

SCOTT POND DAM SALMON JUMP POOL IMPROVEMENT:

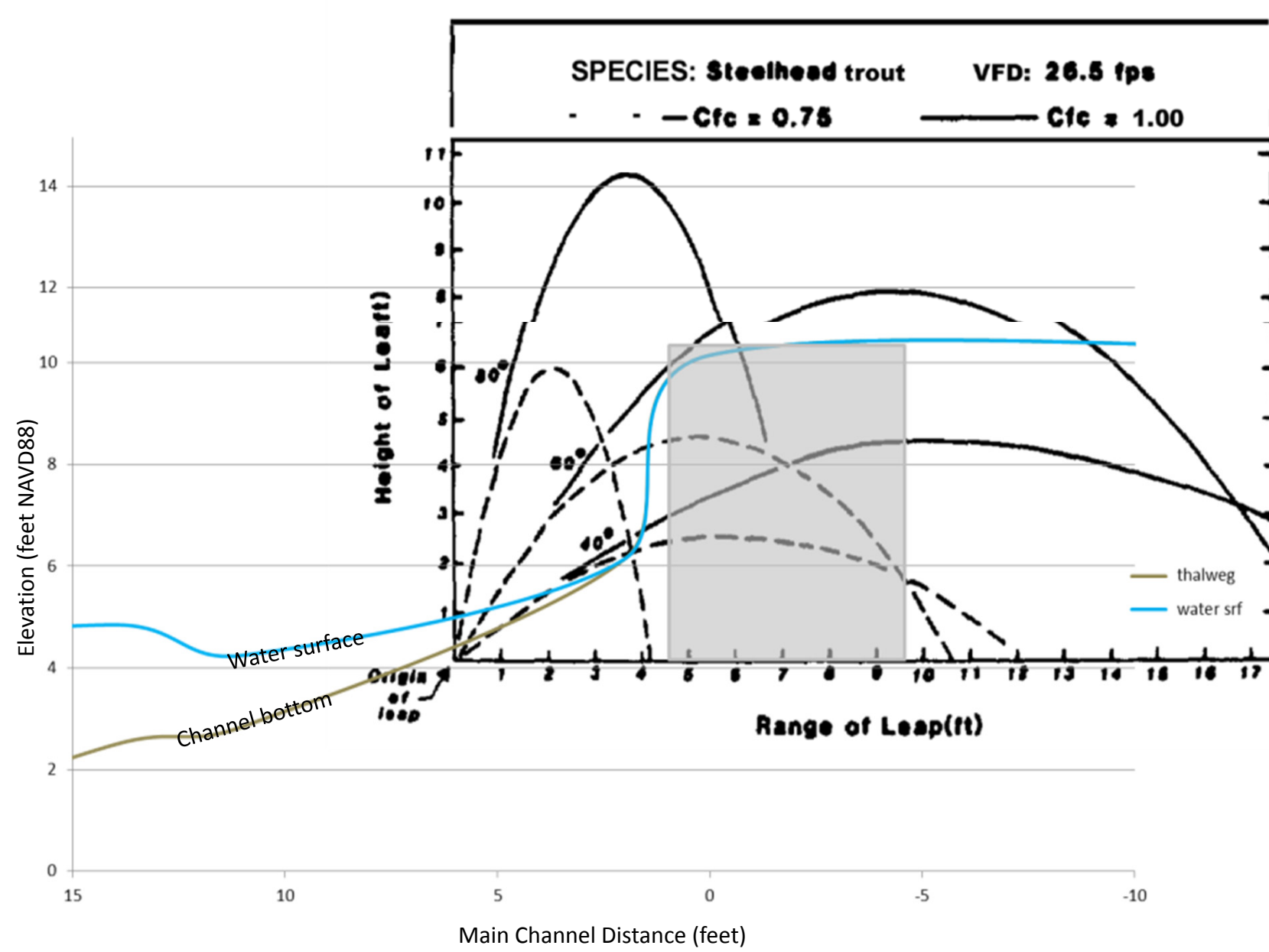
Helping Lake Champlain Steelhead and Atlantic Salmon get to their Native Spawning Grounds on Lewis Creek
CHARLOTTE, VERMONT

This project was funded by a grant from US Fish and Wildlife Service to the Winooski Natural Resources Conservation District. The Conservation District managed the project, US Fish and Wildlife provided technical support, and Milone & MacBroom performed the project design. We would like to thank the landowner for granting access to the project site, the Lewis Creek Association for supporting restoration work in the watershed, and the Vermont Department of Fish & Wildlife for providing technical assistance.

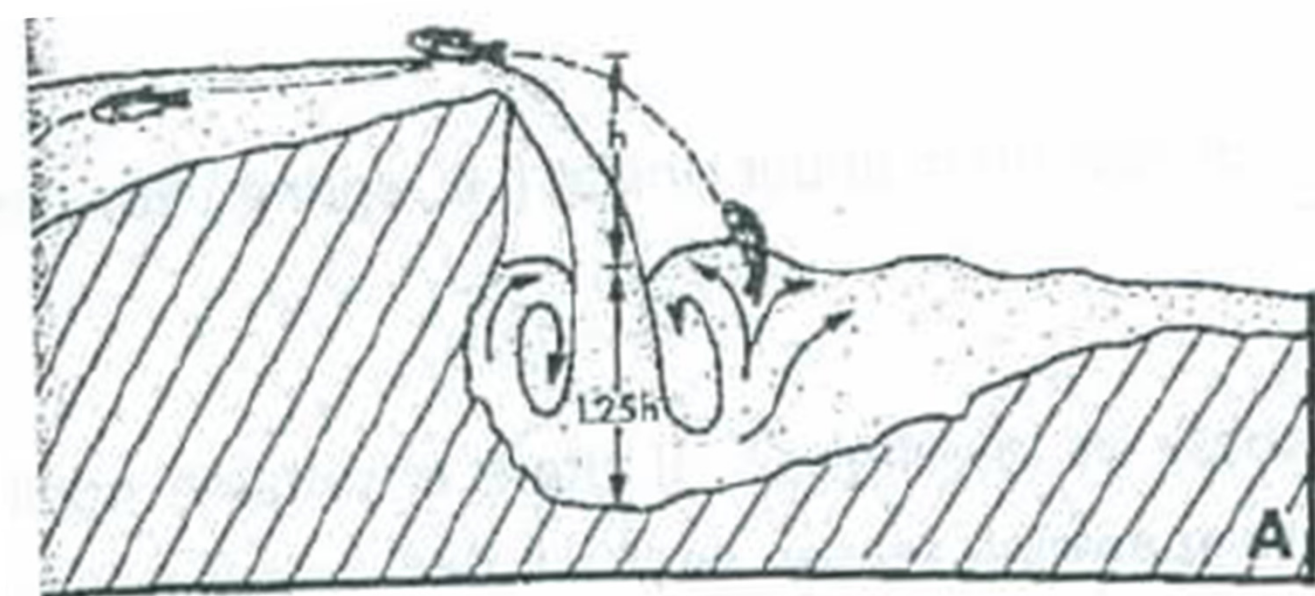


Scott Pond Dam on Lewis Creek
 Charlotte, Vermont
 Low flow (~17 cubic feet per second)
 Source: Terry Dinnan, 8/5/2011

The Scott Pond Dam on Lewis Creek was built in 1980 by the State of Vermont to provide a barrier to sea lamprey. The dam is now privately owned. The goal of this project was to improve the existing jump pool to allow Lake Champlain steelhead and Atlantic salmon to jump over the dam while maintaining the dam's function as a barrier to sea lamprey.



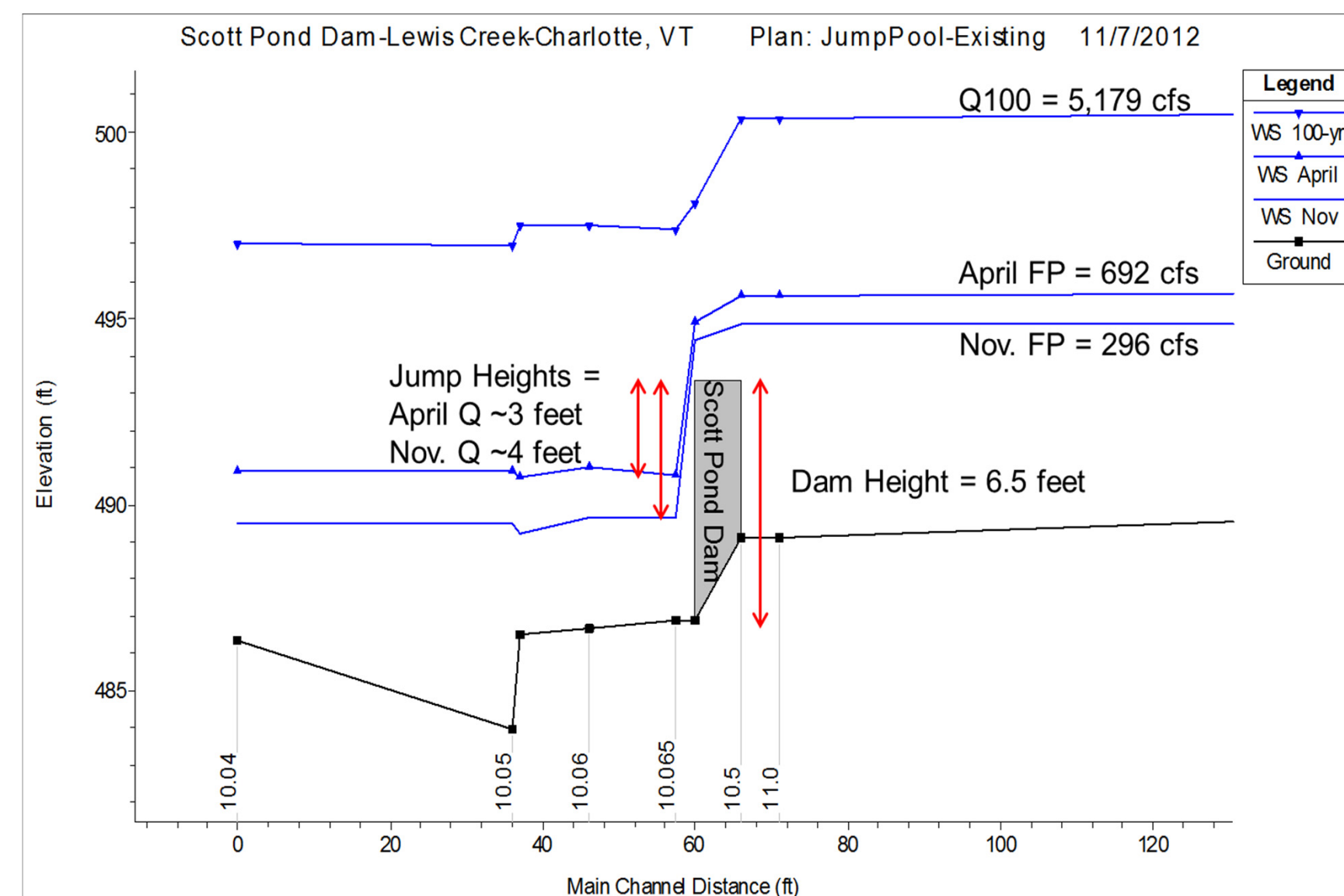
Steelhead jumping characteristics (Bonneville Power Authority, 1985) superimposed on the surveyed channel bottom and the modeled water surface of the fish passage design flow.



Sketch of salmon jump requirements and thrust off of standing wave (Stuart, 1962).

This project included research on fish passage criteria; fish passage, dam safety, and construction design; bid management; and construction oversight. The project objectives included:

- Creating smooth and uniform flow approaching the jump pool that contained a submerged standing wave for lift at the proper leaping location for the fish passage design flow;
- Achieving a jump height of 3 to 4 feet;
- Creating a pool depth of 4 to 5 feet (~ 1.25 x fall height according to Stuart, 1962);
- Achieving the fish passage hydraulic criteria (velocity ~ 6 feet per second, maximum drop ~ 1 foot, and minimum depth ~ 0.7 feet (Bates & Kirn, 2009));
- Maintaining a lamprey barrier; and
- Protecting the dam from damages.



Profile of Lewis Creek from hydraulic model showing jump heights and pool depths for fish passage flows.



Narrow, V-shaped channel in original jump pool during low flows (7/23/2012).



Turbulent flow in former jump pool during fish passage flows (11/1/2012).



Jump pool dewatered immediately prior to construction (8/20/2014).



Rock removal occurring at last corner of jump pool using low-impact techniques to protect the structural integrity of the dam (9/4/2014).



Completed jump pool that is still dewatered (9/5/2014).



Improved jump pool with increased water depth and more uniform flow across the target jump area (9/8/2014).

- Construction Completed September 2014.
- "Scott Pond Dam Project Improves Salmon Passage in Lewis Creek Watershed" -The Charlotte News, September 25, 2014
- Steelhead reported to have jumped over the dam during the 2015 fish migration.

American Council of Engineering Companies
 Vermont Section
 2015 Engineering Excellence Awards
 Entry Category D: Water Resources

