

Project Title: Harvey's Lake Dam Removal, South Peacham Brook, Barnet, Vermont

Project Location (State, County, Town): Vermont, Caledonia County, Barnet, Vermont At-Large District.

Congressional District of Project: Vermont At-Large

Congressional District of Applicant: Vermont At-Large

NFHP/EBTJV Funding Request: \$50,000

Total of Other Federal Funding Contributions: \$55,000

Total of Non-Federal Funding Contributions: \$756,750

Total Project Cost: \$861,750

Applicant:

Project Officer: Ron Rhodes, River Steward, South Pomfret, VT
Organization: Connecticut River Conservancy
Street: 15 Bank Row
City, State, Zip: Greenfield, MA 01301
Telephone Number: 802-457-6114
Fax Number: NA
Email Address: rrhodes@ctriver.org

U.S. Fish and Wildlife Service Sponsoring Office:

Project Officer: Julie Butler, Fish Biologist
Fish and Wildlife Service Office: Lake Champlain Fish and Wildlife Conservation Office
Street: 11 Lincoln Street
City, State, Zip: Essex Junction, VT 05452
Telephone Number: 802-662-5308
Fax Number: 802-872-9704
Email Address: julie_butler@fws.gov

USFWS FONS Database Project Number:

**Coordination Completed with Sponsoring U.S. Fish and Wildlife Service Office
(Check One):**

Yes 8/15/2017 Date Coordination Began
 No

I. PROJECT DESCRIPTION, SCOPE OF WORK, AND PARTNER INFORMATION

A. Project Goal: This proposal focuses on creating aquatic organism passage by removing a dam in the Stevens River (a tributary to the upper Connecticut River) watershed in Barnet, VT and improving water quality by addressing nonpoint sources of pollution. This project also will stop or reduce the backflow of sediment from South Peacham Brook above the existing dam into Harvey's Lake. Removal of the dam on South Peacham Brook will open 27 miles total and 5 miles of upstream, cold water habitat to wild brook trout and other aquatic organisms.

B. Project Description: The Town of Barnet owns the dam, which is a 130 feet wide and 9 feet tall reinforced concrete with a vertical upstream face and sloping downstream face that includes a reinforced concrete apron at its base. Water passes over the dam across its entire length and also through a sluice on river left. The dam is located approximately 1/3 mile downstream of the natural lake outlet and 400 feet downstream of the confluence of the outlet channel with South Peacham Brook. The impounded reservoir immediately upstream of the dam extends to the confluence with South Peacham Brook and is over 100 feet across at its widest point.

South Peacham Brook and the Stevens River below Harvey's Lake are listed by the State of Vermont as having "the problem of dam management alters aquatic habitat" and "the pollutant(s) have made it a priority for management where aquatic habitat and/or other designated uses are not supported." The State also lists it on the 2018 List of Priority Surface Waters (altered by flow regulation).

Removing the dam and stabilizing water level fluctuations to a run-of-river flow at the outlet of the lake will improve downstream aquatic habitat and remove these waters from the State's altered waters list. An estimated 4,430 cubic yards of fine sediment is being stored within South Peacham Brook, the outlet channel, and the reservoir immediately upstream of the dam (much of which will be removed as part of this project). A water control structure (rock ramp) will be installed below the lake outlet to mimic a natural stream system and reduce downstream fluctuations. The structure will allow outflow to mimic the hydrology of a natural stream system and provide for the safe, timely and effective passage of fish.

Connecticut River Conservancy (CRC) received state and foundation funding for engineering design and plans that will be completed by the end of 2018. State Historic Preservation Office (SHPO) clearance to proceed has been received, and permits will be submitted to the State of Vermont and U.S. Army Corps of Engineers (USACE) in time to begin removal in the summer of 2019 once funding is secured.

C. Project Methods/Design (Max Characters: 350): The 130' by 9' dam will be removed via standard excavation equipment and practices (hoe ram and excavator) as outlined in the engineering plans and permits. In-stream habitat work, including the addition of root wads in South Peacham Brook, will be completed simultaneously. Restoration plantings will occur fall 2019/spring 2020 to restore the streambanks.

D. Project Timeline:

2018 – Apply for EBTJV funds September 2018. Finalize engineering design plans (Inter-Fluve); complete permit application process with State of VT and USACE (including public meeting). Issue RFP and hire contractor for dam removal.

2019 - Facilitate an on-site pre-removal meeting between contractor, regulatory agencies and project partners, including local stakeholders. Contact Dig Safe and secure clearance to proceed with construction. Complete and issue Work Start notification form as required by USACE. Help ensure compliance with permit requirements for road access, construction, silt fencing, sediment capture and all other aspects of design plans. Facilitate on-site morning meetings with contractor, regulators and partners for daily work plan review. Prepare end of day project updates (videos and emails) for stakeholders and funding partners, including EBTJV. Facilitate VIP site visits and media coverage of removal activities. Ensure successful completion of removal activities as required by design plans and permits, and implement riparian buffer plantings and post removal restoration in the fall.

2020 – CRC and project partners, including U.S. Fish and Wildlife Service (USFWS), will monitor the site on an on-going basis in order to document river conditions, changes and restoration survival rates for plantings. Also, the USFWS and the Vermont Fish & Wildlife Department will collect electroshocking data to monitor brook trout and other fish populations.

E. Describe the Problem and Specific Cause of the Problem (Max Characters: 350):

The dam is causing multiple environmental problems: fish passage, water quality, stream equilibrium, sediment and flow alterations and increased water temperatures. Brook trout populations below the dam are fragmented and unable to access the colder headwaters of South Peacham brook above the dam that are needed for spawning and thermal refuge in the warm summer months as the lower Stevens River warms up.

F. Summarize the Project’s Expected Outcomes (Max Characters: 350):

Removal of the dam will improve natural flow regimes, free-flowing river conditions, water quality and temperature, sediment release and transport, and connectivity. Floodplain restoration and large wood installations will provide additional habitat in South Peacham brook. Aquatic organism passage will be restored to 27 miles on the Stevens River watershed for native brook trout, sculpin and minnows.

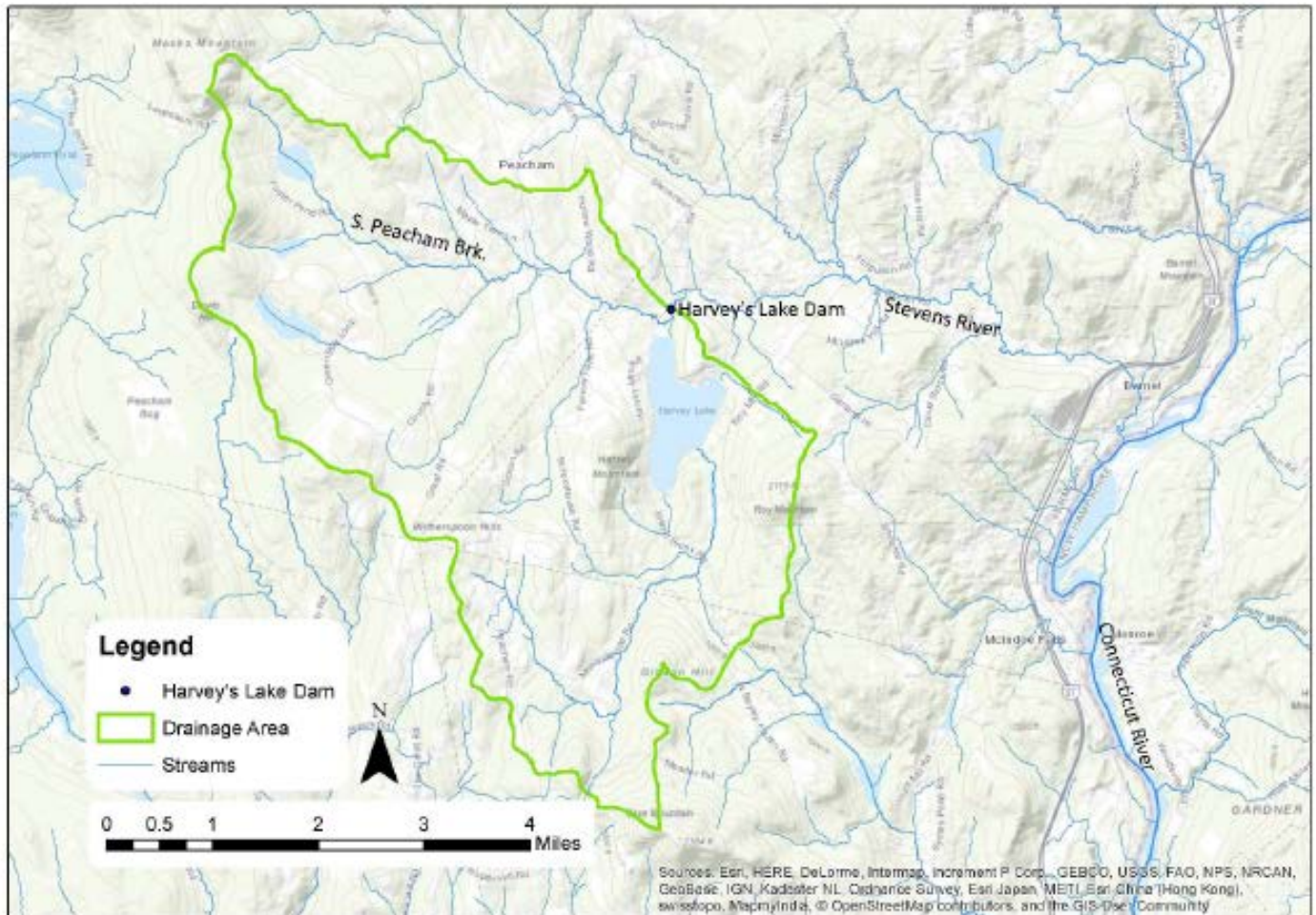
G. Partner Information

Partner Name	In-Kind Contribution (In-hand or Requested)	Cash Contribution (In-hand or Requested)	Federal or Non-Federal Contribution	Partner Category
Town of Barnet	\$5,000 (In-hand)		Non-Federal	Local Government
Vermont Fish & Wildlife	\$2,500 (Request)		Non-Federal	State Agency

USFWS National Fish Passage Program	\$5,000 (Request)	\$50,000 (Request)	Federal	Federal Agency
New Hampshire Charitable Foundation		\$350,750 (Request)	Non-Federal	Local Conservation Foundation
VT Dept. of Environmental Conservation	\$2,500 (In-hand)	\$330,000 (Request)	Non-Federal	State Agency
National Fish & Wildlife Foundation		\$66,000 (Request)	Non-Federal	National Conservation Foundation

NOTE: CRC received grants from the NHCF and VT DEC to fund the 2018/19 Inter-Fluve engineering design contract; we have only listed construction related cost in this document.

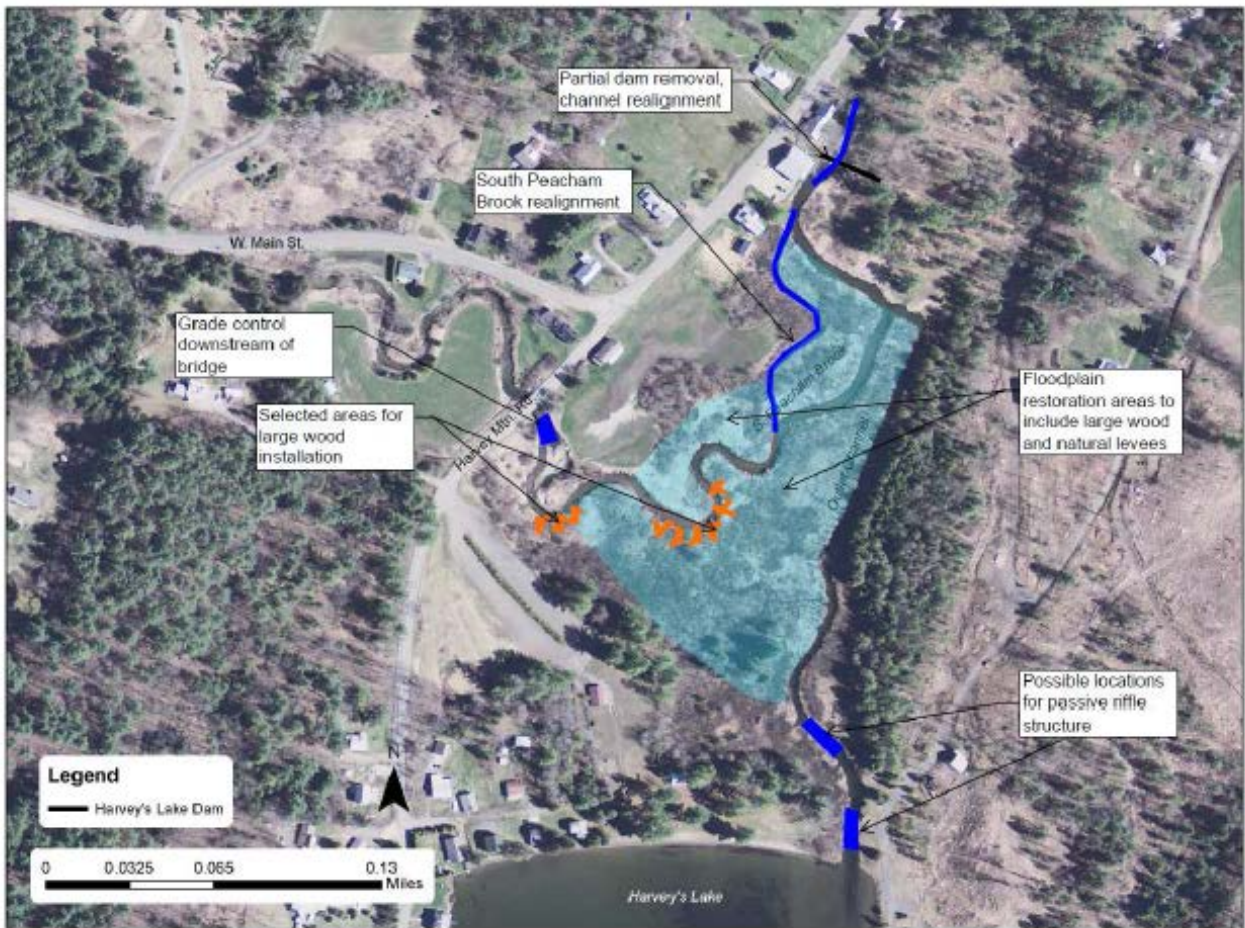
II. PROVIDE A MAP OF THE PROJECT AREA



III. PROVIDE PHOTOGRAPH(S) OF THE PROJECT AREA



Looking upstream at the dam on South Peacham Brook in Barnet, VT.



Design plan; including dam removal, floodplain restoration, large wood habitat and grade control structure.

IV. PROJECT BUDGET

Partner Name	Partner Category *	Activity of Partner **	Budget Category***	EBTJV NFHAP Request	Non-Federal Contribution		Federal Contribution		Total Contribution	Acres/Miles Affected
					In-Kind	Cash	In-Kind	Cash		
NHCF	Conservation Group (Local)	Dam Removal	Contractual			\$300,000			\$300,000	27 miles
		Removal/Restoration/Monitor	Travel			\$5,000			\$5,000	
		Removal/Restoration/Monitor	Admin.			\$45,750			\$45,750	
VT DEC	State Agency	Dam removal	Contractual			\$300,000			\$300,000	27 miles
		Removal/Restoration/Monitor	Admin.			\$30,000			\$30,000	
		Monitoring	Admin/Tech Services		\$2,500				\$2,500	
NFWF	Conservation Group (National)	Dam Removal	Contractual			\$55,000			\$55,000	27 miles
		Removal/Restoration/Monitor	Supplies			\$5,000			\$5,000	
		Removal/Restoration/Monitor	Admin.			\$6,000			\$6,000	
NFHAP & NFPP	Federal Agency	Dam Removal	Contractual	\$50,000				\$50,000	\$100,000	27 miles
USFWS	Federal Agency	Monitoring	Admin/Tech Services				\$5,000		\$5,000	
VT FWD	State Agency	Monitoring	Admin/Tech Services		\$2,500				\$2,500	
Town of Barnet	Local Government	Dam Removal	Other		\$5,000				\$5,000	
Total Contribution				\$50,000	\$10,000	\$746,750	\$5,000	\$50,000	\$861,750	27 miles

*Partner Categories - Federal Agency, State Agency, Local Government, Conservation Group (Local), Conservation Group (National), Native American Tribe, Private Landowners, Corporations/Businesses

**Activity - Acquisition, Fish Ladder, Dam Removal, Culvert Removal, Restoration, Monitoring

***Budget Categories – Administration/Technical Services, Construction Material, Construction Labor, Equipment, Contractual, Travel, Supplies, Other.

NOTE: This is not a Federal Grant program and therefore does not exclude non-federal match used here from being matched to other Federal Grant sources to leverage funds for the project. Indicate if partnering contributions are in-kind or new cash. NFHAP requests should illustrate how the dollars will be spent and by what organization.

Overhead such as utilities, office space, and salary to prepare applications and develop partnerships will not be funded with NFHAP funds and should not be a line item or built into the project. Activities that directly relate to completion of the project such as travel and salary to do design work let and/or monitor contracts are allowable expenses with NFHAP funds but should not constitute more than 10% of the funding request. For more information on the use of NFHAP funds, please see

<http://www.fws.gov/policy/717fw1.html>.

V. PROJECT EVALUATION QUESTIONS

1. **Please provide the GPS Coordinates for the project using UTM NAD 83.**
44.3082850,-72.1393330,LL WGS84(G1150),1206770.46,4944443.10,UTM17N
NAD83(CORS96)
2. **List the type of Project that will be implemented (protection, enhancement, restoration; see definitions in the Appendix A).**
Restoration: Conservation action that returns natural/historic attribute and functions to aquatic habitat.
3. **Are brook trout currently present at the project site or in the project stream? If not, were brook trout historically present?**
Yes, brook trout are present both above and below the project site according to State of Vermont Fish & Wildlife electroshocking data.
4. **Please describe how the Project will conserve Brook Trout and/or its habitat?**
Removal of the dam will reconnect 27 miles of habitat for local brook trout populations; five miles of which is cold, headwater habitat above the dam on South Peacham Brook.
5. **Is the Project site located on/along private or public land? Is the land currently under any form of protection (e.g. conservation easement)?**
The dam is publicly owned by the Town of Barnet, who approached CRC to help them remove the dam. Privately owned land abuts the project area on both sides of the river and brook. These private landowners are part of our official dam removal committee established by the Town, and all have signed landowner agreements with CRC. State owned land surrounds the larger watershed area via the Groton State Forest and Roy Mountain Wildlife Management Area.
6. **What percentage of the watershed above the proposed project is protected in perpetuity?**
According to the State of Vermont: Conserved lands in the Stevens River basin are primarily private farm and forest lands (~2425 acres, ~8% of the land area in the basin), with less than 5% of the basin land area (~1515 ac) located on public conserved lands in the Roy Mountain Wildlife Management Area and portions of Groton State Forest in the southern part of the basin. The public conserved lands protect large portions of the Martins Pond and Harvey's Lake watersheds, and include the shoreline of Mud Pond in Peacham (above the dam removal project area).
7. **List the specific EBTJV range-wide habitat goal(s) and objective(s) addressed by the Project and describe how the Project will contribute towards achieving them (refer to the list of EBTJV range-wide habitat goals and objectives in the Appendix B).**
This dam removal meets the Goal of "Increase connectivity within and among wild Brook Trout catchments" and Objective of "Complete Aquatic Organism Passage projects within 45 wild Brook Trout catchments by 2022".

8. List the EBTJV key conservation action(s) the Project addresses (refer to the list of EBTJV key conservation actions in the Appendix C).

Removing the dam will:

- Increase recreational fishing opportunities for wild Brook Trout;
- Conserve and/or increase habitats that support robust wild Brook Trout populations;
- Conserve genetic diversity of wild Brook Trout populations; and
- Minimize threats to wild Brook Trout populations (e.g. degraded water quality & altered hydrologic regimes).

9. What are the EBTJV Feature ID# and Classification Code for the catchment(s) where the Project work will be implemented (see Appendix D for a description on how to determine both items)?

- **Catchment Feature ID#:** 4573905 and 4573747
- **Catchment Classification Code:** 1.1 and 1.1

10. Will the Project result in re-establishing wild Brook Trout within the catchment?

Not re-establishing since they already exist above and below the dam, but reconnecting the currently separated populations of wild Brook Trout in the Stevens River watershed.

11. Is/are the catchment(s) where the Project work will be implemented located in a Wild Trout Patch; if so what is the Wild Trout Patch Feature ID# and Classification Code (see Appendix E for a description on how to determine both items)?

- a. **Wild Trout Patch Feature ID#:** 4573757 and 4573747
- b. **Wild Trout Patch Classification Code:** 1.1 and 1.1

12. Will the Project benefit any federally listed threatened or endangered species or FWS priority species (refer to the list of FWS priority species for Region 4 and Region 5 in Appendix F)?

Salvelinus fontinalis, Brook Trout – R5 and R4

13. Will the completed project benefit any state listed threatened or endangered species or species of greatest conservation need?

Yes, Brook Trout (naturally reproducing populations).

14. What are the root causes of degradation in the catchment(s) where the Project is located and which of these are addressed by the Project?

Connectivity is impaired due to the existence of the dam. Removal of the dam will solve this degradation, restore the watershed and allow for aquatic organism passage. Water quality impairments also are a result of the dam, and will be improved as a result of the removal, including temperature and dissolved oxygen improvements. South Peacham Brook and the Stevens River below Harvey's Lake are listed by the State of Vermont as having "the problem of dam management alters aquatic habitat" and "the pollutant(s) have made it a priority for management where aquatic habitat and/or other designated uses are not supported." The State also lists it on the 2018 List of Priority Surface Waters (altered by flow regulation).

15. Describe the plans for measuring the Project’s success in meeting its goals and objectives.

Post removal CRC will facilitate technical team monitoring site visits and data collection via electrofishing as required by State of Vermont and USACE permit conditions. Our technical team includes fish biologist from the U.S. Fish & Wildlife Service, and the State of Vermont Fish & Wildlife Department.

16. Does the Project support any goals in existing action plan(s) (e.g. state fish & wildlife, watershed protection, water quality improvement, land or water-use plan(s), or other regional plan(s))?

Yes, the dam removal and related restoration work will support the following:

- VT Dept. of Environmental Conservation Stevens River Basin Plan - the removal of this dam is a high priority project due to the “altered flow and aquatic habitat”;
- Vermont Fish & Wildlife’s Wild Trout Management Plan and the Wildlife Action Plan – both of which make AOP/connectivity issues (including dam removals) a top priority;
- The New Hampshire Charitable Foundation’s Upper Connecticut River report entitled “Priority Connectivity Projects” identifies the dam in Appendix C: Dam and Culvert Projects under Table 1 – Dams that Affect the Passage of Organisms that are not on the Connecticut River.
- According to the North Atlantic Aquatic Connectivity Collaborative this HUC12 (010801030204) ranks as a 3.06 for Brook Trout: EBTJV - Categorical Area Weighted (4 = highest priority, 0 = lowest priority) and as 0.70 for Brook Trout: % DeWeber & Wagner Brook Trout Catchments (1 = highest priority, 0 = lowest priority).

17. Are there invasive fish species within the Project site or have access (no barrier) to it?

Not to our knowledge.

18. Are hatchery-reared salmonids stocked at the Project site or that have access (no barrier) to it?

Not to our knowledge. The State of Vermont does not stock on top of wild Brook trout, and therefore does not stock South Peachem Brook. Hatchery Rainbow trout are stocked in the lower Stevens River, but they do not have access to this upper section due to various barriers (natural and man-made).

19. Please describe the current status of the Project. Is it planned, permitted, and ready to begin?

Engineering design plans are nearly complete and will be “construction ready” by the end of 2018, or early 2019 at the latest. Permit applications will be submitted to both the State of Vermont and the U.S. Army Corps of Engineers; we anticipate receiving all permits by spring 2019. The Vermont State Historic Preservation Office has signed off on this project since the dam is not eligible.

20. Will public access be allowed at the Project site? If so, what kinds of recreational activities are allowed – fishing, hiking, camping, wildlife viewing, etc.?

Yes, public access is currently allowed and will continue to be popular after the dam is removed. Fishing, paddling and bird watching are all popular recreational uses here. Removal of the dam will improve and expand all of these opportunities. The engineering design plans take these activities into account, especially the kayak use below the lake.

21. Will the Project improve recreational fishing opportunities for wild Brook Trout? If so, please describe the improvement and how the improvement will be measured?

Yes, fishing has been popular in this area. Some reaches of the river are attractive for their remoteness and some for their accessibility. Fishing regulations for the river follow the Vermont general rules for trout streams. Many river reaches are especially conducive to fly casting. Measuring the increase in recreational fishing opportunities will be difficult to quantify, but Vermont Fish & Wildlife fishing license sales in the region could be used to compare angler interest in this fishery.

22. Please describe the outreach or educational components associated with the Project.

The Town has discussed the possibility of removing the dam for years. They contacted CRC River Steward Ron Rhodes in 2016 to ask for help in moving removal forward. We created an official “dam committee” made up of local residents who live and own businesses near the dam, as well as members of the Lake Association and a Town Selectboard member. Ron has been meeting with this group ever since, and they have participated in review RFP bids for engineering, alternatives analysis, and final design selection. Several public meetings have been held with the Selectboard and with the Lake Association to review design plans, project timing etc. This type of outreach and public education will continue throughout the project.

23. Please describe how this Project lessens the effects of climate change on Brook Trout.

Dams and the altered flow regimes associated with their presence directly impact aquatic species, ecological processes and water temperature. Climate change, which is expected to increase the quantity and severity of erratic flows as well as increase water temperatures, further threatens high quality cold water streams according to numerous studies by NOAA, US EPA and others. Native aquatic species, such as Brook trout and sculpin, require water temperatures below 20 degrees C in order to thrive. Young fish suffer mortality above 20 degrees C and adults perish at temperatures above 25 degrees. Access to cold headwaters is key for spawning and thermal refuge. Removing this dam will help restore cold water habitats and allow native Brook trout to survive and thrive despite climate change.

24. Please explain how this Project is a good investment of funds, particularly in terms of its recreational and/or economic value.

A \$50,000 investment from EBTJV is less than 6% of the \$861,750 total project cost. According to a 2015 USGS study, "rivers quickly erode sediment accumulated in former reservoirs and redistribute it downstream, commonly returning the river to conditions similar to those prior to impoundment." In addition, "fish and other biological aspects of river ecosystems also respond quickly to dam removal. When given the chance... migratory fish will move upstream and utilize newly opened habitat." This will enhance the recreational fishing and local economic impact of the project.

SUPPORTING DOCUMENTATION: Literature Cited & References to published interagency fishery or aquatic resource management plans.

Vermont Wild Trout Management Plan –

<https://vtfishandwildlife.hosted.civiclive.com/cms/One.aspx?portalId=73163&pageId=5667254>

Vermont Wildlife Action Plan –

<http://vtfishandwildlife.com/node/551>

Vermont Tactical Basin Plan –

http://dec.vermont.gov/sites/dec/files/wsm/mapp/docs/mapp_2015b14tbp.pdf

Upper Connecticut River, Priority Connectivity Projects report –

<https://www.nhcf.org/wp-content/uploads/2015/12/MEF-Priority-Areas-Connectivity-Projects.pdf>

Brook Trout Integrated Spatial Data and Tools -

http://ecosheds.org:8080/geoserver/www/Web_Map_Viewer.html

North Atlantic Landscape Conservation Cooperative -

<http://nalcc.databasin.org/maps/308dd4224496423ab2949db4d26f1b9f/active>

USGS Dam Removal Portal – <https://pubs.er.usgs.gov/publication/ofr20161132>

NOAA - <http://www.noaanews.noaa.gov/stories2015/noaa-analysis-journal-science-no-slowdown-inglobal-warming-in-recent-years.html>

US EPA - <https://www3.epa.gov/climatechange/>

State of Vermont
Fish & Wildlife Department
100 Mineral Street, Suite 302
Springfield, VT 05156-3168
www.vtfishandwildlife.com

[cell] 802-622-4017
[fax] 802-885-8890
[email] lee.simard@vermont.gov

September 21, 2018

Ron Rhodes
North Country River Steward
Connecticut River Watershed Council

Dear Ron,

I am writing to provide support for your effort to obtain EBTJV funding for the removal of the Harvey's Lake dam in Barnet, VT. The current dam is located downstream of where South Peacham Brook confluences with the Harvey's Lake outlet stream and prevents the upstream movement of fish from the Stevens River into Harvey's Lake and South Peacham Brook. Your project will restore aquatic organism passage into South Peacham Brook and Harvey's Lake. Regional Fisheries Biologist, Jud Kratzer has confirmed that the Stevens River and South Peacham Brook support naturally reproducing populations of brook trout.

Sincerely,



Lee Simard
Fisheries Biologist, EBTJV Representative
Vermont Fish and Wildlife Department
lee.simard@state.vt.us





United States Department of the Interior



FISH AND WILDLIFE SERVICE

Lake Champlain Fish and Wildlife Resources Office
11 Lincoln Street
Essex Junction, Vermont 05452

In Reply Refer To:
FWS/Region 5/LCFWCO

September 21, 2018

Ron Rhodes
Connecticut River Conservancy
15 Bank Row
Greenfield, MA 01301

Dear Ron,

The Lake Champlain Fish & Wildlife Conservation Office (LCFWCO) and Connecticut River Conservancy have been working cooperatively on the Harvey's Lake Dam Removal Project since August of 2017. The project supports Service priority species and habitats. The LCFWCO is pleased to sponsor the project for funding consideration through the Eastern Brook Trout Joint Venture in 2019. Please contact me via phone (802.662.5308) or email (julie_butler@fws.gov) with any questions.

Regards,

Julie L. Butler
Fish Passage Biologist
802.662.5308
United States Fish & Wildlife Service

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