

**APPLICATION REVIEW FOR
LOW IMPACT HYDROPOWER INSTITUTE
CERTIFICATION
of the
ARNOLD FALLS PROJECT NO. 2399**



July 27, 2012

Application Reviewer: Patricia McIlvaine

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**APPLICATION REVIEW FOR LOW IMPACT HYDROPOWER
INSTITUTE CERTIFICATION**

ARNOLD FALLS PROJECT - FERC PROJECT NO. 2399

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REVIEW OF APPLICATION FOR CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE ARNOLD FALLS HYDROELECTRIC PROJECT

Prepared by:
Patricia McIlvaine
July 27, 2012

I. INTRODUCTION AND OVERVIEW

This report reviews the application submitted by Central Vermont Public Service Corporation (Applicant or CVPS) to the Low Impact Hydropower Institute (LIHI) for Certification of the Arnold Falls Hydroelectric Project P-2399 (Arnold Falls Project), located on the Passumpsic River in Vermont.

II. PROJECT'S GEOGRAPHIC LOCATION

The Arnold Falls Project is located in northeastern Vermont near St Johnsbury, at river mile 9.7, on the Passumpsic River. The Passumpsic River is a major tributary to the Connecticut River. The Arnold Falls Project is the fourth most downstream of seven dams located on the river (see Figure 1).

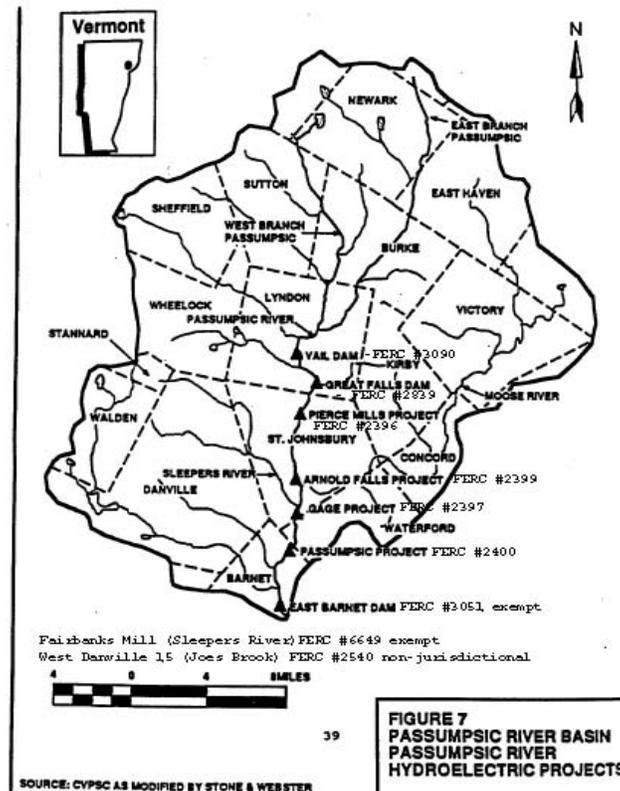


Figure 1 - Passumpsic River Basin

The Passumpsic River joins the Connecticut River just downstream of the East Barnet Dam located in Barnet. The East Barnet Dam is an "exempted" hydropower project which is also operated by CVPS. The drainage area for the Arnolds Falls Project is 235 square miles.

III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The Arnold Falls Project was built in 1928 by the Twin State Gas & Electric Company following the 1927 flood which did extensive damage to a "small and old station" on the north bank of the river. The falls bear the surname of Dr. Jonathan Arnold, an early settler and entrepreneur who constructed the first sawmill there in 1787 and a gristmill the following year. The Project impounds a 7.2-acre reservoir that extends about 2,200 feet upstream with a water surface elevation of 574.7 feet msl and about 10.8 acre-feet of usable storage. In 2009 the existing timber crib dams were abandoned in place and replaced with a reinforced concrete gravity dam immediately downstream of the timber crib dams.

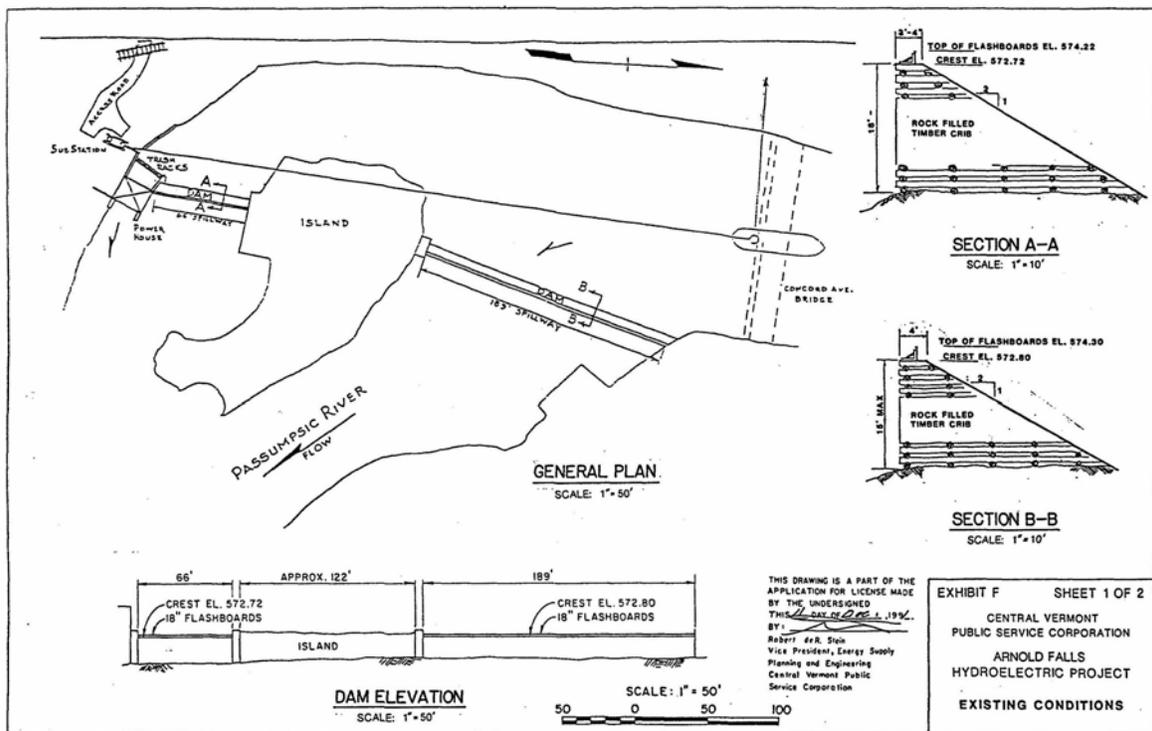


Figure 2 - Diagram of the Arnold Falls Project

The North Dam is 180 feet long by 18 feet high, with a dam crest elevation of 573.00 feet msl. It is topped with 18-inch hinged steel flashboards. The South Dam is 65 feet long by 15 feet high, with a crest elevation of 572.0 feet msl, topped with an inflatable flashboard system. The intake is 20 feet wide with trashracks and a manually operated bulkhead gate. See Figure 3 below.

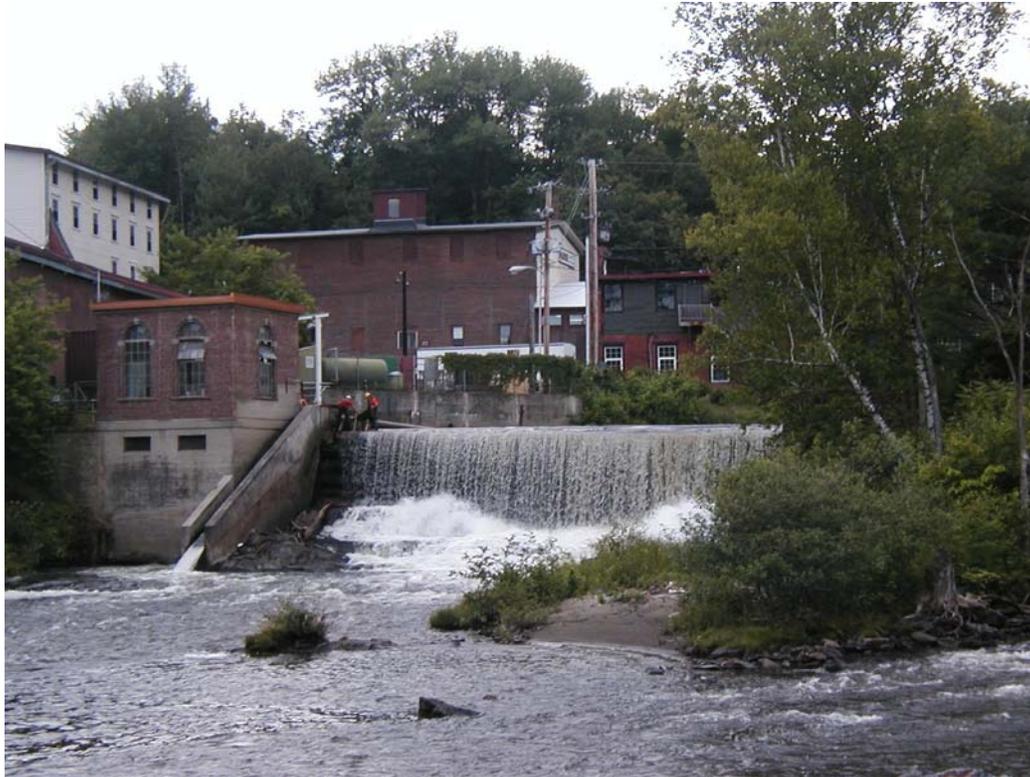


Figure 3 - Arnold Falls Dam and Powerhouse

The powerhouse contains one vertical shaft turbine rated at 335 kW and a generator rated at 350 kW. A substation is located adjacent to the intake. The downstream fish passage facility is located in the sluiceway of the spillway adjacent to the intake. The bypassed reach is about 300 feet long. The project has a hydraulic range of 150 to 262 cfs and an average annual generation of about 1,274 MWh. Approximately 4,063 square feet of land area is occupied by the non-reservoir facilities at the Project.

IV. REGULATORY AND COMPLIANCE STATUS

On December 31, 1991, CVPS filed an application to the Federal Energy Regulatory Commission (FERC) for a subsequent license to continue to operate and maintain the Arnold Falls Hydroelectric Project. Timely motions to intervene were filed by the Vermont Agency of Natural Resources (VANR), the U.S. Department of Interior, and American Rivers. None of the entities opposed relicensing of the project. The FERC license states that comments received from interested agencies and individuals were fully considered in determining conditions associated with license issuance. The license was issued on December 8, 1994 for a 40 year term.

According to CVPS's application for LIHI certification, no compliance issues or regulatory proceedings or license amendments have been issued. A review of FERC's eLibrary from 1995 through March 2012, appears to generally support this position, but notes the following license modifications:

- An amendment of Article 404 regarding modification of the Flow Management Plan was issued on April 10, 1997 addressing several issues as discussed under Criterion A - Flows.
- As discussed under Criterion C - Fish Passage and Protection, two time extensions for the construction of the required fish passage facilities were requested and granted.
- As discussed under Criterion G - Recreation, extensions to file a Recreation Study Plan was revised from the 2005 deadline to 2008 and again to 2010.

CVPSC filed an application in 1991 for water quality certification from the Vermont Agency of Natural Resources (VANR) for the Arnold Falls Project. The application was withdrawn and re-filed on October 8, 1992, and again on June 21, 1993. The water quality certification was ultimately issued on June 16, 1994.

The FERC license denotes that certain conditions contained in the Water Quality Certificate extend beyond the authority of such a certification and there for were not incorporated, or were modified, within the FERC license. These include:

- Future upstream fish passage facilities shall be governed by the authority reserved under Section 18 of the Federal Power Act, and not those of VANR, if those specified in the future by VANR conflict with these federal mandates.
- FERC determined that VANR's requirement to review and approve all project maintenance and repair work including their scheduling inappropriately attempts to govern activities at the project which fall under the jurisdiction of FERC, not VANR.
- FERC did not accept VANR's requirement to have all future project changes be subject to VANR review and approval. FERC contends that such broad authority extends beyond the authority provided under Section 401 of the Clean Water Act.
- FERC did not include VANR's right to "order" FERC to re-open the license at any time to consider modifications deemed necessary by VANR to meet state quality standards. FERC did however note that VANR has the ability to make such a request of FERC.

Review of FERC's eLibrary and specific questioning of the applicant did not identify any reported license deviations in the past five years or license compliance delays other than the fish passage extensions identified above.

Resource agency comments obtained during telephone contact and emails received were generally supportive of the compliance activities at this site, with fish passage concerns being the only potential issue of concern. Telephone communications are summarized in Appendix A, followed by copies of written communications received from the resource agencies.

V. PUBLIC COMMENT RECEIVED BY LIHI

The deadline for submission of comments on the certification application was April 6, 2012. No comment letters were received.

VI. SUMMARY OF COMPLIANCE WITH CRITERIA AND ISSUES IDENTIFIED

Criterion A - Flows - The facility appears to be operated in compliance with the established minimum flow requirements, reservoir fluctuation and re-filling rates, leakage verification and deviation reporting. No specific areas of concern were identified by the resource agencies contacted.

Criterion B - Water Quality - The facility appears to be operated in compliance with all water quality related conditions of the FERC license and Water Quality Certificate. No specific areas of concern were identified by the VANR.

Criterion C - Fish Passage and Protection – Final downstream fish passage for anadromous fish, with Atlantic salmon being the target species, has been installed and operating since September 1999,. . The USFWS reserved their authority within the FERC license under Section 18 of the FPA for construction of upstream passage and for modifying the downstream fish passage requirements as changes in needs arise. The VANR issued Water Quality Certificate has similar future non-species specific fish passage requirements. Neither upstream passage for anadromous or any passage for American eel have been requested. Passage for these species to the Passumpsic River is blocked by East Barnet Dam (also owned by CVPS) and further downstream by the Dodge Falls Dam located on the Connecticut River. The Dodge Falls Dam currently has no upstream fish passage facilities. No passage requirements have been identified for riverine species. Fish protection features consisting of 1-inch bar spacing trashracks have been installed. Downstream fish passage effectiveness testing in the form of observations was performed at the Gage and Passumpsic Projects, to be applied to this site. The various resource agencies consulted during this LIHI review reported differences of opinion or lack of ability to confirm effectiveness of the downstream fish passages, as discussed further under Criterion C - Fish Passage and Protection. Effective July 2012, the USFWS ended their program for restoration of Atlantic Salmon to the Connecticut River basin. Thus, as the FERC license and WQC requirements scheduled for 1997 have not been totally satisfied, but Atlantic salmon are no longer a target restoration species for this river system, a condition for LIHI certification is recommended rather than failure of the project for this criterion.

Criterion D - Watershed Protection - There are no requirements for a buffer zone, shoreline protection fund or shoreline management plan for the Facility. Thus, as all requirements, of which there are none, are nonetheless being met, this Facility passes for this criterion. No additional term for certification is appropriate.

Criterion E - Threatened and Endangered Species Protection - There are no federally or state endangered or threatened species found in the area or that would potentially be affected by Facility operations. The Bald Eagle is considered a potential transient only. VANR determined

that a State listed rare species found in the vicinity would not be impacted by continued Project operations.

Criterion F - Cultural Resources - The Project is subject to the provisions of "Programmatic Agreement Among FERC, the Advisory Council on Historic Preservation and the Vermont State Historic Preservation Officer (SHPO)." Annual reports have been submitted as required by the single Cultural Resources Management Plan to both FERC and the Vermont State Historic Preservation Office. There are no issues with adherence to cultural resources (historic or archaeological) protection requirements at the Facility.

Criterion G - Recreation - The Project is generally in compliance with all recreational requirements. The single exception is that a bank fishing/viewing area has not yet been developed, although FERC Order dated 11/23/10 required an agency approved selection and implementation schedule by May 2011. Consultation with local representatives in St. Johnsbury has confirmed that CVPS is still working to identify suitable property in vicinity of the Project to implement this final requirement. A certification condition is recommended relative to this issue.

Criterion G - Facilities Recommended for Removal - No resource agencies have recommended dam removal.

VII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION

Based on my review of information submitted by the applicant, the additional documentation noted herein, the public comments submitted in writing or through my consultations with various resource agencies and other entities, I believe that the Project is in compliance with the LIHI criteria, as discussed in detail later in this report.

Therefore, I recommend that the Arnold Falls Project be certified to be in compliance with LIHI's criteria with a certification term of five years *but with the following conditions set forth below, for the reasons stated:*

- LIHI requires demonstration of effective fish passage to be certified as low impact. Downstream passage for Atlantic salmon was the focus for passage at this site; however, recent decision by the USFWS has eliminated restoration efforts for this species in this river system. Although past documentation suggests that the agencies determined that the configuration of the passage facility at Arnold Falls should work satisfactory, although final reporting on effectiveness testing could not be confirmed, recent communications with USFWS and VDF&W could not confirm this opinion, and VDF&W stated that additional issues may still exist at this site. Therefore, LIHI requires that consultation be re-opened with USFWS and VDF&W to re-assess, if needed, the effectiveness of the passage facilities at Arnold Falls. If no additional studies are needed, CVPS shall provide LIHI documentation demonstrating agreement by USFWS and VDF&W with this decision within one month of its issuance. If any additional studies are required, documentation of the agency approved study plan, study schedule and study results shall be provided to LIHI

within one month of the finalization of these documents. These documents will demonstrate compliance with this criterion.

- CVPS shall install the bank/fishing area at the location agreed to by the Town of St. Johnsbury within the new deadline to be requested from/ established by FERC for its installation, or within the five-year LIHI certification period, which ever is shorter. CVPS shall provide LIHI documentation of the new deadline, agreement reached with the Town, and the schedule for the installation of the fishing area. This will confirm that this criterion is met.

LIHI reserves the right to withdraw or suspend LIHI certification should these conditions not be met in the time period prescribed.

VIII. DETAILED CRITERIA REVIEW

A. FLOWS

Goal: The Flows Criterion is designed to ensure that the river has healthy flows for fish, wildlife and water quality, including seasonal flow fluctuations where appropriate.

Standard: For instream flows, a certified facility must comply with recent resource agency recommendations for flows. If there were no qualifying resource agency recommendations, the applicant can meet one of two alternative standards: (1) meet the flow levels required using the Aquatic Base Flow methodology or the “good” habitat flow level under the Montana-Tennant methodology; or (2) present a letter from a resource agency prepared for the application confirming the flows at the facility are adequately protective of fish, wildlife, and water quality.

Criterion:

- 1) Is the facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?**

YES - No exceptions to these flow requirements were reported in the FERC eLibrary in the past five years, nor were any reported by the applicant. VANR confirmed no known deviations from these requirements. Modifications to the original requirements are included in the list below. In summary these flow requirements include:

- a minimum flow of 78 cfs (excluding fish passage flows) or inflow when operating;
- a minimum flow of 33 cfs (including fish passage flows) when not operating into the south channel. When inflow is <139 cfs, 26% of inflow is released to the south channel with the remainder to the north channel;
- restrictions on impoundment refilling rates;

- matching of instantaneous outflow approximately with inflows to minimize reservoir fluctuations;
- reporting of minimum flow deviations, the cause and corrective actions taken to minimize reoccurrence to FERC within 30 days of the deviation; and
- verification of 25 cfs leakage into the North Channel

This Project passes Criterion A - Flows- Go to B

B. WATER QUALITY

Goal: The Water Quality Criterion is designed to ensure that water quality in the river is protected.

Standard: The Water Quality Criterion has two parts. First, an Applicant must demonstrate that the facility is in compliance with state water quality standards, either through producing a recent Clean Water Act Section 401 certification or providing other demonstration of compliance. Second, an applicant must demonstrate that the facility has not contributed to a state finding that the river has impaired water quality under Clean Water Act Section 303(d).

Criterion:

1) Is the Facility either:

a) In compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the facility after December 31, 1986? Or

Yes. The operation of Arnold Falls is in compliance with the requirements of the 401 Water Quality Certification, which was issued on June 16, 1994, based on review of information provided and consultation with Mr. Shayne Jaquith of the Water Quality Division of VANR.

YES, go to B2

2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?

YES. Review of the 2010 Clean Water Act Section 303(d) List of Impaired Waters issued by the Vermont Agency of Natural Resources, Division of Water Quality identified the portion of the Passumpsic River from the Pierce Mills Project (upstream of Arnold Falls) through a five-mile stretch downstream of the Passumpsic Project as "impaired". **GO TO B3**

3) If the answer to question B.2. is yes, has there been a determination that the Facility is not a cause of that violation?

YES. The impairment is identified as being due to *e. coli* originating from the St. Johnsbury, Vermont wastewater treatment facility, which passes combined sewer overflows. The Arnold Falls Project is not identified as causing or contributing to this water quality impairment.

The Project Passes Criterion B - Water Quality - Go to C

C. FISH PASSAGE AND PROTECTION

Goal: The Fish Passage and Protection Criterion is designed to ensure that, where necessary, the facility provides effective fish passage for riverine, anadromous and catadromous fish, and protects fish from entrainment.

Standard: For riverine, anadromous and catadromous fish, a certified facility must be in compliance with both recent mandatory prescriptions regarding fish passage and recent resource agency recommendations regarding fish protection. If anadromous or catadromous fish historically passed through the facility area but are no longer present, the facility will pass this criterion if the Applicant can show both that the fish are not extirpated or extinct in the area due in part to the facility and that the facility has made a legally binding commitment to provide any future fish passage recommended by a resource agency. When no recent fish passage prescription exists for anadromous or catadromous fish, and the fish are still present in the area, the facility must demonstrate either that there was a recent decision that fish passage is not necessary for a valid environmental reason, that existing fish passage survival rates at the facility are greater than 95% over 80% of the run, or provide a letter prepared for the application from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service confirming the existing passage is appropriately protective.

Criterion:

1) Is the facility in compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?

YES, for anadromous species, if effectiveness of passage can be demonstrated to be effective or is no longer needed. FERC license Articles 405 and 406 specified the requirements mandated by the USFWS and VANR for the construction and effectiveness testing of initially temporary, then permanent, downstream passage for salmon smolt (which are stocked upstream annually). Although delayed for two years, the permanent facility was constructed in September 1999. This passage consists of a surface entrance weir and sluiceway in the spillway adjacent to the station intake. Fish enter the sliceway through a three-foot-wide concrete chute, which ends at a three-foot-deep plunge pool which discharges to the bypass channel. The effectiveness testing plan was commented on by USFWS and VANR and following modification, was approved. Effectiveness testing was conducted through visual observations performed by USFWS, VANR and the owner only at Gage and Passumpsic Projects, with those results to also apply to Arnold Falls, because the configuration of the fish passage was not expected to be problematic at the Arnold Falls site. Documentation via a letter exists indicating that agency

observations were made and that CVPS was performing the requested observations. A November 1997 report on the results of the observations at the Gage project was issued to the VANR and USFWS. Neither a similar report for Passumpsic Project observations, nor submission of any report to FERC for either site could be found. Shayne Jaquith of VANR's email response indicated that no non-compliance issues have been identified for any of the WQC conditions, including fish passage requirements. John Warner of USFWS stated he could not comment on the effectiveness of the passage facilities as he does not conduct inspections at these facilities regarding their effectiveness. Len Geradi of the VANR, Division of Fish and Wildlife (VDF&W) indicated that while the primary concern dealing with passage of salmon smolt was at the Gage Project, that he believes some issues may still exist at all four Passumpsic River projects. He however could not provide any specific details at this time. He did comment that it is likely that a final report was never developed for FERC submission.

Effective July 2012, the USFWS ended its program for Atlantic salmon restoration of the Connecticut River basin, including the Passumpsic River, thus in the opinion of the Reviewer, significantly reducing the importance of final demonstration of effectiveness testing of the downstream passage for this species.

Per Article 407 of the FERC license, a mandatory fish prescription for upstream passage was issued by the USFWS in December 1993. To date, upstream passage for anadromous species has not yet been requested based on consultation with the USFWS. Upstream passage is blocked by the East Barnet Dam on the Passumpsic River and the Dodge Falls Dam located downstream on the Connecticut River.

GO TO B2 for catadromous species

- 2) Are there historic records of anadromous and/or catadromous fish movement through the facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?**

There are no current records for American eel in the Passumpsic River based on applicant provided data, specifically the 2005 Vermont Wildlife Action Plan. American eel were historically plentiful in the Lake Champlain and Connecticut River watersheds, however this Report identifies that numerous large dams on the Connecticut River prevent the passage of eel currently. Mr. John Warner of USFWS stated that the site is too far upstream to be available habitat for American eel. ***Go to C2a***

- a) If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility?**

YES. . The Dodge Falls dam, as well as others, located downstream on the Connecticut River is a barrier for upstream passage of both anadromous and catadromous species.

Go to C2b

- b) **If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream obstruction or the completion of a specified process), has the Facility owner/operator made a legally enforceable commitment to provide such passage?**

YES, The USFWS has reserved authority for mandating upstream fish passage and for modifying the downstream fish passage requirements as changes in needs arise. This is included as Article 407 in the FERC license. As written, this prescription is not limited to any specific species. The Water Quality Certificate also has a non-species specific condition requiring such installation within a two year notice from the VANR for such passage. No upstream passage has been required based on consultation with USFWS. **Go to C5**

- 5) **Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream or downstream passage of riverine fish?**

NOT APPLICABLE. No fish passage prescriptions have been issued for riverine fish. **Go to C6**

- 6) **Is the facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?**

YES. Trashracks with one-inch bar spacing were required by the resource agencies and installed at the site.

The Project Conditionally Passes Criterion C - Fish Passage and Protection

- Go to D

D. WATERSHED PROTECTION

Goal: The Watershed Protection criterion is designed to ensure that sufficient action has been taken to protect, mitigate and enhance environmental conditions in the watershed.

Standard: A certified facility must be in compliance with resource agency and Federal Energy Regulatory Commission (“FERC”) recommendations regarding watershed protection, mitigation or enhancement. In addition, the criterion rewards projects with an extra three years of certification that have a buffer zone extending 200 feet from the high water mark or an approved watershed enhancement fund that could achieve within the project’s watershed the ecological and recreational equivalent to the buffer zone and has the agreement of appropriate stakeholders and state and federal resource agencies. A Facility can pass this criterion, but not receive extra years of certification, if it is in compliance with both state and federal resource agencies recommendations in a license-approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project.

Criterion:

1) Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the average annual high water line for at least 50% of the shoreline, including all of the undeveloped shoreline?

NO, *go to D2*

2) Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1), and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?

NO, *go to D3*

3) Has the facility owner/operator established through a settlement agreement with appropriate stakeholders, with state and federal resource agencies' agreement, an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation)

NO, *Go to D4*

4) Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project.

NOT APPLICABLE. No Shoreland Management Plan or equivalent plan was required for the Arnold Project. Under Article 401 of the FERC license, a plan to control erosion, to control slope instability, and to minimize the quantity of sediment resulting from project construction and operation is required to be submitted 90 days prior to the start of any land- disturbing activities associated with the construction of recreation facilities, fishways, or other features required by this license.

The Project Passes Criterion D - Watershed Protection - Go to E

E. THREATENED AND ENDANGERED SPECIES PROTECTION

Goal: The Threatened and Endangered Species Protection Criterion is designed to ensure that the facility does not negatively impact state or federal threatened or endangered species.

Standard: For threatened and endangered species present in the facility area, the Applicant must either demonstrate that the facility does not negatively affect the species, or demonstrate compliance with the species recovery plan and receive long term authority for a “take” (damage) of the species under federal or state laws.

Criterion:

1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?

NO. No federal or state endangered or threatened species have been identified at the Arnold Falls Project. The Bald Eagle, a state listed species is considered a potential transient but has not been observed in the vicinity of the Project. The hare figwort (*Scrophularia lanceolata*) is listed by the Vermont Natural Heritage Program as rare plant and was found in the vicinity of the Project.

The Environmental Assessment notes that the VANR indicated during re-licensing that the continued operation would not adversely affect populations of species inhabiting unique habitat at any of the Passumpsic Projects. Review of the VT ANR Natural Resources Atlas for current known presence of protected species, as recommended by Shayne Jaquith of VANR, was conducted by the Applicant as part of the Application submission. This review confirmed that no impacts to federal or state protected species are expected from the operation of the Arnold Falls Project.

The Project Passes Criterion E - Threatened and Endangered Species Protection - Go to F

F. CULTURAL RESOURCE PROTECTION

Goal: The Cultural Resource Protection Criterion is designed to ensure that the facility does not inappropriately impact cultural resources.

Standard: Cultural resources must be protected either through compliance with FERC license provisions, or through development of a plan approved by the relevant state or federal agency.

Criterion:

1) If FERC-regulated, is the Facility in compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?

YES. License Article 408 requires implementation of the "Programmatic Agreement Among FERC, the Advisory Council on Historic Preservation and the Vermont State Historic Preservation Officer (SHPO)." This Agreement covers multiple CVPS hydropower Projects on the Passumpsic River and a single Cultural Resources Management Plan (CRMP) was developed (and approved in 2000) for all four Facilities requiring a five-year monitoring and reporting

program. The four projects' dams, intake structures, generating units and powerhouses, including Arnold Falls, are considered to represent the historic period (1882-1941) of hydroelectric power development in Vermont and are considered eligible for inclusion in the National Register of Historic Places. Annual reports associated with surveys of the project shoreline are submitted to both the FERC and the Vermont SHPO. Currently there do not appear to be any known archaeological sites threatened by Project operations. Documentation provided by the applicant has demonstrated compliance with cultural resources protection requirements. Likewise communications with the VT SHPO has confirmed their satisfaction with the Project's compliance history.

The Project Passes Criterion F - Cultural Resource Protection - Go to G

G. RECREATION

Goal: The Recreation Criterion is designed to ensure that the facility provides access to the water without fee or charge, and accommodates recreational activities on the public's river.

Standard. A certified facility must be in compliance with terms of its FERC license or exemption related to recreational access, accommodation and facilities. If not FERC-regulated, a certified facility must be in compliance with similar requirements as recommended by resource agencies. A certified facility must also provide the public access to water without fee or charge.

Criterion:

1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?

YES. FERC license Article 411 required development and maintenance of a public access area for bank fishing and viewing, a parking area, canoe portage facilities, as well as installation/maintenance of interpretative and public safety signage. To date, the bank fishing area has yet been developed due to difficulties in available property to construct the site. FERC Order dated 11/23/10 required an agency approved selection and implementation schedule for the site by May 2011. CVPS reported to the LIHI reviewer that they were not aware of this FERC Order and deadline, and as a result of this LIHI investigation, would seek an extension from FERC. Consultation with Jim Rust, Chair of the St. Johnsbury Board of Selectman, has confirmed that CVPS is actively working with them to resolve lack of site identification. A 2002 FERC inspection report found the canoe portage trail and parking area to be well maintained, although clarification to the signage regarding their open public access without discrimination was requested. A 2008 FERC inspection report found the sites well maintained. Evaluation of the use of the recreational facilities was assessed and a report submitted to FERC in September 2010 following modification to a draft of the report to incorporate VANR and Town of St. Johnsbury comments.

Go to G3

3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?

YES. In addition to a statement issued by the applicant, the FERC inspection report stated that such access is provided free of charge.

The Project Conditionally Passes Criterion G - Recreation - Go to G

H. FACILITIES RECOMMENDED FOR REMOVAL

Goal: The Facilities Recommended for Removal Criterion is designed to ensure that a facility is not certified if a natural resource agency concludes it should be removed.

Standard: If a resource agency has recommended removal of a dam associated with the facility, the facility will not be certified.

Criterion:

1) Is there a Resource Agency recommendation for removal of the dam associated with the Facility?

NO. No resource agency has recommended removal of this dam.

The Project Passes Criterion H -Facilities Recommended for Removal

**THE ARNOLD FALLS PROJECT MEETS
THE LIHI CRITERIA FOR CERTIFICATION WITH THE
FOLLOWING CONDITIONS:**

(A) LIHI requires demonstration of effective fish passage to be certified as low impact. Downstream passage for Atlantic salmon was the focus for passage at this site; however, recent decision by the USFWS has eliminated restoration efforts for this species in this river system. Although past documentation suggests that the agencies determined that the configuration of the passage facility at Arnold Falls should work satisfactory, although final reporting on effectiveness testing could not be confirmed, recent communications with USFWS and VDF&W could not confirm this opinion, and VDF&W stated that additional issues may still exist at this site. Therefore, LIHI requires that consultation be re-opened with USFWS and VDF&W to re-assess, if needed, the effectiveness of the passage facilities at Arnold Falls. If no additional studies are needed, CVPS shall provide LIHI documentation demonstrating agreement by USFWS and VDF&W with this decision within one month of its issuance. If any additional studies are required, documentation of the agency approved study plan, study schedule and study results shall be provided to LIHI within one month of the finalization of these documents. These documents will demonstrate compliance with this criterion.

(B) CVPS shall install the bank/fishing area at the location agreed to by the Town of St. Johnsbury within the new deadline to be requested from/ established by FERC for its installation, or within the five-year LIHI certification period, which ever is shorter. CVPS shall provide LIHI documentation of the new deadline, agreement reached with the Town, and the schedule for the installation of the fishing area. This will confirm that this criterion is met.

LIHI reserves the right to withdraw or suspend LIHI certification should these conditions not be met in the time period prescribed.

APPENDIX A

INDEX OF PRIMARY CONTACT INFORMATION FOR LIHI CRITERIA

LIHI CRITERION	PRIMARY CONTACT INFORMATION
Flows	Shayne Jaquith, VANR, DEC - Water Quality Division John Warner, USFWS Hydropower Coordinator
Water Quality	Shayne Jaquith, VANR, DEC - Water Quality Division
Fish Passage & Protection	Shayne Jaquith, VANR, DEC - Water Quality Division John Warner, USFWS Hydropower Coordinator Len Geradi, VANR, DF&W
Watershed Protection	None required
Threatened & Endangered Species	Shayne Jaquith, VANR, DEC
Cultural Resources Protection	Devin Colman, Vermont State Historic Preservation Office Scott Dillon, Vermont State Historic Preservation Office
Recreation	Jim Rust, Chair, Board of Selectman, Town of St. Johnsbury
Facilities Recommended for Removal	None required

RECORD OF CONTACTS

NOTE: The information presented below was gathered from contacts by email, telephone, and/or written public comments to LIHI. Telephone interviews were conducted either when the reviewer determined a response received by email or public comment was not available, insufficient, or when a contact preferred a telephone conversation. Copies of emails follow this page.

Date: May 22, 2012 - Telephone conversation
Contact Person: Jim Rust, Chair, St. Johnsbury Board of Selectman
Contact Information: 802-748-4331
Area of Expertise: Recreation

Mr. Rust confirmed that CVPS is actively working with the community to find a mutually suitable location for the bank fishing area. He stated that due to the recent departure of the Town Manager, such activities have been put on hold until this position can be re-filled.

Date: May 31, 2012 - Telephone conversation; June 4, 2012 email
Contact Person: John Warner, USFWS, Hydropower Coordinator
Contact Information: 603-223-2541 x 15; john.warner@fws.gov
Area of Expertise: Fisheries

Mr. Warner confirmed that upstream passage for anadromous species is not required due to downstream barriers. He also stated that the Passumpsic River is too far upstream to provide American eel habitat. He commented that he cannot state whether the site is, or is not, providing effective downstream fish passage or protection as he does not conduct follow-up investigation on such projects. His office depends on licensees adhering to their license commitments. In some instances, state resource agencies may conduct follow-up observations, but he was not aware that VF&W had done any for the CVPS sites. He did share email communications between he and Len Gerardi of VF&W who raised some question about the lack of formal effectiveness testing at any of the Passumpsic projects. Mr. Warner also stated that Len Gerardi, not Ken Cox, is the appropriate VF&W contact. A follow-up email from June 4, 2012 is also attached.

Date: June 20, 2012
Contact Person: Devin Colman
Vermont State Historic Preservation Office
Contact Information: 802-828-3043; Devin.colman@state.vt.us
Area of Expertise: Cultural Resources - Historic Structures

Devin reported that whenever CVPS has had any structure modifications, that appropriate consultation has been made and that resolution of issues has always been to the SHPO's satisfaction. Required reports are being files to the SHPO's office. No issues regarding impacts to historic structures have been identified. CVPS has been good to work with. He suggested contacting Scott Dillon to discuss archaeological issues.

Date: July 26, 2012 Telephone call
Contact Person: Scott Dillon
Vermont State Historic Preservation Office
Contact Information: 802-828-3048; Scott.dillon@state.vt.us
Area of Expertise: Cultural Resources – Archaeological resources

Scott reported that whenever CVPS has had any structure modifications or excavations, that appropriate consultation has been made and that resolution of issues has always been to the SHPO's satisfaction. He described CVPS as a 'good steward' in terms of cultural resource protection. No issues regarding impacts to archaeological resources have been identified.

Date: April 16 email and May 31, 2012 telephone call
Contact Person: Shayne Jaquith, VANR, Department of Environmental
Conservation, Water Quality Division
Contact Information: 802-338-4853; Shayne.jaquith@state.vt.us
Area of Expertise: Water Quality Certification

See attached email dated April 16 summarizing communications regarding compliance with conditions under the Water Quality Certifications issued for all of the CVPS the sites seeking LIHI certification. When contacted on May 31 regarding protected species, Shayne suggested I review the VT ANR Natural Resources Atlas for known presence of protected species in lieu of his office conducting such a review. (Note: Such a review was completed as part of the LIHI Application preparation.) Shayne Jaquith also stated that the VANR is appreciative of the LIHI process in that they are seeing projects undergoing improved compliance programs as a result of LIHI conditions required to obtain certification.

Date: May 31 telephone call and June 1, 2012 email
Contact Person: Len Gerardi, VANR, Division of Fish & Wildlife
Contact Information: 802-885-8828; ken.cox@state.vt.us
Area of Expertise: Fisheries

On May 31, Mr. Gerardi commented he did not recall the observation level effectiveness testing that was done for the Passumpsic Projects. During a June 1 conversation, following his review of key letters documenting this past testing, he reported that several issues are still unresolved at the Passumpsic River sites, although he believes fish passage issues are more of a concern at the Gage Project. A follow-up email from June 1 is attached.

Patricia B. McIlvaine

From: John_Warner@fws.gov
Sent: Monday, June 04, 2012 8:26 AM
To: Gerardi, Len
Cc: Fitzgerald, Brian; 'Patricia B. McIlvaine'; Wentworth, Rod
Subject: RE: Documents on Passumpsic Projects downstream fish passage effectiveness testing
Attachments: Memo Site Inspection fish passage Passumpsic River.pdf

Pat - I looked through our files and found a series of site visit reports from our fishway engineer between 1998 and 2001 (attached) - Review of these reports suggest that we have accepted some aspects of passage at the sites , but had concerns over some components and had recommendations to improve passage. It is not clear from our files that the recommended changes were ever implemented, not is it completely clear that CVPS received all these reports. Regardless, at a minimum, it seems that CVPS would need to respond to items identified in the attached memos relative to whether they were, in fact, implemented.

-- jw

(See attached file: Memo Site Inspection fish passage Passumpsic River.pdf)

John P. Warner
Assistant Supervisor, Conservation Planning Assistance and Endangered Species
New England Field Office, U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301
(603) 223-2541 - ext.15
(603) 223-0104 - FAX

www.fws.gov.northeast/newenglandfieldoffice
☛ "Gerardi, Len" <Len.Gerardi@state.vt.us>

"Gerardi, Len"
<Len.Gerardi@state.vt.us>

05/31/2012 06:39 PM

To "Patricia B. McIlvaine"
<Pat.McIlvaine@wright-pierce.com>
cc "John_Warner@fws.gov"
<John_Warner@fws.gov>, "Wentworth, Rod"
<rod.wentworth@state.vt.us>, "Fitzgerald,
Brian" <Brian.Fitzgerald@state.vt.us>
Subject RE: Documents on Passumpsic Projects
downstream fish passage effectiveness testing

Pat,

The documents you passed along are from 1996.

I went back to my time logs and found that on May 25 and 26, 1995 I was addressing salmon smolts stalled in the Gage headrace. The Passumpsic River water temperature had risen to 14oC at 1500 hrs. I recall the river flow was quite low for the season. On June 2 I coordinated

6/4/2012

UNITED STATES GOVERNMENT
U.S. FISH AND WILDLIFE SERVICE
300 WESTGATE CENTER DRIVE
DIVISION OF ENGINEERING
HADLEY, MASSACHUSETTS 01035-9589

DATE: May 24, 2001

MEMORANDUM

To: Regional Engineer
To: Supervisor, New England Field Office, Concord, N.H.
Attention: John Warner

From: Curtis Orvis, Hydraulic Engineer

Subject: Site Inspections of Downstream Fish Passage Facilities on the Passumpsic River at the East Barnet (FERC#3051), Passumpsic (FERC# 2400), and Gage (FERC# 2397) Hydroelectric Projects in Vermont (Tributaries to the Connecticut River) on May 23rd with Len Gerardi, VTANR, Fisheries and John Warner, NEFO(ES).

East Barnet Hydroelectric Project, FERC#3051, Passumpsic River, VT

Background on the design and construction were presented by KA and USFWS. The angled rack and bypass were constructed to the approved design standards. Flow observed in the bypass was about 22 cfs and the river flow was estimated to be 500 cfs. The forebay, bypass sluice, control gate, pipe and exit channel and chute were inspected in detail. About 6 smolts were observed in the forebay. The turbine unit has a capacity range from 125 to 1100 cfs.

Issues discussed at the site inspection were concern for delays to Atlantic salmon smolts, downstream passage effectiveness and efficiency, need for more data or better refinement of whether there is a problem.

In attendance were:

John Warner, NEFO(ES)	Len Gerardi, VT ANR Fisheries
John Greenan, Central Vermont Public Service	Jeff Wallin, Consultant for Owner
Brandon Kulik, KA Consultant for Owner	Curt Orvis, USFWS, Fish Passage Eng.
Tom Kahl, KA Consultant for Owner	Bill McCrae, CVPS Operator

Information collected by Steve McCormick, Conte Lab, were reviewed. On May 10, 1999 at a water temperature of 14 C, 80 smolts were angled in the forebay. The average discharge in 1999 on May 10th was 849 cfs from the USGS gage at Passumpsic (slightly upstream). The day before and day after, the discharge was less than 700 cfs. A review of the approach velocities was made. For the 21.7-foot deep x 30-foot wide angled rack an area of 651 square feet is computed. At a turbine discharge of about 650 cfs, the average approach velocity would be about 1 fps. At the 849 cfs discharge, the approach velocity would be about 1.3 fps.

For the observations on May 23rd at a discharge of 500 cfs, the approach velocity would be about 0.8 fps. Comparing to the Holyoke Canal louvers, it would represent a situation with about half-capacity discharge. Operating the canal (capacity 8000 cfs) at 4000 cfs was considered undesirable due to the reduced efficiency. At Holyoke there is additional flow passing through the Hadley Falls units that could be diverted first, but in the Passumpsic the total river discharge is being passed through the units for attraction.

On May 16, 2001 at a temperature of 11 C, 6 fish were caught in the bypass trap and 26 fish were angled from the forebay. This year based on provisional data, the discharge was between 600 and 700 cfs on May 16th. Thus, the approach velocity would be about 1 fps. It would be useful comparing the temperature data John Greenan had on

the site to the flow data available. CVPS will review evaluation studies and measures using the recommendations from the fisheries agencies.

Passumpsic Project, FERC# 2400, Passumpsic River, VT

At the Passumpsic project, the protective rack with 1-inch clear spacing was installed with air cleaning system. The minimum flow bypass was operating with about 7 to 15 inches of overflow depth over the stop log planks. The plunge from the gate dropped about 6 feet onto the sill of the gate. A plunge pool is needed for smolt passage. Constructing a downstream wall was proposed to create the pool. Sand bags were suggested to be used to determine the best location for the wall. CVPS and KA will pursue further.

Gage Project, FERC# 2397, Passumpsic River, VT

The forebay and bypass structure were inspected. A sweeping flow passes over the bypass gate and into the downstream channel which appears to avoid any impact on the ledge below. Depths appear to be adequate in the flow and pools for smolt passage.

Cavendish Project, FERC# 2489, Black River, VT

Preliminary results of mark/recapture studies at the Cavendish Project were discussed. Partial surface screening and increased bypass flow of 10 cfs were tested. Effectiveness to date appears to be less than 60 percent. One more batch of test fish remain to be released. Obtaining additional test fish was discussed, but there appears to be no more available. Operations will continue with the 10 cfs discharge through June 15.

**UNITED STATES GOVERNMENT
U.S. FISH AND WILDLIFE SERVICE
300 WESTGATE CENTER DRIVE
DIVISION OF ENGINEERING
HADLEY, MASSACHUSETTS 01035-9589**

DATE: September 3, 1999

MEMORANDUM

To: Regional Engineer
To: Supervisor, New England Field Office, Concord, N.H.
Attention: John Warner

From: Curtis Orvis, Hydraulic Engineer

Subject: Site Inspections of Downstream Fish Passage Facilities at Selected Passumpsic, Stevens, and Wells River Hydroelectric Projects in Vermont (Tributaries to the Connecticut River) on August 26th with Len Gerardi, VTANR, Fisheries.

Emerson Falls Hydro Project, FERC# 7809, Sleepers River, VT (Exemption)

Issues discussed at the site inspection were flows, weir modifications, flow control and monitoring, debris disposal, and leakage. In attendance were:

Judy Pransky, Owner/operator
Josie Stapenhorst, Owner/operator
Martin Arseneault, Eng./consultant
Francis Lee, FERC

Len Gerardi, VT ANR Fisheries
Jeff Cueto, VT ANR, State Hydrologist, DEC
Brian Fitzgerald, VT ANR, DEC
Curt Orvis, USFWS, Fish Passage Eng.

Len explained the first need to pass the 15 cfs minimum flow at the center weir and second requirement for downstream fish passage at the project. Owners have a reluctance to construct either a canal head works or angled rack at the upstream end of the power canal. I explained the minimum requirement of 1-inch clear spaced rack with an adjacent bypass for downstream fish passage. The rack was re-constructed at the penstock intake without the surface bypass. Once again we reiterated options for completing downstream fish passage at the project include installing a seasonal rack at the upstream end of the intake canal and notching the dam near the center or creating a bypass and plunge pool at the recently re-constructed intake where the rake is located. As the project stands at this time, smolts will be trapped in the intake canal without an exit other than through the turbines or swimming upstream through the intake canal and locating the minimum flow bypass. A design and construction schedule is needed for completion of the downstream fishway. Jeff Cueto was opposed to constructing concrete side walls or plunge pool at the penstock intake. USGS provisional data give a flow of 3.4 cfs for the inspection date of August 26, 1999.

Pierce Mills Hydroelectric Project, FERC# 2396, Passumpsic River, VT

We discussed the downstream bypass and Len felt that it was functioning properly with the recent plunge pool rock excavation. We did not inspect the site.

Arnolds Falls Project, FERC # 2399, Passumpsic River, VT

We briefly inspected the completed downstream bypass at the hydro site. We were able to walk down the

We inspected the dam and intake to the penstock at the project. The tailwater appeared to be adequate depth, but a bypass collection box with sluice or pipe is needed to transfer fish from the forebay to the bypass reach. A letter from the NEFO(ES) was sent to the developer on Sept. 2, 1999 re-iterating the need for downstream fish passage at the project.

Conclusion

Additional work is needed at the Emerson Falls, Arnold's Falls, Gage, Passumpsic, Cavendish, Barnet, Boltonville, and Newbury sites to complete the plunge pools and make the downstream fishways safe and effective for downstream passage of Atlantic salmon smolts. It appears that a comprehensive project review is needed in the spring (or fall) prior to the downstream passage season with project insufficiencies formally communicated to the owners/developers of the projects.

UNITED STATES GOVERNMENT
U.S. FISH AND WILDLIFE SERVICE
300 WESTGATE CENTER DRIVE
DIVISION OF ENGINEERING
HADLEY, MASSACHUSETTS 01035-9589

DATE: February 5, 1999

MEMORANDUM

TO: Supervisor, NEFO (ES), Concord, N.H.
Attention, John Warner

FROM: Curt Orvis, Hydraulic Engineer

SUBJECT: Photographic Record of Progress on Proposed Downstream Fish Passage Structures on the Passumpsic River, Connecticut River Basin, Vermont.

Reference is made to a September 11, 1998 memorandum that provides details to the site inspections completed in August 1998.

Photographs of the following sites (in downstream order) are attached:

Project	FERC#	Facilities Needed			Plunge Pool
		1-inch cl. sp.	Rack	Conveyance	
Passumpsic River					
Vail	3090	X		X	X
Great Falls	2839	X		X	X
Pierce Mills	2396				X?
Arnold Falls	2399	X		X	X
Gage	2397				X(I)
Passumpsic	2400				X(I)
East Barnett	3051				X(I)
Sleepers River					
Emerson Falls	7809			X	X
Black River					
Cavendish	2489				X

X - needed X(I) - improvements recommended

Attachments

cc: L. Gerardi, Vermont F&G, St. Johnsbury (without attachments)
B. Rizzo, EFO, Newton Corner, Ma. (without attachments)

UNITED STATES GOVERNMENT
U.S. FISH AND WILDLIFE SERVICE
300 WESTGATE CENTER DRIVE
DIVISION OF ENGINEERING
HADLEY, MASSACHUSETTS 01035-9589

DATE: September 8, 1998

MEMORANDUM

To: Regional Engineer
To: Supervisor, New England Field Office, Concord, N.H.
Attention: John Warner

From: Curtis Orvis, Hydraulic Engineer

Subject: Site Inspections of Downstream Fish Passage Facilities at the Passumpsic River Hydroelectric Projects in Vermont (Tributary to the Connecticut River)

Emerson Falls Hydro Project, FERC# 7809

Options for completing downstream fish passage at the project include installing a seasonal rack at the upstream end of the intake canal and notching the dam near the center or creating a bypass and plunge pool at the newly constructed intake with rack with rake. As the project stands at this time, smolts will be trapped in the intake canal without an exit other than through the turbines.

Pierce Mills Hydroelectric Project, FERC# 2396

The combined downstream bypass and minimum flow release structure adjacent to the trashracks was complete and passing the required discharge to the bypass channel. The new trashracks with 1-inch clear spacing were at the site. The bypass plunge was inspected closely and appeared good. It did appear that some portion of the plunging flow was welling up on the upstream side of the plunge pool which might indicate the need for removal of additional rock or debris from the pool. Otherwise, the design changes appeared to be very effective.

Arnolds Falls Project, FERC # 2399

The depth of the proposed plunge pool was investigated at minimum flows (approximately 33 cfs) and tailwater elevations by reducing the flow through the unit. The depth at the proposed outlet and plunge impact was measured to be 2 feet deep. Based on existing criteria of 1/4 of the differential head at the site, the plunge pool needs to be 4' deep. There will be a sweeping flow from the draft tubes, but additional depth is required to insure that smolts will not impact the bedrock outcrop at the base of the plunge. The contractor planned to dewater and excavate the rock by hand or non-blasting techniques. KA will investigate depths of flow versus slope for final design of the downstream bypass chute.

The angled rack and other guidance/diversion options were discussed at length. Overlay plates and bar insertions were rejected by the operator as "choking" the unit. The intake is only about 12 feet deep which requires for all practical purposes full-depth protection. The first test of flow inducers did not produce the desired visual results that CVPS wanted. The angled rack as designed will be supported from the existing pier at the intake and side wall of the intake forebay without additional piers, but the estimated cost was still in the \$250,000 range which is expensive for this low-head, low-Mw project.

)*

Patricia B. McIlvaine

From: Gerardi, Len [Len.Gerardi@state.vt.us]
Sent: Thursday, May 31, 2012 6:40 PM
To: 'Patricia B. McIlvaine'
Cc: 'John_Warner@fws.gov'; Wentworth, Rod; Fitzgerald, Brian
Subject: RE: Documents on Passumpsic Projects downstream fish passage effectiveness testing
Pat,

The documents you passed along are from 1996.

I went back to my time logs and found that on May 25 and 26, 1995 I was addressing salmon smolts stalled in the Gage headrace. The Passumpsic River water temperature had risen to 14oC at 1500 hrs. I recall the river flow was quite low for the season. On June 2 I coordinated with CVPS' station operator Frank Chaloux to evacuate smolts remaining in the Gage headrace essentially by draining it.

I believe all the 1996 stir and motion on fish passage efficiency / effectiveness monitoring was prompted by the observed problems with smolts being trapped in the Gage headrace in 1995.

I know that in response to the problem and our consultation CVPS installed a thermometer at Gage that could be read from outside the powerhouse. I believe that temperature logging was instituted for a time, and a record of springtime temperatures may well have been forwarded to DEC and FW for one or more years thereafter. If systematic monitoring of salmon behavior at the stations, other than just looking to see if smolts were holed up in the Gage headrace, was ever undertaken, it now escapes my memory. I'm pretty sure no official reports were ever submitted for ANR review. CVPS' John Greenan is someone involved whose memory may be better than mine.

I think that like so many situationally burning issues, the issue of salmon smolt passage (or insufficiency thereof) returned to a slow smolder in high water / cold temperature springs that followed 1995, and other brushfires sucked up my attention.

I believe there are myriad uncertainties and unresolved concerns still out there regarding passage efficiency / effectiveness at the CVPS facilities in question on the Passumpsic.

As I mentioned I will be on leave for much of the time between tomorrow and Monday June 25. I doubt I will have any time between now and then to delve into my archives to dredge up any pertinent history and documentation on this matter.

Lenny Gerardi
Fisheries Biologist
Vermont Fish and Wildlife Department
1229 Portland Street, Suite 201

6/4/2012

St. Johnsbury, VT 05819
Phone: (802) 751-0108
FAX: (802) 748-6687
EMail: LEN.GERARDI@STATE.VT.US

From: Patricia B. McIlvaine [mailto:Pat.McIlvaine@wright-pierce.com]
Sent: Thursday, May 31, 2012 3:10 PM
To: Gerardi, Len
Cc: 'john.warner@fws.gov'
Subject: Documents on Passumpsic Projects downstream fish passage effectiveness testing

Len & John

Here are what appear to be the key documents I was provided regarding what was deemed appropriate effectiveness testing at the time. The highlights are mine.

Thanks

Pat

Pat McIlvaine | Project Manager
Wright-Pierce | Water, Wastewater & Infrastructure Engineers
Please note my new e-mail address: pat.mcllvaine@Wright-Pierce.com
www.wright-pierce.com

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Patricia B. McIlvaine

From: Maryalice Fischer <MFischer@normandeau.com>
Sent: Friday, April 20, 2012 1:33 PM
To: gabriela@goldfarbconsulting.com; pbm@wright-pierce.com
Cc: fayer@lowimpacthydro.org; John King
Subject: FW: Review of LIHI Certification Candidate Projects

Hello Gabriela and Pat,

CVPS was successful with obtaining the information below from Vermont relative to compliance with their water quality certifications. As you know, the WQCs (included as part of the LIHI applications) are not limited strictly to issues of water quality itself, but also to other resource protection measures included as conditions within those certifications.

Please let me know if you have any questions.

Maryalice Fischer
Normandeau Associates, Inc.
917 Route 12
Westmoreland NH 03467

603.757.4011 voice
603.903.4702 mobile

From: Jaquith, Shayne [<mailto:Shayne.Jaquith@state.vt.us>]
Sent: Monday, April 16, 2012 10:09 AM
To: Eliason, Beth
Subject: RE: Review of LIHI Certification Candidate Projects

Beth,

In addition to the reviews I sent you on the 13th, you had requested a review of the Silver Lake project. I've conducted that review and my comments follow.

Silver Lake

The Silver Lake Hydroelectric Project was certified in 2008 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

If you have any further questions, don't hesitate to contact me.

Take care,
Shayne

Please note that my phone number has changed to 802-338-4853

Shayne Jaquith
Streamflow Protection Program
Department of Environmental Conservation
Water Quality Division
103 S. Main St, 10 North, 1st Floor
Waterbury, VT 05671-0408

802-338-4853

shayne.jaquith@state.vt.us

From: Jaquith, Shayne

Sent: Friday, April 13, 2012 1:17 PM

To: 'beliaso@cvps.com'

Subject: Review of LIHI Certification Candidate Projects

Hi Beth,

BT asked me to review the LIHI candidate projects that you had submitted to him. I have completed review of most but not all of the projects you submitted and wanted to provide you with my comments on those projects. I will continue my review of the remaining projects and expect to have comments to you by the end of next week. My comments are provided below.

Cavendish FERC Project No. 2489

The Cavendish Hydroelectric Project was certified in 1993 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Middlebury Lower FERC Project No. 2737

The Middlebury Lower Hydroelectric Project was certified in 1999 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Weybridge FERC Project No. 2731

The Weybridge Hydroelectric Project was certified in 1993 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Pierce Mills FERC Project No. 2396

The Pierce Mills Hydroelectric Project was certified in 1994 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Arnold Falls FERC Project No. 2399

The Arnold Falls Hydroelectric Project was certified in 1994 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Gage FERC Project No. 2397

The Gage Hydroelectric Project was certified in 1994 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Passumpsic FERC Project No. 2400

The Passumpsic Hydroelectric Project was certified in 1994 by the Department of Environmental Conservation (the Department). Conformance with the conditions of the certification would assure that the project does not violate Vermont Water Quality Standards. At this time the Department has no information to suggest that the project is not operating in full conformance with the conditions of its water quality certification.

Take care,
Shayne

Please note that my phone number has changed to 802-338-4853

Shayne Jaquith
Streamflow Protection Program
Department of Environmental Conservation
Water Quality Division
103 S. Main St, 10 North, 1st Floor
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802-338-4853
shayne.jaquith@state.vt.us

Please consider the environment before printing this e-mail.