St. Croix River Tributary Culvert Replacement, West Musquash Trib., Grand Lake Stream, Maine

-67.754551, 45.27423
HUC 8 St Croix
HUC 10 Big Musquash Stream
HUC 12 West Branch Big Musquash Stream

Project Location (State, County, Town): Maine, Washington, Grand Lake Stream Plt

Congressional District of Project: 2

Congressional District of Applicant: 2

NFHP / EBTJV Funding Requested: $19,500

Total of Other Federal Funding Contributions: $5,000

Total of Non-Federal Funding Contributions: $19,500

Total Project Cost: $44,000

Applicant:
Project Officer: David Montague
Organization: Downeast Lakes Land Trust
Street: 4 Water Street
City, State, Zip: Grand Lake Stream, ME 04668
Telephone Number: 207-796-2100
Fax Number: 207-796-2100
EMail Address: dmontague@downeastlakes.org

U.S. Fish and Wildlife Service Sponsoring Office:
Project Officer: Scott Craig
Fish and Wildlife Service Office: Maine
Street: 403 Hatchery Road
City, State, Zip: East Orland, Maine 04431
Telephone Number: 207 469-6701 ext. 226
Fax Number: 207 469-6725
EMail Address: Scott_Craig@fws.gov

USFWS FONS Database Project Number: 53371-2016-405

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

___X___ Yes ___September 9, 2016__ Date Coordination Began
_____ No

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

A. Project Goal:

B. Project Description:

This project will replace an undersized and failing stream crossing on West Musquash Trib., a wild brook trout water**.** The present crossing consists of a rusted culvert that is washed out and contributing sediment to the stream. The culvert is also undersized and poses a seasonal barrier to fish and other aquatic organisms during high water. In addition the culvert is incorrectly oriented to the natural stream bed, causing a sharp bend in the stream into an artificially-constructed diversionary channel that parallels the road for approximately 100 yards. As a result, a deadwater has been created upstream that is acting as a heat sink in this traditionally cold water fishery. The crossing will be replaced with a >1.2 bankfull-width (USFWS estimated at 10.5 ft), open bottom structure designed to allow passage at all flows. This will result in opening up 1.5 miles of cold water brook trout habitat, removing an artificial heat sink, restoring the stream to its natural bed, removing a public safety hazard, and preventing further sedimentation of the stream.

C. Proposed Methods/Design (Max Characters: 350):

The project will use an open bottom arch culvert to replace the existing, failing 5' round culvert stream crossing. This new design will follow Stream Smart practices by having a natural bottom and exceeding the 1.2 times the bank full width requirements. It will also be designed to handle a 100 year storm event based on Cornell Extreme Weather Data.

D. Project Timeline

January-May 2018 - Engineering design and securing permits
January-April 20, 2018 - Tree cutting (timing follows endangered species act for long-eared bats)
May-June 2018 - Securing contractor and ordering structure
July 15-September 30, 2018 - Construction window
October 2018 – Reporting

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

The existing culvert is deleterious to native brook trout habitat in two ways:
1) The culvert is undersized and causes a velocity barrier under high water conditions; 2) the culvert is rusted and failing, depositing significant amounts of road sediment into the stream; 3) the stream has been re-routed into an artificial channel that creates a dead water heat sink.

The sedimentation severely impacts the quality of habitat for wild brook trout. In addition, the failing culvert has created a hole in the traveled surface of the road roughly 3' x 6' and 3' deep. This hole is a hazard to public safety that would be removed as a result of a successful stream restoration project.

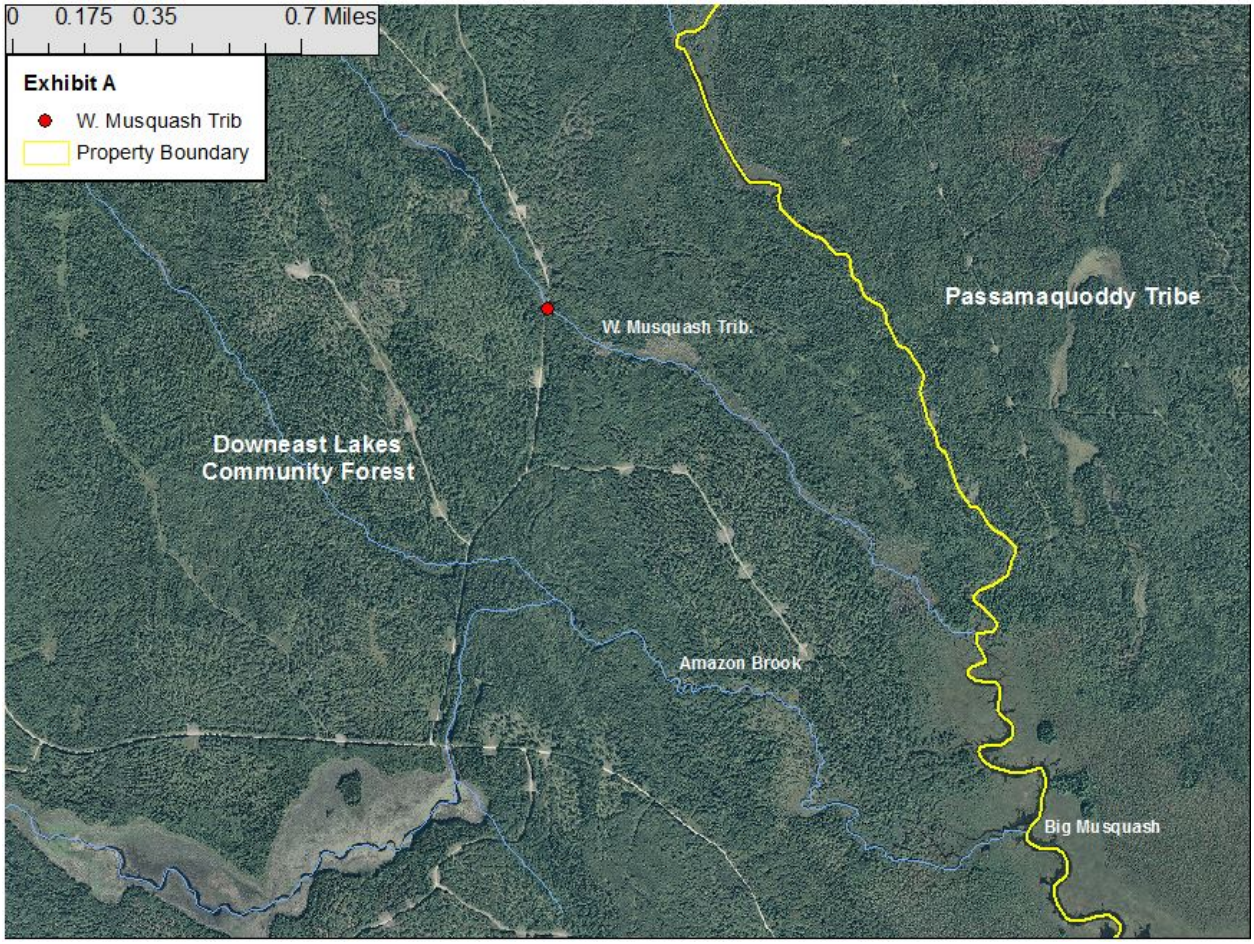
F. Summarize the Project's Expected Outcomes (Max Characters: 350):

This project will improve access to West Musquash Trib. for fish and other aquatic organisms and restore the ecological function of this stream. It will also resolve a public safety concern that is resulting from a deep washout in the middle of the traveled roadway, which leaves the road nearly impassable. In addition, the project will address a chronic sedimentation problem that is detrimental to the health of the stream, the 4,200 acre Big Musquash wetlands complex (rated "exemplary" by the Maine Natural Areas Program), and the West Branch of the St. Croix International Waterway.

G. Partner Information

Partner Name	In-Kind Contribution	Cash Contribution	Federal or Non-Federal Contribution	Partner Category
Downeast Lakes Land Trust	$7,500	$3,000	Non-federal	Local Organization
Grand Lake Stream ATV Club		$1,000	Non-federal	Local Organization
Maine Dept. of Inland Fisheries And Wildlife	$3,000		Non-federal	State Agency
US Fish and Wildlife Service	$5,000		Federal	Federal Agency
Project SHARE	$4,000		Non-federal	Local Organization

II. PROVIDE A MAP OF THE PROJECT AREA



III. PROVIDE PHOTOGRAPH(S) OF THE PROJECT AREA

Road surface at crossing depicting deep washout that contributes sediment to stream and poses a safety hazard (note vehicle deviation around hole) (Photo: David Montague, DLLT).

Outlet of West Branch Trib. Note rusted culvert bottom. Culvert is partially collapsed in center (Photo: David Montague, DLLT).

IV. Project Budget Table

Partner Name	Partner Category *	Activity of Partner **	Budget Category***	EBTJV NFHAP Request	Non-Federal		Federal Contribution		Total Contribution	Acres/Miles Affected
					In-Kind	Cash	In-Kind	Cash		
Downeast Lakes Land Trust	Conservation Group (Local)	Overall Project Management	Administration/ Technical Services		$3,000				$3,000	Restore access to approximately 1.5 miles of upstream habitat
		Permitting	Administration/ Technical Services		$1,000				$1,000	
		Gravel and rip rap	Construction Material		$2,000				$2,000	
		Engineering	Technical Services	$3,500					$3,500	
		Arch culvert and delivery	Construction labor and materials	$16,000					$16,000	
		Arch culvert installation	Construction Labor			$3,000			$3,000	
		Monitoring	Technical Services		$2,500				$2,500	
Grand Lake Stream ATV Club	Local non-profit		Construction Labor			$1,000			$1,000	
Maine Dept. of Inland Fisheries & Wildlife	State Agency	Technical Design Assistance, Monitoring	Technical Services		$3,000				$3,000	
US Fish and Wildlife Service	Federal Agency	Onsite Construction Assistance	Technical Services				$4,000		$4,000	
		Electrofishing and monitoring	Technical Services				$1,000		$1,000	

Project SHARE	Conservation Group (Local)	Technical design and construction assistance	Construction- Labor		$4,000				$4,000	
Total Contribution				$19,500	$15,500	$4,000	$5,000		$44,000	

*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. **What are the GPS Coordinates for the Project site (please use UTM NAD 83):**
   i. 597691E, 5014169N

2. **List the type of Project that will be implemented (protection, enhancement, restoration; see definitions in the Appendix A).**
   Restoration: Conservation actions that return natural/historic attributes or functions to aquatic habitat.

3. **Are Brook Trout currently present at the Project site or have access to the Project site? If not, were brook trout historically present?**
   Brook trout are currently present at the project site and were found during stream surveying by Scott Craig of the US Fish and Wildlife Service. The habitat is suitable for increased populations above and below the project site.

4. **Please describe how the Project will conserve Brook Trout and/or its habitat?**
   The project will remove a passage barrier that currently limits access to West Musquash Trib. and return the stream to its natural streambed. It will also improve habitat by reducing the sedimentation problem in the stream, and improve public safety by removing a hazardous washout in the roadway.

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 project is located within the Downeast Lakes Community Forest, owned and managed by the Downeast Lakes Land Trust. The land is protected by a working forest easement held by the State of Maine on the west side of the road and a forever wild easement held by the Forest Society of Maine on the east side of the road.

6. **What percentage of the watershed above the Project site is protected in perpetuity?**
   The entire watershed above the project site is permanently protected. This site is within a 55,000 acre community forest located in a landscape of more than 1.4 million permanently-protected, contiguous acres.

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).**
   Increasing access to West Musquash Trib. by improving passage and habitat at the proposed crossing replacement site will contribute the following range-wide goals:
   a. Maintain the current number of wild Brook Trout patches (i.e. no net loss)
   b. Increase connectivity within and among wild Brook Trout catchments

8. **List the EBTJV key conservation action(s) the Project addresses (refer to the list of EBTJV key conservation actions in the Appendix C).**
   This project addresses the following EBTJV conservation priorities:
   a. Increase recreational fishing opportunities for wild brook trout
   b. Conserve and/or increase habitats that support robust wild Brook Trout populations

c. Restore and reconnect suitable habitats adjacent to robust wild Brook Trout populations
d. Conserve genetic diversity of wild Brook Trout populations
e. Minimize threats to wild Brook Trout populations (e.g., degraded water quality, invasive species, 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#: 5195840**
- **Catchment Classification Code: 1.1**

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

The project will restore fish passage and year-round wild brook trout access to the upper portions of the catchment.

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#: 5195840.0
b. Wild Trout Patch Classification Code: 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)?

The St. Croix watershed is not within Atlantic Salmon critical habitat; however, it is within the GOM DPS of the federally listed Endangered Atlantic Salmon.

The following Service priority species will benefit from the project:
Salvelinus fontinalis, Brook Trout
Salmo, salar, Atlantic Salmon, GOM DPS

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

Wild Brook Trout are considered a Species of Greatest Conservation Need within Maine's Wildlife Action Plan, and the plan also considers restoring stream connectivity to be a priority conservation action.

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?**
    The primary cause of degradation to the stream and catchment is non point source runoff and the sedimentation it causes.

15. **Describe the plans for measuring the Project's success in meeting its goals and objectives.**
    The undersized and degraded barrier culvert is the primary threat to brook trout in this cold water refugium tributary. USFWS staff will continue to monitor this wild brook trout population after the culvert is replaced with an open bottom structure.

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))?**
    The conservation of the surrounding landscape has been accomplished through the landscape and watershed scale Downeast Lakes Conservation Proposal. To date, 370,000 acres have been permanently conserved through this initiative since 2001, and project lands are within a 1.4 million acre international landscape of conserved lands.

    Wild Brook Trout are considered a Species of Greatest Conservation Need within Maine's Wildlife Action Plan, and the plan also considers restoring stream connectivity to be a priority conservation action.

17. **Are there invasive fish species within the Project site or have access (no barrier) to it?**
    No invasive fish species have been detected at the Project site. Largemouth bass have been detected in Big Lake, approximately 8 miles downstream of the crossing site. There are no barriers to prevent bass from reaching the site, but habitat characteristics make largemouth bass use of the Project site unlikely.

18. **Are hatchery-reared salmonids stocked at the Project site or that have access (no barrier) to it?**
    Hatchery-reared salmonids are not stocked at the site. This tributary contains a resident wild (non-stocked) Brook Trout population that, according to US Fish and Wildlife, is not threatened by bass in the lake. There is also a population of landlocked salmon in Big Lake which is native and periodically augmented with stock bred from the adjacent West Grand Lake fishery.

19. **Please describe the current status of the Project. Is it planned, permitted, and ready to begin?**
    Scott Craig, US Fish and Wildlife Service, worked with David Montague, Downeast Lakes Land Trust, to collect data on September 9, 2016. Using the stream data gathered, Scott put together stream stats, discharge estimates, and a longitudinal profile. This information will be used to create a stamped engineered plan for the new structure. The design follows Stream Smart practices, so we will not require Local or State Permits.

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.?

The project is located within the 55,000 acre Downeast Lakes Community Forest, which is managed for public access for all forms of traditional outdoor recreation. The crossing serves as a route for automobiles and ATVs, and it is a groomed snowmobile trail in winter. All traditional outdoor recreation including hunting, fishing, and wildlife viewing will continue to be allowed from the stream crossing. No fees will be charged.

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?

The wild resident Brook Trout in this cold water tributary are subject to standard Maine Fishing regulations. Opening up this habitat by installing a proper crossing will allow for a stronger and healthier brook trout population, which can lead to an increase in fishing opportunities.

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

We plan to use this site as a demonstration stream crossing to show other landowners and managers the benefits of installing proper stream crossings. During the past 12 months, DLLT has hosted more than 80 landowners and management professionals on tours of the Downeast Lakes Community Forest. In addition, more than 300 local students and community members participated in educational programs on the property.

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

This design addresses climate resiliency by following Stream Smart practices, having a natural bottom, and exceeding the 1.2 times the bank full width requirements. It will also be designed to handle a 100 year storm event based on Cornell Extreme Weather Data.

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

This project carries a greater than 1:1 match and utilizes state agencies and local organizations to reduce the costs. Installing a proper crossing will create safer passage for residents, and will reduce the sedimentation of the stream and the lake. Economic well-being of the region is a key component of the mission of the Downeast Lakes Land Trust, and this project will support that mission by expanding opportunities for recreation that supports a thriving, nationally-recognized guiding and sporting camp industry in the Grand Lake Stream area.

VI. SUPPORTING DOCUMENTATION

United States Department of the Interior

U. S. FISH & WILDLIFE SERVICE

Maine Fish and Wildlife Conservation Office
306 Hatchery Way
East Orland, Maine 04431
(207) 240-3172

September 15, 2017

David Montague
Executive Director
Downeast Lakes Land Trust
4 Water Street
Grand Lake Stream, ME 04668
207-796-2100

Mr. Montague

Thank you for letting me comment on your Eastern Brook Trout Joint Venture proposal entitled: *West Musquash Trib, Grand Lake Stream, ME.* FONs I.D. 53371-2016-405. We began coordination for this project in August 2016, and conducted a site visit on September 8, 2016. Coordinates 45.274062 -67.754526.

The Maine Fish and Wildlife Conservation Office strongly supports your project based on the fact that I observed a very high density of Brook trout during our field visit at this private road crossing, which your organization provides free public access, is failing (unsafe) due to deterioration of a 4^{ft} diameter corrugated metal culvert. The stream is pristine away from the road influence and I surmise that Brook trout abundance is high because of ideal water temperature- on a hot September (8^{th}) afternoon, it was a cool 18.1ºC!

I hope to continue our support by pledging assistance during the construction phase of the project. With our past field work (Stream Simulation data collection and preliminary culvert design and visual fish survey), and 2-3 days of onsite construction assistance, I believe my offices In-Kind contributions are $5,000.

If you have any comments or questions, please contact me at 207-240-3172 or scott_craig@fws.gov.

Sincerely,

Scott D. Craig

Scott D. Craig
Project Leader
Maine Fish and Wildlife Conservation Office

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA, ME 04333-0041
TEL: 207-287-8000

PAUL R. LEPAGE
GOVERNOR

CHANDLER E. WOODCOCK
COMMISSIONER

September 22, 2017

David Montague
Executive Director
Downeast Lakes Land Trust
4 Water Street
Grand Lake Stream, ME 04668

Dear Mr. Montague:

As Maine's primary coordinator for the Eastern Brook Trout Joint Venture (EBTJV), I and the Maine Department of Inland Fisheries and Wildlife (MDIFW) support and encourage the implementation of your ***'St. Croix River Tributary Culvert Replacement, West Musquash Trib., Grand Lake Stream, Maine'*** project for funding under the National Fish Habitat Partnerships. Replacing the currently failing and improperly designed crossing structure on West Musquash Tributary with an open bottomed arch culvert with the standard 1.2 times the bank-full width span will improve the ability of wild Eastern brook trout to access their historic headwater spawning, nursery and cold-water refugia areas of this system. Improving this crossing will strengthen wild brook trout status in West Musquash Tributary especially during periods of high flows when the existing culvert increases velocities making it impossible for trout to pass even at burst speeds. It will also help terrestrial organisms move along the riparian zone under the road, and improve downstream spawning areas by reducing the current problems associated with excessive sedimentation. The goals of this project are consistent with those of Maine's Strategies for the Eastern Brook Trout Joint Venture's Conservation Strategy, MDIFW's Brook Trout Management Plan, Maine's Wildlife Action Plan and the range-wide goals of the EBTJV.

I encourage you to seriously consider this project, and its partners, for your funding program. If you have any further questions regarding this project, please do not hesitate to contact me.

Best Regards,

Merry Gallagher
Research Fishery Biologist

U.S. Fish & Wildlife Service

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A signed release is required from Non-Service photographers, videographers, and artists stipulating conditions for use of each product obtained by the Service. Completed forms are maintained at the originating office and copies are sent to the Regional External Affairs Office prior to use in any Service Product.

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Office and Phone: _____

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Therefore, I agree to indemnify and hold harmless from any claims the following:

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or

Special Agreement Instructions (purchase information, usage restrictions, etc.):

Product Description (image number, subject, horizontal/vertical, location, title, etc.):

West Musquash Trib Outlet

Name: David Montague

Address: 4 Water Street, Grand Lake Stream, ME 04668

Phone: 207-796-2100

Signature: _____ Date: 9/16/16

FWS Form 3-2259 10/03

U.S. Fish & Wildlife Service

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I agree to the above full copyright release: _____ **(Signature)**

Special Agreement Instructions (purchase information, usage restrictions, etc.):

Product Description (image number, subject, horizontal/vertical, location, title, etc.):

West Musquash Trib road surface

Name: David Montague

Address: 4 Water Street, Grand Lake Stream, ME 04668

Phone: 207-796-2100

Signature: _____ Date: 9/16/16

FWS Form 3-2259 10/03


Outlet Otter Brook Tributary
Culvert is damaged under road!