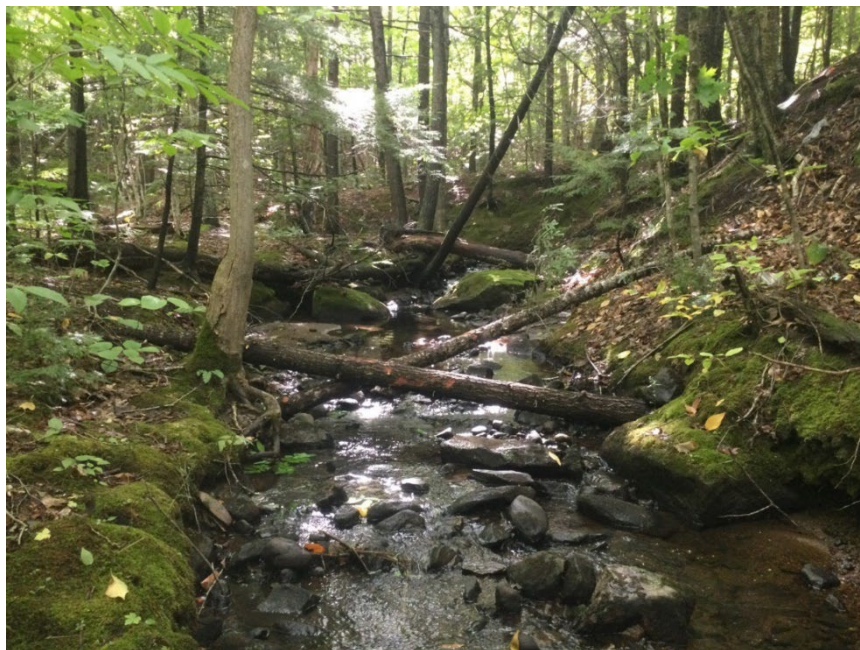
This reach of Reservoir Brook is well forested, relatively flat, and sinuous. The dominant substrate is sand, gravel and cobble. A total of 54 large-wood installations were constructed along the 3500-foot upper reach of Reservoir Brook. Installations were generally constructed 50-70 feet apart, however some larger gaps were left around infrastructure like wooden bridges, culverts, and the sewer line downstream of Reservoir Road. Yellow birch, Sugar maple, and Eastern hemlock were the primary tree species used throughout the upper reach of reservoir brook. The trees used in the installations ranged in diameter (DBH) from 4 to 9 inches. The Strategic Wood Additions constructed within this reach of Reservoir brook are expected to have positive impacts on the instream habitat, slow water velocities, and re-engage the brook with the surrounding flood plain.

Lower Reach: Route 104 to Waukegan Road



The above map shows the lower reach of Reservoir Brook extending from the Route 104 crossing to Waukegan Street. Strategic wood additions 55-77 are represented by the green circles and photo locations represented by the red diamonds.

Photo 7:



Installation site 55: N 43.642958°, W 71.506686°. Eastern Hemlock added to this location.

Photo 8:



Installation site 61: N 43.643622°, W 71.506879°. Yellow birch added to this location

Photo 9:



Installation site 65: N 43.644088°, W 71.507104°. American beech added to this location.

Photo 10:



Installation site 68: N 43.644798 °, W 71.507649°. Eastern hemlock and American beech added to this location.

Photo 11:



Installation site 71: N 43.645512°, W 71.508711°. American elm and White ash added to this location.

Photo 12:



Installation site 77: N 43.645057°, W 71.508116°. American linden added to this location.

Lower Reach Summary:

The Lower reach of Reservoir Brook is also well forested, but less sinuous and has a more pronounced stream channel slope than the upper reach. The substrate is primarily cobble with some boulders, except for the last several hundred yards before Waukegan Street, which is mostly sand and smaller cobble. Many Eastern brook trout and some other fish species were observed throughout this reach during construction. A total of 22 large-wood installations were constructed within this section of Reservoir Brook. Wood was added approximately every 50 feet starting several hundred feet downstream of the Route 104 crossing and several hundred feet upstream of the Waukegan Street crossing. American beech and Eastern Hemlock were the primary species used; however, the surrounding forest did contain a diversity of species including Sugar Maple, American linden, and American elm. The diameter (DBH) of trees used ranged from 4-9 inches. The large wood added to this reach of Reservoir Brook is expected to create and enhance instream habitat for the fish present, while also retaining additional nutrients and sediment upstream of Lake Waukegan.