

APPROVED*Scott D. Craig* Dec. 31, 2019

**Eastern Brook Trout Joint Venture
Completed Project Report Form**

Project Title: Culvert Replacement (W. Musquash) and Re-establish Natural Watershed Boundary between St. Croix and Machias Rivers.

- **Location:** Grand Lake Stream, ME
- **Lat / Long Coordinates:**
 W. Musquash Culvert Project -67.7544 45.2740
 St. Croix-Machias Project -67.8784 45.1411
- **Sponsor:** Scott Craig, Project Leader, Maine Fish and Wildlife Conservation Office
- **Completion Date:** 10/25/19
- **Partners involved:** Downeast Lakes Land Trust, Maine Dept. of Inland Fisheries and Wildlife, Maine Department of Marine Resources, US Fish and Wildlife Service (Fisheries, Engineering and Partners Programs), Grand Lake Stream ATV Club, Project SHARE
- **Project costs:**
 1. Total cost: \$119,688
 2. Non federal amount: \$43,500
 3. Federal amount: \$76,188
- **Final Funding:**
 NFHAP Funding Through EBTJV: \$19,500
 Total Federal Contributions: \$76,188
 Total Non-Federal Contributions: \$43,500

Partner	Type of Match (In-Kind or Cash)	Amount
EBTJV	Cash	19,500
NRCS	Cash	56,688
DLLT	Cash	3,000
GLS ATV Club	Cash	1,000
Project SHARE	In-kind	4,000
DLLT	In-kind	19,500
USFWS	In-kind	10,000
MDIFW	In-kind	6,000

- **Action strategy implemented in the project (according to EBTJV range wide, regional, or state level habitat strategies).**
 1. Increase recreational fishing opportunities for wild brook trout
 2. Conserve and/or increase habitats that support robust wild Brook Trout

populations

3. Restore and reconnect suitable habitats adjacent to robust wild Brook Trout populations
4. Conserve genetic diversity of wild Brook Trout populations
5. Minimize threats to wild Brook Trout populations (e.g., degraded water quality, invasive species, altered hydrologic regimes)

- **Priority score of the sub-watershed where the project took place.**

W. Musquash Culvert Project: ID#: 5195840 Score 1.1

- **Describe any additional species of greatest concern or the state wildlife action plan listed habitat conservation goal (s) supported by the project.**

The Machias River is within critical habitat for Endangered Atlantic Salmon.

The following Service priority species will benefit from the project:

Salvelinus fontinalis, Brook Trout

Salmo, salar, Atlantic Salmon, GOM DPS

- **Description: project objective(s):**

1. Restore aquatic organism passage to connect 1.5 miles of upstream habitat.

We received EBTJV approval to add the following objective:

2. Restore a natural barrier between the St. Croix and Machias River watersheds to prevent invasive species passage.

- **Methods used:**

1. An undersized and failing 5' diameter round culvert was replaced with a 16' spanning open-bottomed arch placed diagonally to the road, which restored the stream to its original bed and drained an artificial deadwater.
2. Remnant wood and steel dam abutments were removed and a 15' wide earth berm was installed to separate the two watersheds. The berm was armored with rocks on each side and seeded with a conservation mix to prevent erosion.

- **Project outcomes: Describe outcomes and whether or not the objectives were met.**

If not why? What lessons were learned? All objectives were met. For the first time in more than 150 years, the St. Croix and Machias watersheds are once again separated by a permanent land barrier. This project was very timely, as invasive variable-leaf milfoil has just been detected in Big Lake in the West Branch of the St. Croix (15 miles downstream of site, mostly by interconnected flatwater lakes), and invasive largemouth bass was recently confirmed in Third Machias Lake (1 mile from site). This project was put together rapidly, and would not have been possible without a very productive collaboration among state, federal, and NGO partners.

Fish passage is restored at West Musquash Tributary. The stream has been returned to its natural bed, and a 1-acre artificial deadwater has drained fully. This area is expected to

revegetate naturally and restore a closed canopy over the entire length of the stream. Given the positive outcome of the drained deadwater (and loss of a significant contributor to stream warming and deoxygenation), we feel the decision to incur additional expense and effort by relocating the crossing, skewing the angle to the road, and restoring the stream to its original bed was justified.

- **What is the Brook trout population response to the project outcome?**

Unknown at this time. E-fishing has not occurred post-construction.

- **If applicable, what is the number of stream miles and or acres of brook trout habitat?**

A. Protected: n/a

B. Restored/Enhanced: 1.5 miles

- **If applicable what is the number of stream miles and or lake/pond acres of brook trout habitat gained access to as a result of removing a fish barrier. Include the # of fish barriers removed?** 1 barrier removed providing access to 1.5 stream miles.
- **If applicable, what is the number of stream miles and or lake or pond acres of brook trout habitat with sediment, phosphorous, or nitrogen inputs that were rehabilitated to within 25% of natural or other desired levels such as numeric state water quality criteria?** N/A

******Before and after photos of the projects from Downeast Lakes Land Trust******



W. Musquash Culvert Project - Before



W. Musquash Culvert Project - After



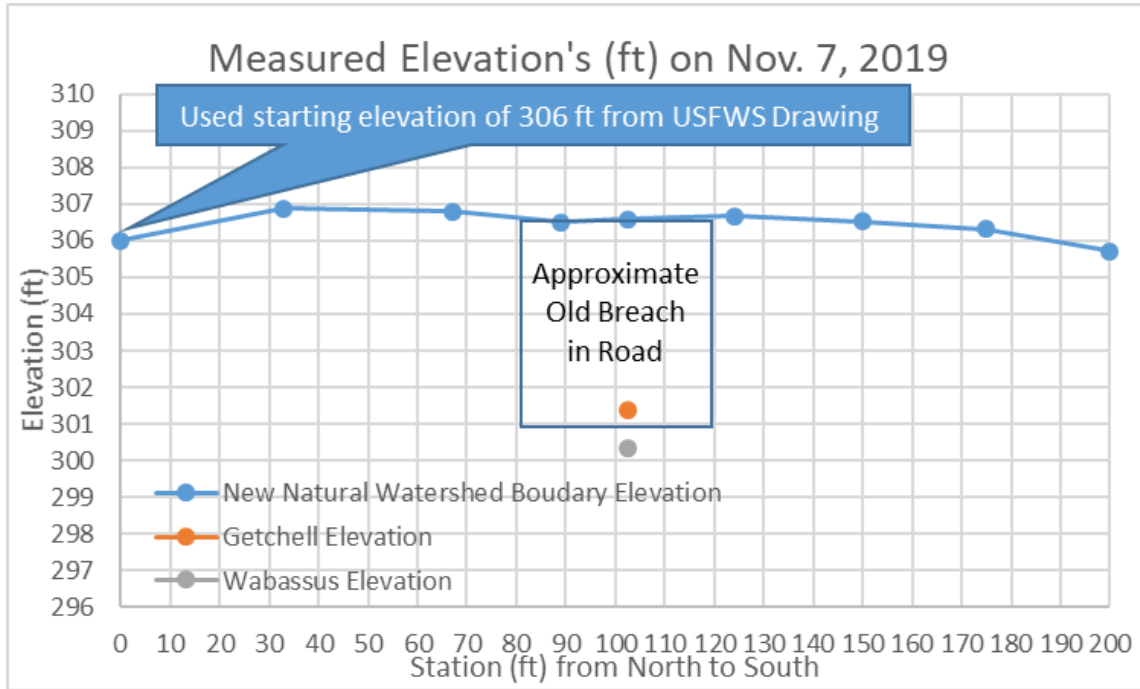
St. Croix-Machias Project Before



St. Croix-Machias Project After.

St. Croix- Machias Project

Post Construction Survey by Scott Craig, MeFWCO on November 7, 2019

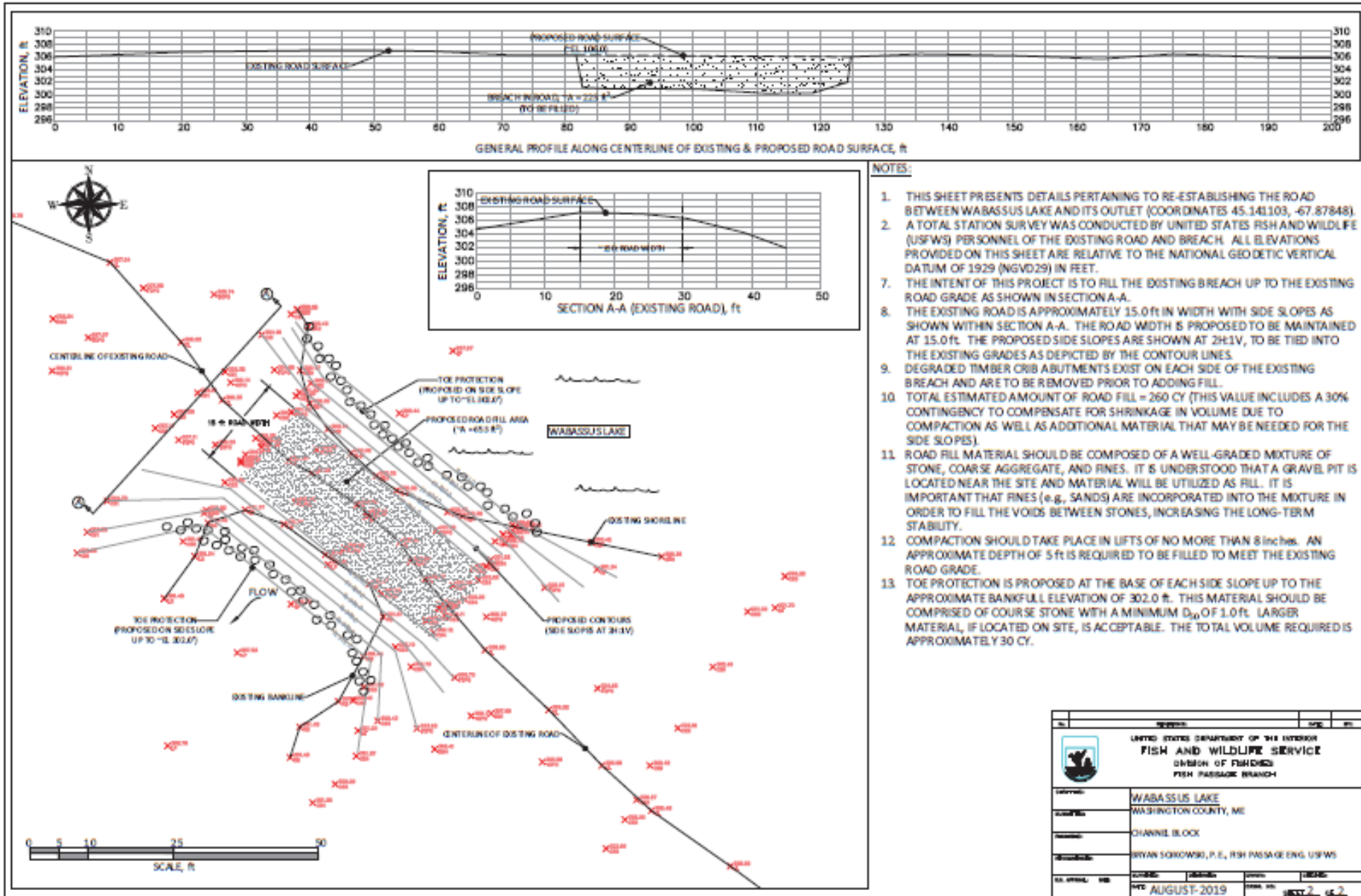


Base Rock Diameter (ft)	
Wabassus	Getchell
1.1	1.1
1.2	1.1
1.3	1.2
1.4	1.5
1.7	1.6
1.7	1.6
1.9	1.7
1.9	1.8
2.0	1.8
2.2	1.8
2.6	1.9
2.6	2.6

1.8	1.6	Mean
1.1	1.1	Min
2.6	2.6	Max
12	12	n=

Note: Data within design specifications.

St. Croix- Machias Project Design Specifications from USFWS





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) 902-1566

April 11, 2019

Stephen G. Perry
Coordinator Eastern Brook Trout Joint Venture
350 Hunkins Pond Road
Sanbornton, NH 03269
603-455-9704

Dear: Mr. Perry,

The purpose of this letter is to seek your approval to modify an existing-approved EBTJV Project that was submitted in 2017 and USFWS completed a Financial Agreement on August 8, 2018 (F18AP00667).

The original project is titled “St. Croix River Tributary Culvert Replacement, West Musquash Trib., Grand Lake Stream, Maine” and the applicant (Downeast Lakes Land Trust) has received some additional funding through the Natural Resources Conservation Service ([Maine RCPP](#)) to help with the culvert replacement. Therefore we have some additional funds to complete another project.

Maine Department of Inland Fisheries and Wildlife (MDIFW) was consulted to find an additional restoration project in the area. Regional Fisheries Biologist Greg Burr determined the highest priority Brook Trout project in the Grand Lake Stream area is to fill in a log drive canal that unnaturally connects the Machias and St. Croix River watersheds.

The primary issue is invasive Largemouth Bass that were recently identified in 3rd Machias Lake. MDIFW therefore requests remaining EBTJV funds be used to protect native Brook Trout and Landlocked Atlantic Salmon in the Upper St. Croix Watershed by restoring a natural drainage divide at this location. See map.

Downeast Lakes Land Trust owns the property between Getchell Lakes (Machias River) and Wabasuss Lake (St. Croix River Watershed) and local residents greatly support this restoration action!

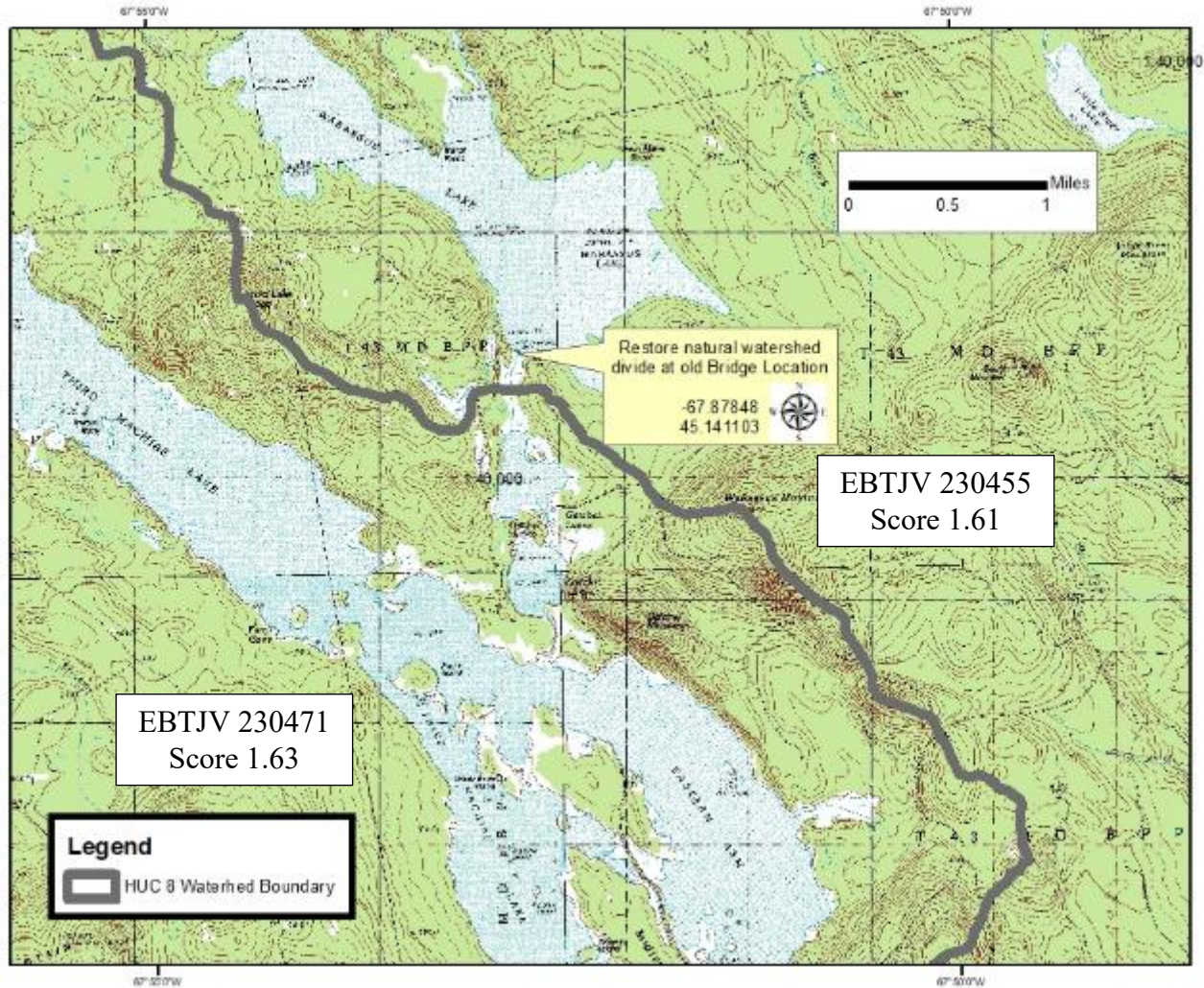
If you have any comments or questions, please contact me at 207-902-1566 scott_craig@fws.gov You can also contact David Montegue of Downeast Lakes Land Trust (207 796-2936) or Greg Burr of MDIFW at 207 434-5925 gregory.burr@maine.gov.

Sincerely,

Scott D. Craig



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



Picture looking south towards Getchell Lake from Wabassus. Natural watershed barrier re-installed here.



Email's

Thu, Apr 11, 8:14
AM

Stephen Perry

to Scott, Callie, Nat

I'm fine with the request to use funds left over from the referenced project to support the new project. I do have a couple of question though; what is the amount of FWS-NFHAP funds being re-directed to the new project, what is the new project's total cost, and who are the project partners?

Thank you,

Steve

Stephen G. Perry, Coordinator
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Craig, Scott <scott_craig@fws.gov>

Apr 15, 2019, 9:14
AM

to Nathaniel, Stephen, Callie, Greg, David

cc: McMunigal, Montague, Burr

Steve and Nate

Sorry for the delay, was out of office both Thursday and Friday.

Cost of the barrier installation is largely unknown at this time, because we can't get to the site for a field survey until after Mud Season and gates open up ~ May 20th?. USFWS, MDIFW and applicant (Downeast Lakes Land Trust- DLLT) are scheduled to do a Total Station Survey on May 29th and USFWS will do the initial engineering design to help keep costs down.

DLLT will be providing all the fill material from a nearby gravel pit that is on their property. I'm guessing the survey, engineering design and fill will provide up to \$10,000 of In-kind funding. Est. Construction will take 2-3 days. with 2 dump trucks, large excavator and a front end loader for the gravel pit= \$10-12k?

If \$5k goes into the original EBTJV project and \$12k goes into Barrier project, there still may be about \$2k left. So another (3rd) project was identified. See attached map.

When I went on a site visit last October, Greg Burr (MDIFW) showed me the improperly sized culvert located between the Getchell lakes (Machias Drainage). Greg said the 4ft diameter culvert is normally blocked each summer-fall with Beaver debris, and this backs water up to Wabassus (St. Croix Drainage). Note: Culvert was completely blocked during our site visit on Oct 30, 2018

DLLT would like to use any remaining funds ~\$2k to help replace this circular pipe with a concrete deck bridge with a 16-20 ft span.

Note: Bankfull width estimated to be ~8 ft. Cost of new bridge structure would be about \$30k and project might qualify for NRCS-RCPP funding in 2020?

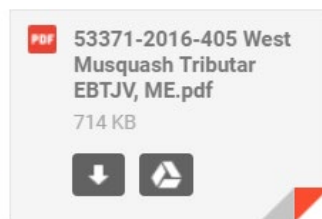
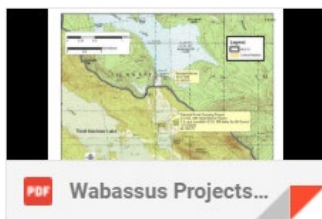
Original Proposal Contributions In-kind \$20.5k+ \$4k Cash.

New estimated contributions In-kind \$10k + \$28k Cash needed for Getchell Lakes culvert to Bridge Project.

Partners. DLLT, MDIFW, Maine DMR, USFWS (Fisheries, Engineering and Partners Programs), Grand Lake ATV Club, Project SHARE.

2 attachments- map-photos from site visit from Oct 2018 and original proposal

2 Attachments



Stephen Perry

Apr 15, 2019, 9:58 AM

to me, Nathaniel, Callie, David, Greg

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Best regards,

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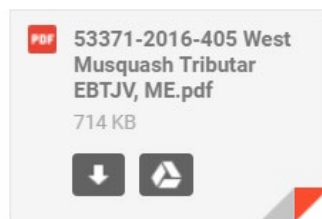
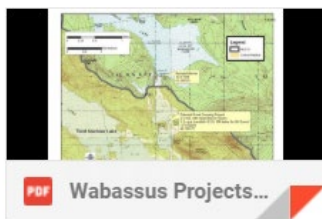
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