

# Dam Prioritization Tool for the New York Portion of the Lake Champlain Basin

Lake Champlain Basin Program Project Final Report



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## **Grantee**

Trout Unlimited, Inc.

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## **Project Location:**

The project will encompass the entire portion of the Lake Champlain Basin in New York (Clinton, Franklin, Essex, Warren, and Washington counties).

## **Project Description:**

A collaborative approach was used to identify important infrastructural, social, and ecosystem metrics related to dams in the Lake Champlain Basin of NY. The project team formulated a methodology to prioritize dams for removal based on ecological benefit and expected community acceptance. Metrics and priorities were incorporated into an interactive screening tool, available to all partners and community members, that will facilitate the reconnection of fragmented stream networks in the Lake Champlain Basin.

## **A. Introduction**

Trout Unlimited is a national non-profit organization with a mission to conserve, protect, and restore North America's cold-water fisheries and their watersheds. Our focus and strategy are to protect important habitat, reconnect degraded waterways and restore trout and salmon populations by bringing all parties to the table to find proactive solutions that meet the environmental challenges facing communities and the watersheds where we live. TU has been working with towns in NY and around the country to improve aquatic passage for cold-water fish through the removal of dams and inadequately sized culverts. We believe the best conservation work comes from true partnerships between landowners, agencies, non-profits, municipalities, and other stakeholders. TU will use our collaborative approach to help accelerate the removal of priority barriers in the New York portion of the Lake Champlain basin through the development of a web-based dam prioritization tool. The dam screening web-based tool will help identify and define the ecological benefits of removal, while also highlighting dam safety concerns, historic and

community value and overall feasibility of dam removal. Dam removal projects are challenging. The TU tool will incorporate both ecological and social metrics that will help us highlight and prioritize opportunities for removal projects. Being able to focus on feasible sites that provide the greatest ecological value with the least amount of opposition will help accelerate and highlight dam removal as a viable option for restoration.

Developing a strategy to improve ecosystem health through community supported priority barrier removals is in line with the mission of the Lake Champlain Basin Program (LCBP). The project will address LCBP priorities to conserve and restore native species and their habitat, improve water quality and promote flood resilience. Further, the results of the prioritization effort can leverage state and federal funds for implementation of on-the-ground aquatic restoration and reconnection projects.

Addressing aquatic barriers within the Lake Champlain basin can provide critical improvements to populations of Atlantic salmon, brook trout and many of the other 76 native fish species in the basin. The Nature Conservancy (TNC) has previously completed the Vermont Dam Screening Tool for the Lake Champlain Basin<sup>1</sup>, but the New York side of the watershed, representing approximately 40% of the basin in the U.S., remains un-prioritized. Building upon the methods established by TNC, we will categorize each of the 211 known dams in the study area. The goal of the project is to develop a tool that can be used to help prioritize dam removal projects that have the highest ecological value, improve public safety, and are supported by the local community.

The TU team engaged project partners in a collaborative effort to identify metrics to consider in the development of the prioritization tool. Metrics were designed to consider infrastructure condition and community safety, watershed condition, ecosystem vulnerability and social and historic values. Infrastructure vulnerability metrics consider dam risk classification, land ownership, and potential flood impacts. Social metrics include the dam's historic value, land ownership and the current use of the upstream impoundment (recreation, drinking water, energy, etc.). Social metrics are included to better understand the potential for communities to support dam removal. Ecosystem metrics include land use, habitat condition, value of connectivity for ecosystem health and aquatic species of concern, and invasive species management. In addition, TU's Conservation Portfolio framework<sup>2</sup> was used as a screening tool to understand native brook trout populations in the basin.

The Conservation Portfolio applies the 3-R framework (Resiliency, Redundancy, and Representation) to evaluate each Eastern Brook Trout (EBT) population patch for its resiliency to disturbances, likelihood of demographic persistence, and representation of genetic, life history, and geographic diversity. The approach is grounded in one of the basic tenets of conservation biology: diversity provides stability<sup>3</sup>. Key data sources include the Eastern Brook Trout Joint Venture patch characteristics, stream habitat classification data, and models of stream temperature and brook trout probability of occurrence. The Conservation Portfolio will identify opportunities to reconnect isolated and marginal brook trout populations by increasing the size of habitat patches while also considering the movement potential of invasive species such as lamprey. While TU has already completed a Conservation Portfolio<sup>4</sup> assessment for eastern brook trout using data sources applicable range-wide, a more focused analysis of populations within the Lake Champlain watershed using locally-specific data sources will result in a finer, more precise assessment of brook trout population diversity in the watershed. Atlantic salmon data was also incorporated into the prioritization strategy.

Additional metrics were developed after review of the existing data and meeting with project partners. Results from the prioritization exercise were presented in a web mapping application that stakeholders can use to assess opportunities for dam removal or other habitat reconnection projects.

## B. Project Timeline

Table 1. Project Workplan and Timeline – October 2020-October 2022

Task #	Task Title	Objective	Deliverable or Output	Timeline
1	Establish Screening Tool Goals and Community Outreach	Engage community and partners and the NY-LCB Dam Task Force in the development of the dam screening tool.	3-5 Community meetings to collect and identify existing data, determine metrics and develop project strategy	October-March 2022  <b>COMPLETE</b>
2	Identify Metrics and Prioritization Scheme	Develop a prioritization strategy that will consider both social and ecosystem metrics.	Prioritization metrics identified	October-May 2022  <b>COMPLETE</b>
3	Develop QAPP & Collect Data	QAPP is complete and approved.  Data analyzed according to prioritization strategy.	Approved QAPP	October – October 2021  <b>COMPLETE</b>
4	Draft Screening Tool Development	Community members and partners will be able to query multiple objectives in order to identify priority barrier removal projects that will achieve ecosystem improvements.	Draft dam screening tool and user guide developed	April 2021 - July 2022  <b>COMPLETE</b>
5	Final Screening Tool Development & Dissemination	Final screening tool hosted online	Final dam screening tool and user guide	July 2021- July 2022 <b>COMPLETE</b>

6	Grant Management and reporting	Grant managed according to NEIWPC and TU requirements.	Quarterly reports submitted  Approved final report submitted	Quarterly reports due 10 days following end of each calendar quarter  Draft final report due October 30, 2022 <b>COMPLETE</b>
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### C. Task Descriptions

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The objective of the LC Dam Screening Project is to design a user-friendly tool individuals, groups and organizations can use to identify feasible dam removal projects that meet a variety of objectives.

#### Task 1. Establish Screening Tool Goals and Community Outreach

TU will engage with community members and partners in the development of the dam screening tool. The New York Lake Champlain Basin Dam (NY-LCB) Dam Task Force will be our main partner outreach mechanism and will help guide development of the tool. The TU team will meet with the group three times to discuss the project. The timing of consultation with the group will include an initial meeting to review metric ideas and strategies for the project. The next meeting will take place following the initial data screening and then another consultation with the group prior to finalizing the tool. Other organizations, municipalities and partners that are not represented by the NY-LCB Dam Task Force will also be consulted for input and feedback.

Status: **COMPLETE**

- Initial outreach to the NY-LCB Dam Task Force is complete.
- Initial outreach to the VT-LCB Dam Task Force is complete.
- Feedback from the meeting was disseminated and discussed with the project team.

#### Task 2. Identify Metrics and Prioritization Scheme

Working with our partners, TU will identify ecological and social metrics be used to develop a prioritization process for the dam screening exercise.

Status: **COMPLETE**

- Draft prioritization metrics complete following NY-LCB Dam Task Force meeting.
- Members from VT-LCB Dam Task Force supplied additional feedback to be incorporated into the tool.
- Completed building of habitat patches for base map for the tool development.
- Majority of the tool data sets have been identified and incorporated; we are still waiting on one tool being developed by USGS that will help us define floodplain extent. Once this tool has been released, we will include it in our effort and be ready to provide draft tool.

#### Task 3. Develop QAPP & Collect Data

Describe quality assurance procedures that will maintain project performance. Collect data to support prioritization strategy.

Status: **COMPLETE**

- QAPP draft version 2 complete, signed and distributed
- Datasets have been identified and gathered and additional municipality landowner data acquired through NYS Clearinghouse.

#### **Task 4.** Draft Screening Tool Development

Community members and partners will be able to query multiple objectives to identify priority barrier removal projects that will achieve ecosystem improvements.

Status: **COMPLETE**

- Screening tool functionality developed.

#### **Task 5.** Final Screening Tool Development & Dissemination

TU will develop a tool to screen dam removal projects using a variety of ecosystem and community-based metrics. Present user-friendly online web-based dam screening and visualization tool for stakeholders. The tool will be structured around an interactive map interface and will be hosted on ArcGIS Online, a public-facing ArcGIS cloud server environment, for at least five years following the conclusion of the project. It will be maintained under Trout Unlimited's ArcGIS Enterprise portal and will be accessible online permanently through the tu.org website. Updates to the tool will be completed periodically as needed and recommended by the Lake Champlain Technical Advisory Committee.

Status: **COMPLETE**

- Published DRAFT tool in ArcGIS Enterprise and solicited feedback from partners through an online survey and email communications (Appendix A).
- Published FINAL "[Lake Champlain Basin, New York Barrier Prioritization Tool](#)" and User Guide (Appendix B).
- [Removed/Remediated Barrier Information Survey](#) created to help TU update the map as barriers are removed or remediated throughout the Lake Champlain Basin, NY.

#### **Task 6:** Grant Management and reporting

TU will manage the grant according to defined NEIWPCC requirements which will include quarterly status reports, task-based invoices, and final reporting.

Status: **COMPLETE**

- 1<sup>st</sup> quarterly report submitted. No invoice will be submitted at this time.
- 2<sup>nd</sup> quarterly report submitted. No invoice will be submitted at this time.
- 3<sup>rd</sup> quarterly report submitted. No invoice will be submitted at this time.
- Invoice #1 submitted 12/3/2021.
- 4<sup>th</sup> quarterly report submitted. No invoice will be submitted at this time.
- 1<sup>st</sup> quarterly report submitted. Invoice #2 will be submitted at this time.
- 2<sup>nd</sup> quarterly report submitted.
- Invoice #3 submitted 8/11/2022
- Final Report Submitted 10/10/2022

**Appendix A (attached): Feedback survey results**

**Appendix B (attached): User guide**