



Connecticut River
Conservancy



AMERICAN
WHITewater



September 1, 2021

Honorable Kimberly D. Bose Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Room 1A
Washington, DC 20426

Re: Comments on Great River Hydro Offer of Settlement and Revisions to Exhibit D Documents dated August 2, 2022 regarding (Wilder) P-1892-030; (Bellows Falls) P-1855-050, and (Vernon) P-1904-078.

Dear Secretary Bose,

The Connecticut River Watershed Council, Inc. (CRWC), now doing business as the Connecticut River Conservancy (CRC), is a nonprofit citizen group established in 1952 to advocate for the protection, restoration, and sustainable use of the Connecticut River and its four-state watershed. We have been participating in the relicensing of the five hydropower facilities on the Connecticut River since the beginning of the process in late 2012.

American Whitewater (AW) is a national non-profit 501(c)(3) river conservation and recreation organization founded in 1954 whose mission is to protect and restore our nation's whitewater resources and to enhance opportunities to enjoy them safely. Our members are primarily conservation-oriented kayakers and canoeists, many of whom live and/or engage in recreational boating in Vermont, and New Hampshire. As a result, we have a strong and direct interest in the availability of whitewater flows on the Connecticut River below the Wilder and Bellows Falls dams.

Since 1876, the Appalachian Mountain Club (AMC) has promoted the protection, enjoyment, and understanding of the mountains, forests, waters, and trails of the Appalachian region. AMC is the largest conservation and recreation organization in the Northeast with more than 90,000 members, supporters, and advocates, many of whom live within two hours of the Connecticut River and would use the Sumner Falls and Bellows Falls sections of the Connecticut River for whitewater boating and the rest of the river and surrounding lands for quieter recreation.

CRC participated in negotiations with Great River Hydro (GRH) conducted during 2020 that resulted in the Memorandum of Understanding (MOU) filed in December of 2020. CRC, AMC, and AW did not participate in the negotiations that have resulted in the current Settlement Agreement for Fish Passage, which were filed on August 2, 2022.

CRC, AMC, and AW have reviewed the Great River Hydro Offer of Settlement and Revisions to Exhibit D Documents dated August 2, 2022, and is grateful for the positive progress in this effort. CRC, AMC, and AW collectively provide the following specific comments that consist of these main

points:

- Great River Hydro should be responsible for the removal of the Salmon Dam at the Bellows Falls project as mitigation for impacts to the fishery.
- We support the extended period for operations of fish ladders in the spring to accommodate in river migration of resident species.
- Timelines for additional studies and implementation are too long to sufficiently protect our federal trust species and subsequently are not in the public interest.
- Fish passage performance standards should be included for American eel and Sea lamprey.

GRH indicates in its transmittal letter that “The Agreement is a product of extensive discussions among the parties over more than a year and is the *second of two settlement agreements* in these relicensing proceedings.”¹ CRC does not recall the MOU from 2020 being filed as a settlement agreement, pursuant to 18 C.F.R. § 385.602(b)(2) (2021), instead it was included in the Amended Final License Application as a preferred alternative. Due to that, there was no notice issued from FERC that provided an opportunity for the public to comment on that MOU regarding changes in operations. CRC points this out only as a procedural nature to clarify if there should have been a formal public comment period regarding the December 2020 MOU. We note that neither the MOU nor this Offer of Settlement is a comprehensive settlement agreement in that it does not address all project impacts including but not limited to project effects on the recreational use and enjoyment of the Connecticut River, erosion concerns, and consideration of Traditional Cultural Properties.

SUMMARY OF OUR COMMENTS

In general, the settlement discussion as written is difficult to understand, which means that it may become unenforceable later. There are references in Appendix B to areas of the settlement that don’t seem to exist² and tasks that seem to be the same thing listed multiple times (for example: “3.4.2.1 OPERATE PERMANENT UPSTREAM EEL/SEA LAMPREY LADDER IMPROVEMENTS” and “3.4.2.2 OPERATE & MONITOR INTERIM UPSTREAM EEL/SEA LAMPREY LADDER IMPROVEMENTS” and “3.4.2.3 IF NO FURTHER STUDY: OPERATE PERMANENT EEL PASSAGE 7/16 -11/15”³ CRC is aware of other licensing processes that became contentious due to the lack of clear language in agreements. The settlement agreement should be edited for clarity.

1.14 Withdrawal Rights

GRH indicates that, “a Party may unilaterally withdraw from this Agreement if... (ii) NHDES or VDEC issues a Water Quality Certification that contains fish passage conditions that are materially additive to, or materially inconsistent with, the terms of this Agreement and the Water Quality Certification is not thereafter satisfactorily modified after administrative and judicial appeals are

¹ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Transmission Letter dated August 2, 2022. Page 2.

² See Appendix B. “3.4.3 Hydraulic and Engineering Assessment of Ladder shad passage same as 3.2.2.1”

³ See Appendix B. Page 1.

pursued by the Licensee.”⁴ Neither VT DEC, nor NH DES are signatories to this agreement. VT Fish and Wildlife and NH Department of Fish and Game are both sister agencies to the agencies that hold authority over the 401-certification process. We are unclear how VT DEC or NH DES can be held to this part of the agreement when neither have signed on to this agreement and they are both required to conduct a public process and consider public input when the 401 certification is drafted.

2.5 Support for Removal of Salmon Dam

We appreciate the licensee’s agreement to support removal of the Salmon Dam, but disagree with the language of this section, specifically that the “The Licensee... in no event shall be responsible for financing removal efforts.”⁵ The installation of this dam was to limit false attraction as part of providing effective fish passage under the last license. (See enclosure which documents the licensee’s construction process.) Similarly, removal of this dam would mitigate the hydro project’s impacts to the fishery, which only occur because of the presence of the project and the diversion of flow in the river. As the focus of fishery restoration efforts have changed from Atlantic Salmon to American eel and Sea lamprey at the Bellows Falls facility, it follows that mitigation be provided to support the restoration of those species.

Removal is reasonably an obligation of GRH, and they are best able to do the removal given their capacity. Additionally, we are in an unprecedented moment in terms of the amount of Federal funding that is being directed to hydro-electric facilities to support efficiencies and upgrades. The recently passed Infrastructure Investment and Jobs Act provides \$553,600,000 in incentive payments to cover up to 30% of the cost of upgrades for “adding or improving safe and effective fish passage, including new or upgraded turbine technology, fish ladders, fishways, and all other associated technology, equipment, or other fish passage technology to a qualified hydroelectric facility.”⁶ Congressional staff indicates that this is considered a “down payment” for ongoing additional investments in improving and upgrading hydro-power assets nationally.⁷

Currently, third party restoration funding for the removal of unused dams is primarily derived from public sources. It is unconscionable that public restoration money be required to remove this dam when public funding is also being passed through to hydro facilities for exactly these types of mitigation measures. This dam is in the project area, was installed there because of project impacts, and the removal of it is now a needed mitigation measure for protected fish species that have been impacted by the presence of the dam. There is no reason that Great River Hydro should not bear the cost of this mitigation effort.

3.1 General fish passage obligations of Licensee

CRC supports the extended period in spring that the fish ladders will be operated to support the

⁴ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Page 5.

⁵ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Page 8.

⁶ 42 USC § 15883. (b)(3)(A).

⁷ See: <https://kuster.house.gov/news/documentsingle.aspx?DocumentID=4522>

spawning needs of resident early spring spawners such as walleye and white suckers. This example is an important improvement from Great River Hydro and acknowledges that mitigation for impacts from hydro facilities should not be limited only to migratory species.

3.4 Fish Passage and Protection Measures at the Vernon Project

The timeline for implementation is too long. The relicensing process has been going on for 10 years and the licensee has understood capital improvements would be required for improvements to fish passage. A schedule that allows a full sixteen years after license issuance to upgrade fish passage means that safe and effective passage has been delayed for 26 years, plus the time between now and when the new license is issued. We note that the criteria for evaluating fish passage is that it should be safe, effective, and *timely* [emphasis added]. This proposal is not timely nor defensible. Delays of this magnitude should not be acceptable.

3.4.1 Downstream Passage and Protection (Vernon)

Regarding Vernon downstream passage, the licensee indicates that they, “shall undertake a hydraulic study or a suitable alternative, designed to inform downstream passage/design options... no later than January 1 of License Year 2; the study initiated, completed, and reported on no later than December 31 of License Year 3.”⁸

Assuring safe, effective, and timely fish passage is a routine aspect of relicensing. After-the-fact studies and improvements are conditions subsequent that effectively remove fish passage from the public relicensing process. This hydraulic study should have been done as part of the overall licensing studies that took place between 2013 and 2018. Delaying it another four or five years (when we consider the length of the 401 process and timeline for issuance of license) is unreasonable. We request that the hydraulic study begin immediately so that upgrades to the ladder can begin in the first year when the license is issued.

The settlement states the following timeline for implementation, “The Licensee shall initiate design consultation with the Agencies no later than July 1 of License Year 3, and final design plans (sufficient for construction bid purposes) shall be completed no later than December 31 of License Year 4. Construction shall be initiated during License Year 5 and completed no later than December 31 of License Year 6.”⁹ This implies it would take 18 months to develop a design and 2 years to complete construction for downstream passage at Vernon. While we understand that there may be some difficulty in finding an effective way to move American shad downstream and keep them out of the turbines, this length of time is excessive, and we reiterate that hydraulic studies should be done now. Taking 6 years (after license issuance! – so really 8 or more years) to establish effective downstream passage at Vernon is too long and is not in the public interest.

3.4.2 Upstream American Eel and Sea Lamprey Passage

3.4.2.1 Within Ladder Measures for Eel and Lamprey Passage for the period April 7 through July 15

⁸ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Page 10.

⁹ Ibid.

The licensee indicates that they, “shall undertake a hydraulic study within the existing Vernon fish ladder... (this is the same hydraulic study and engineering assessment discussed under section 3.2.3).”¹⁰ There is no section 3.2.3 so it is not clear what the applicant is referring to.

It is important to prioritize downstream passage at Vernon given the mortality to American shad and American eel at that project. Upstream passage improvements could logically be scheduled slightly later, but according to the settlement agreement, it will take 4 years to complete the hydraulic study and 5 years to complete a PIT tag study to understand upstream passage performance of American eel and Sea lamprey within the Vernon fish ladder. Most studies done during relicensing were completed within 1 or 2 years. Four or five years seems an excessive period to establish baseline understanding, which should have been done during the past decade as a part of relicensing studies. Assuring safe and effective fish passage is a routine aspect of relicensing. After-the-fact studies and improvements are conditions subsequent that effectively remove fish passage from the public relicensing process.

3.4.2.2 Within Ladder Interim Measures for Eels for the period July 16 through November 15

Study 18 American Eel Upstream Passage Assessment, completed between 2015 and 2018, already established a temporary eel ramp for passing American eel upstream.¹¹ Yet, the settlement document indicates that, “eel passage facilities shall be completed by July 15 of License Year 3 and shall be fully operational no later than July 16 of License Year 3.” Given that the licensee and the agencies were able to establish a temporary upstream passage process for Study 18, why would they require 3 years to design a new temporary passage? Study 18 Supplement #2 states, “The eel ramp design was based on the Haro (2013) generic temporary eel ramp trap design modified for the site.”¹² If a generic eel ramp has already been installed for the studies, we assume that it could be re-installed immediately and then enhanced or modified as passage numbers are assessed over the coming immediate years, instead of waiting five years to begin this effort again.

3.4.3 Upstream Anadromous Fish Passage

We are pleased to see that the settlement agreement includes “improvements to the public viewing window and counting room.”¹³ It is unfortunate that there is not more detail as to what those improvements will entail. Currently the public viewing window is outside in the elements with little to no interpretation to help the public understand fish passage or species. It is a less than welcoming attraction and would benefit with a major reconstruction to provide a comprehensive visitors center with interpretation, which would bring added benefit to the Town of Vernon. Exhibit D indicates that the licensee anticipates this effort to cost \$180,000. We request that additional detailed information be provided to explain exactly what the upgrades will

¹⁰ Ibid. Page 11.

¹¹ See ILP Study 18 American Eel Upstream Passage Assessment Study Report dated March 1, 2016; Supplement to Study Report dated November 30, 2016; and Supplement #2 to Study Report dated January 26, 2018.

¹² ILP Study 18 American Eel Upstream Passage Assessment Study Report. Supplement #2 to Study Report dated January 26, 2018. Page 3.

¹³ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Page 13.

consist of and provide an opportunity for the public and the Town of Vernon to comment.

3.5 Fish Passage and Protection Measures at the Bellows Falls Project

3.5.1 Downstream Passage and Protection (Bellows Falls)

The applicant states, “In License Years 3 and 4, the Licensee shall undertake a hydraulic study... to inform downstream passage... for American eel.”¹⁴ Immediately after that, they state that they will consult on study design in year 6 and report on the study in year 7¹⁵. The Appendix B chart indicates that the hydraulic studies for eel and lamprey would occur in years 5 and 6.¹⁶ It is difficult to follow the sequence of events planned for fish passage improvement, and subsequently, as indicated above, it will be difficult to enforce this settlement.

All of the various potential scenarios indicated above for hydraulic study at Bellows Falls are too long. We restate our comments regarding Vernon, this hydraulic study should more properly have been done as part of the overall licensing studies that took place between 2013 and 2018. Delaying it another five to nine years (when we consider the length of the 401 process and timeline for issuance of license) with the potential for effective passage to be installed in year 10-12 is unreasonable and not in the public’s interest. We request that the hydraulic study begin immediately so that upgrades to the ladder can begin in the first year when the license is issued. Assuring safe and effective fish passage is a routine aspect of relicensing. After-the-fact studies and improvements are conditions subsequent that effectively remove fish passage from the public relicensing process.

3.5.2 Upstream American Eel and Sea Lamprey Passage

3.5.2.1 Within Ladder Measures for Eel and Lamprey Passage for the period April 1 through July 15

The settlement agreement proposes a two-stage process for assessing upstream passage efficiency at Bellows Falls for American eel and Sea lamprey. We reiterate our concern that the timeline of all studies and implementation processes are too long. For Bellows Falls, the settlement contemplates a PIT tag study for upstream passage in years 3 and 4 with a hydraulic study of the fish ladder in years 5 and 6. There is no reason that the PIT tag study and hydraulic study cannot occur at the same time. It would be more efficient and economical to conduct hydraulic studies at the same time for all three projects, thereby identifying issues in the fish ladders at the outset of the process. We already have evidence of American eel and Sea lamprey passing through the ladders at these projects, the hydraulic studies can and should be done immediately.

3.5.2.4 Permanent Upstream Eel Passage Measures in the Bellows Falls Bypass Reach

The licensee indicates a timeline for assessment of where American eel congregate once the Salmon dam is removed. If the licensee were to properly remove this dam, that action could be

¹⁴ Ibid. Page 14.

¹⁵ Ibid.

¹⁶ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Appendix B: Project Specific Fish Passage Implementation Chart. Page 1

scheduled by them within a reasonable timeline. If the licensee is relying on third parties with public grant funds to remove the dam, the schedule of that depends on the pace of grant acquisition, engineering designs, and construction constraints. Given this, we suggest that GRH be required to remove the Salmon dam immediately upon the issuance of the license and that the language be altered to strike the reference to a year and simply state that, “The Licensee shall initiate consultation with the Agencies on an eel survey study plan no later than July 1 of the year the Salmon Dam is removed ~~or License Year 6, whichever is later~~. The first passage season after removal of the Salmon Dam ~~or License Year 7, whichever is later~~, the Licensee shall undertake the upstream eel survey...” to ensure that American eel that pass up the bypass reach are quickly protected and provided with an effective upstream passage pathway.

3.6 Fish Passage and Protection Measures at the Wilder Project

3.6.1 Downstream Passage and Protection

We restate our comments regarding downstream passage at Vernon and Bellows Falls, this hydraulic study should more properly have been done as part of the overall licensing studies that took place between 2013 and 2018. Delaying it, in this case, 16 years after license issuance is unreasonable time to wait and not in the public’s interest. Assuring safe and effective fish passage is a routine aspect of relicensing. After-the-fact studies and improvements are conditions subsequent that effectively remove fish passage from the public relicensing process.

3.6.2 Upstream American Eel and Sea Lamprey Passage

3.6.2.1 Within Ladder Measures for Eel and Lamprey Passage for the period April 7 through July 15

Additionally, the settlement seems to contemplate improvements to upstream passage at Wilder before completing effective downstream passage. The timeline for downstream passage assumes fully operational downstream passage in year 16¹⁷, while the upstream passage would be “fully operational no later than April 7 of License Year 14.”¹⁸ The improvements for downstream passage should occur before upstream passage improvements and simultaneously with downstream passage improvements at Bellows Falls and Vernon.

3.7. Fish Passage Facilities Operations and Maintenance Plan

The settlement indicates that the “[annual fishway Operation and Maintenance] O&M report shall be submitted to the Agencies by January 31 annually.”¹⁹ This annual report should be filed with FERC as well to provide transparency for the public.

3.8 Fish Passage Facilities Effectiveness Testing

We are very grateful that effectiveness testing has been included as a consideration for ongoing improvements and that upstream and downstream performance standards have been established for American shad at Vernon. We note that the agencies have a “goal of 95% through-project

¹⁷ Great River Hydro “Offer of Settlement and Revisions to Exhibit D Documents.” Settlement Agreement for Fish Passage. Page 18.

¹⁸ Ibid. Page 19.

¹⁹ Ibid. Page 20.

survival for American eels”²⁰ for downstream passage, but it is not clear whether this also is formally included as a performance standard as it is not explicitly stated. Additionally, there are no performance standards for upstream passage for Sea lamprey or American eel. We would prefer to see a more comprehensive chart that establishes performance standards for all three migratory species (American shad, American eel, and Sea lamprey) for upstream and downstream passage at all three facilities clearly outlined as part of this settlement.

In summary, we appreciate the many hours that both Great River Hydro staff and the agency’s staff contributed to coming to agreement on fish passage. There are positive aspects to this settlement, but improvements can also be made. Relicensing studies have shown injury and mortality impacts to American eels and American shad as they attempt to out migrate through the turbines. Safe, effective, and timely downstream passage for American eel and American shad should be the priority action in this fish passage agreement, with swift improvements to upstream passage occurring first at Vernon, followed by Bellows Falls and Wilder. All of the hydraulic studies to assess downstream passage should be done simultaneously to create efficiencies in the process. Great River Hydro states that the “Agreement is in the public interest.”²¹ It is in fact only in the public interest if fish passage is improved in a timely manner.

We appreciate the opportunity to comment. I can be reached at kurffer@ctriver.org or (802) 258-0413.

Sincerely,



Kathy Urffer
Connecticut River Conservancy



Bob Nasdor
American Whitewater



Mark Zakutansky
Appalachian Mountain Club

ATTACHMENTS:

²⁰ Ibid. Page 21.

²¹ Ibid. Page 2.

- Bellows Falls Salmon Dam construction reports

CC:

John Ragonese, Great River Hydro; jragonese@greatriverhydro.com

Ron Shems; ron@tarrantgillies.com

Jeff Crocker, VT DEC; jeff.crocker@vermont.gov

Eric Davis, VT DEC; eric.davis@vermont.gov

Betsy Simard, VT DEC; betsy.simard@vermont.gov

Lael Will, VT Fish and Wildlife; lael.will@vermont.gov

James Tilley, NH DES; james.w.tilley@des.nh.gov

Matt Carpenter, NH Fish and Game; mathew.a.carpenter@wildlife.nh.gov

Melissa Grader, US Fish and Wildlife Service; melissa_grader@fws.gov

Ken Sprankle, US Fish and Wildlife Service; ken_sprankle@fws.gov

Rebecca Ellis, (Rep. Peter Welch); rebecca.ellis@mail.house.gov

Tom Berry, (Sen. Patrick Leahy); Tom_Berry@leahy.senate.gov

Haley Pero, (Sen. Bernard Sanders); Haley_Pero@sanders.senate.gov

Charlotte Harris, (Rep. Annie Kuster); charlotte.harris@mail.house.gov

Sarah Holmes, (Sen. Jeanne Shaheen); Sarah_Holmes@shaheen.senate.gov

Chris Scott, (Sen. Jeanne Shaheen); Chris_Scott@shaheen.senate.gov

Peter Clark, (Sen. Jeanne Shaheen); peter_clark@shaheen.senate.gov

Kerry Holmes, (Sen. Maggie Hassan); Kerry_Holmes@hassan.senate.gov

May 18, 1982

Subject: Bellows Falls Fishway Construction Plans

From: Ben Rizzo, Engineering Advisor, Conn. River Technical Committee

Upon review of the final construction plans for the Bellows Falls Fishway forwarded by NEPSco on April 30, 1982, the following items were noted:

General

1. Each spring the lower portion of the fishway (in tailrace area) will be flooded by high river flows (70-90,000 cfs). To eliminate operation and maintenance problems caused by floating debris settling in the lower fishway pools, floor grating should be installed over the top of the fishway up to elevation 248-250'.
2. An access walkway and railing should be provided along the top of the fishway wall for maintenance and inspection purposes. (Similar to Turners Falls & Brunswick Projects).
3. The fishway is scheduled to operate at tailwater levels up to elevation 234, which corresponds to a river flow of approximately 28,000 cfs. As presently designed, the lower fishway pools will be overtopped at these flows since the top of the fishway is at elevation 235' in the tailrace area. The minimum elevation for the top of the fishway in the tailrace area should be approximately 236.5'.
4. Our experience with the vertical slot fishway at the Rainbow Dam on the Farmington River in Connecticut indicates that American Shad suffer excessive injury and scale loss, primarily by fish coming into contact with the baffles and slots during fall back activity. To reduce this problem at the Bellows Falls Fishway, the exposed corners of the concrete baffles have curved surfaces. However, we anticipate that in a few years these concrete surfaces will be roughened by scouring of the fine material, exposing the coarser aggregate material for contact by shad. We strongly recommend installing permanent smooth nosing at the three exposed surfaces of each vertical slot baffle, either PVC or aluminum piping cut to the appropriate size could be used for this purpose.

Sheet #204-1 - The elevation of a typical slotted weir shows a 6" high concrete sill at the base of the slot. This sill should be deleted.

Sheet #213-1 - Section 1-1 The sluice gate opening at the upper end of the fishway provides a clearance of only 4-1/2 inches above normal forebay level. We recommend a clearance of at least 18 inches at this location.

Sheet #226-1 - Section 9 Provide a chamfer on inside walls at windows of Public Viewing Gallery.

Sheet #232-0 - Fish Counting Room, Section 5-5 The visibility at the observation window will be poor since the fishway walls in this area are approximately 13' high. To improve natural lighting we suggest lowering the free standing wall opposite the window to a height of 8 feet. The pipe sleeve over the window should be raised approximately two feet.

The downstream migrant pipe in the counting room may require insulation to eliminate condensation.

Sheet #264-0 & 265-1 - Fish Barrier Dam

The proposed fish barrier dam (crest elevation 238.5) is very similar in elevation to the presently existing waterfall. The new barrier dam as proposed will probably be negotiable by salmon when river flows exceed 17,000 cfs (Tailwater = 231 feet).

The crest elevation of the fish barrier dam shown on the Exhibit "S" drawings dated June 1979 is elevation 250, which is approximately 11.5 feet higher than the presently proposed barrier dam. We recommend moving the barrier dam approximately 40 feet upstream to the crest of the existing waterfall and constructing a barrier dam approximately 10 feet high with a crest elevation of at least 248 feet ±.

Sheet #272-0 - Fish Trap Area, Structural Details

The proposed design indicates floor grating will be located above the counting window. This will restrict visibility at the counting window and we recommend removing the grating from this area.

Sheet #297-1 & 298-1 - Downstream Migrant Pipe & Sluice Gate, Detail Z

The sluice gate stem will restrict the use of the downstream migrant conduit by adult fish. The 3' wide opening should not be obstructed. Twin gate stems or cable supports located at each end of the sluice gate would be satisfactory. Immersed pipe electrodes may also be required to increase adult passage efficiency similar to the Holyoke Project. -- A timber sluice gate may be better suited for this purpose.

The bends in the 24-inch diameter downstream migrant pipe should have a radius of 10 feet.

B. Rizzo

memorandum

U.S. FISH AND WILDLIFE SERVICE

ONE GATEWAY CENTER
SUITE 700

NEWTON CORNER, MASSACHUSETTS 02158

TO: Files (Conn. River Tech. Committee)

FROM: Ben Rizzo, Hydraulic Engineer - *BR*
Engineering Advisor

DATE: July 5, 1982

SUBJECT: June 17/82 Meeting at Bellows Falls Fishway Construction Site
Bellows Falls Dam - Connecticut River, Vermont

On June 17/82 I met with the following personnel at the Bellows Falls Fishway, presently under construction at the Bellows Falls Dam on the Connecticut River in Vermont:

Conn. River Tech Committee:

Steve Rideout, (Coordinator) FWS Hadley, MA
Angelo Incerpi, (Chairman) VT. F & G
Ken Cox., (Biologist) VT. F & G

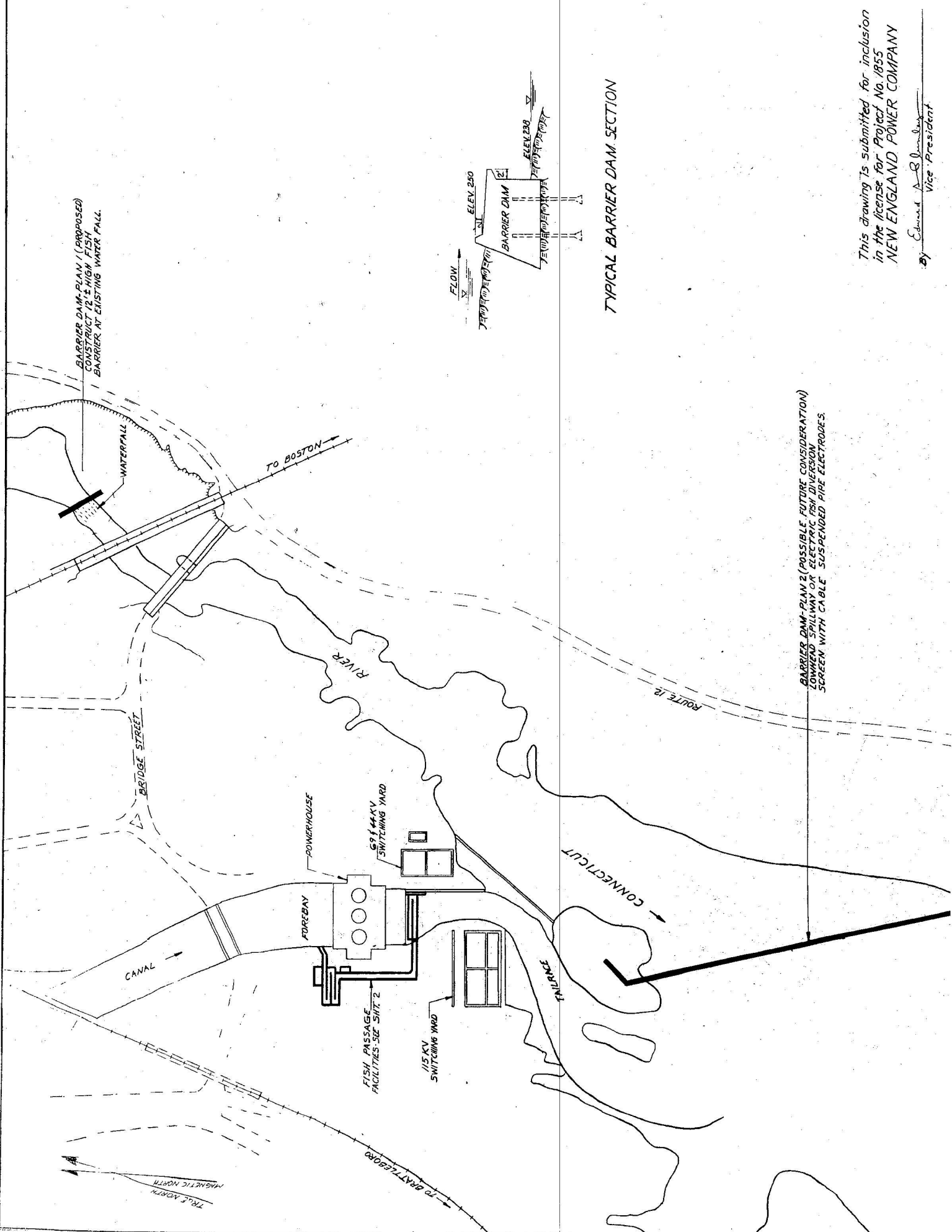
NEPSCo (New England Power Service Company)

Armond Millette, Senior Engineer

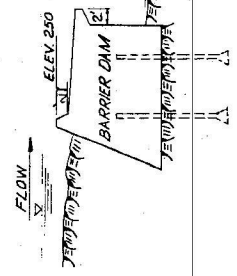
The purpose of the meeting was to inspect project construction which commenced on May 10/82 and is proceeding on schedule and to discuss fishway modifications recommended by the Technical Committee (copy attached).

NEPSCo indicated they concur with the suggested modifications and will forward a written response to the technical Committee regarding the incorporation of these modifications in the project.

Attachment



BARRIER DAM - PLAN 1 (PROPOSED)
 CONSTRUCT 12'-6" HIGH FISH
 BARRIER AT EXISTING WATER FALL.



TYPICAL BARRIER DAM SECTION

BARRIER DAM - PLAN 2 (POSSIBLE FUTURE CONSIDERATION)
 LOWHEAD SPILLWAY OR ELECTRIC FISH DIVERSION
 SCREEN WITH CABLE SUSPENDED PIPE ELECTRODES.

This drawing is submitted for inclusion
 in the license for Project No. 1855
 NEW ENGLAND POWER COMPANY

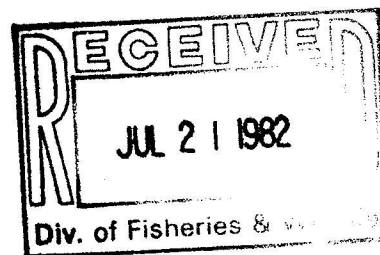
By Edward A. [Signature]
 Vice President

OATIS

New England Power Service

New England Power Service Company
25 Research Drive
Westborough, MA 01581
Tel. (617) 366-9011

8 July 1982



FEDERAL ENERGY REGULATORY COMMISSION
New York Regional Office
26 Federal Plaza
New York, New York 10278

Attention: Mr. James D. Hebson

New England Power Company
BELLOWS FALLS PROJECT - FERC LP NO. 1855 - NH/VT
Fishway Construction Progress Report

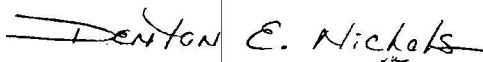
Dear Mr. Hebson:

Enclosed is the Second Construction Progress Report for the fishway installation at the Bellows Falls Project for June 1982.

As mentioned in our 8 June 1982 cover letter for the First Construction Progress Report, this report and all subsequent construction progress reports will be furnished to the signatories of the Settlement Agreement.

Very truly yours,

NEW ENGLAND POWER SERVICE COMPANY



Denton E. Nichols
Project Engineer

DEN/kaa
Enclosure
Copies/Settlement Agreement Signatories
FLS/Mrs. Rosamond Allen
P. S. Foote/FERC/Washington
D. Z. Breck
W. G. Hayes

NEW ENGLAND POWER CO. - CONSTRUCTION SCHEDULE - BELLOWS FALLS FISHWAY

(1982)	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
• MOBILIZE	██████████						
• CLEAR & GRUB	██████████						
• AREA 1 - EXCAV. FORM & POUR		██████████					
• AREA 2 "		██████████					
• AREA 3 "		██████████	██████████				
• AREA 4 "		██████████	██████████	██████████			
• AREA 5 "		██████████	██████████	██████████			
• AREA 6 "		██████████	██████████	██████████	██████████		
• AREA 7-8-9 (TAILRACE) *		██████████	██████████	██████████	██████████	██████████	
• VISITORS VIEWING AREA		██████████					
• BARRIER DAM		██████████					
• DEMOBILIZE **							██████████

* NOTE: THE TAILRACE WILL BE Dewatered DURING THE PERIOD 12 JULY 82 - 10 SEPT 82

FOR CONSTRUCTION OF THE "UNDERWATER COMPONENTS" OF THE STRUCTURE.

** SITE RESTORATION & LANDSCAPING IS SCHEDULED FOR SPRING 1983.

SEP 16 1982

New England Power Service

New England Power Service Company
25 Research Drive
Westborough, MA 01581
Tel. (617) 366-9011

14 September 1982

FEDERAL ENERGY REGULATORY COMMISSION
New York Regional Office
26 Federal Plaza
New York, New York 10278

Attention: Mr. James D. Hebson

New England Power Company
BELLOWS FALLS PROJECT - FERC LP NO. 1855 - NH/VT
Fishway Construction Progress Report

Dear Mr. Hebson:

Enclosed is the Fourth Construction Progress Report for the fishway installation at the Bellows Falls Project for August 1982.

Very truly yours,

NEW ENGLAND POWER SERVICE COMPANY

Denton E. Nichols

Denton E. Nichols
Project Engineer

DEN/kaa

Enclosure

Copies/Settlement Agreement Signatories

FLS/Mrs. Rosamond Allen
P. S. Foote/FERC/Washington
D. Z. Breck
W. G. Hayes
L. C. Underwood

FISHWAY CONSTRUCTION PROGRESS

REPORT NO. 4

GENERAL PROGRESS

This report covers the design and construction progress for the month of August 1982.

Engineering & Design

Revisions were made to the barrier dam drawings due to location change, optimizing better foundation conditions with minimal bedrock excavation. The Contractor's submittal for a steel bulkhead to seal off the intake structure through the canal wall was approved for fabrication. The Visitor's Center architectural and structural drawings were completed, including the building specifications.

Basically all reinforcing steel drawings have been approved by the Design Department for the remainder of the job. Other submittals for construction materials and embedments are being reviewed and approved as received.

Miscellaneous

Arrangements were made with the Contractor to pump out the three draft tubes, allowing access and inspection by the New England Power Service Company engineering personnel. The draft tube concrete was found to be in excellent condition, except for several localized eroded areas in the arch at the draft tube/elbow construction joint. These areas in Units 2 and 3 will be repaired by the Contractor prior to cofferdam removal.

CONSTRUCTION PROGRESS

The Contractor concentrated his work effort in the tailrace area (Areas 7, 8, & 9) and Areas 4, 5 & 6 during this period. The tailrace work was conducted on a two - 12 hour shift basis, seven days per week. The following was accomplished: completed tailrace area dewatering and side wall bedrock excavation; placed reinforcing steel and poured concrete for Nos. 1 and 2 draft tube extensions, placed steel and poured No. 3 draft tube side walls, placed steel and formed walls over No. 1 and 2 draft tubes; continued overburden and bedrock excavation in Areas 2, 3, 5 & 6 as required for the structure, manholes, and sewer lines; installed backfill as needed for slabs and around piers in Areas 2 & 5; yard drainage piping was installed in Area 6 along with the fish sluice piping; in Area 7 placed steel, formed, and poured the pier and walls connecting to the tailrace's west side; embedments have been installed in the walls for the bridge nosings.

The Contractor is planning to install the canal wall steel bulkhead prior to completion of the tailrace work and station start-up.

New England Power Service

New England Power Service Company
25 Research Drive
Westborough, MA 01581
Tel. (617) 366-9011

8 October 1982

FEDERAL ENERGY REGULATORY COMMISSION
New York Regional Office
26 Federal Plaza
New York, New York 10278

Attention: Mr. James D. Hebson

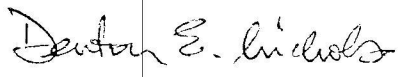
New England Power Company
BELLOWS FALLS PROJECT - FERC LP NO. 1855 - NH/VT
Fishway Construction Progress Report

Dear Mr. Hebson:

Enclosed is the Fifth Construction Progress Report for the fishway installation at the Bellows Falls Project for September 1982.

Very truly yours,

NEW ENGLAND POWER SERVICE COMPANY



Denton E. Nichols
Project Engineer

DEN/kaa

Enclosure

Copies/Settlement Agreement Signatories
1 L3/MRS. ROSAMOND ALLEN
P. S. Foote/FERC/Washington
D. Z. Breck
W. G. Hayes
L. C. Underwood

FISHWAY CONSTRUCTION PROGRESS

REPORT NO. 5

placed around piers and under slabs; and reinforcing steel and concrete were placed in slabs and walls in 20% of this area.

Area 3

Rock excavation is 95% complete for the fishway and counting house.

Area 4

The 10" ductile iron sewer line and 24" fish pipe were completed through this area. Reinforcing steel and concrete were placed for the bridge curbs and weir walls. Backfill was partially completed against fishway walls and the structural steel bridge beams were placed.

Area 5

The sewer manhole was completed. Reinforcing steel and concrete was placed in walls which were then partially backfilled.

Area 6

Reinforcing steel and concrete were placed in bridge curbs and structural steel bridge beams were set. Walls were partially backfilled.

Barrier Dam

The access road down into the gorge was completed in anticipation of barrier dam construction.

Status of Construction

The fishway slabs and channel walls are being completed over the draft tube extensions. Work effort is now concentrated in Area 2, Areas 7-9, and (tailrace) at the barrier dam.

The Contractor anticipates completing the concrete structure in 1982 with the Visitor's Center and clean-up scheduled for spring 1983.

It is estimated about 50% of the work has been completed to date.

Construction Difficulties

No major construction problems arose during this period.

Contract Status

None

New England Power Service

NOV 8 1982
New England Power Service Company
25 Research Drive
Westborough, MA 01581
Tel. (617) 366-9011

3 November 1982

FEDERAL ENERGY REGULATORY COMMISSION
New York Regional Office
26 Federal Plaza
New York, New York 10278

Attention: Mr. James D. Hebson

New England Power Company
BELLOWS FALLS PROJECT - FERC LP NO. 1855 - NH/VT
Fishway Construction Progress Report

Dear Mr. Hebson:

Enclosed is the Sixth Construction Progress Report for the fishway installation at the Bellows Falls Project for October 1982.

Very truly yours,

NEW ENGLAND POWER SERVICE COMPANY

Denton E. Nichols

Denton E. Nichols
Project Engineer

DEN/kaa

Enclosure

Copies/Settlement Agreement Signatories
FLS/Mrs. Rosamond Allen
P. S. Foote/FERC/Washington
D. Z. Breck
W. G. Hayes
H. W. Sullivan Jr.
L. C. Underwood

FISHWAY CONSTRUCTION PROGRESS

REPORT NO. 6

GENERAL PROGRESS

This report covers the design and construction progress for the month of October 1982.

Engineering & Design

The barrier dam alignment was modified at the request of USF&WS to incorporate a 45° bend at the 1/3 point and to provide a better fit to the existing rock contours. A concrete beam was field designed to support the fishway spanning the mill water lines at the Area 1/Area 2 expansion joint. Concrete liners on bedrock at interior attraction water diffuser walls were eliminated to minimize rock excavation and concrete.

Basically all miscellaneous metal, reinforcing and structural steel drawings have been approved by the Design Department for the remainder of the job. Other submittals for construction materials are being reviewed and approved as received.

CONSTRUCTION PROGRESS

The Contractor continued to concentrate on the tailrace work (Area 7, 8 & 9). Concrete slabs and walls above the draft tube extensions were completed. Work is continuing on slabs and walls for the attraction water diffuser and sluiceway extension in Area 9. Work has also concentrated on fishway slabs and walls in Area 2 working towards the intake area. Unit 1 was removed for overhaul in July and will be returned to service in November.

Other work accomplished during October 1982, by areas is as follows:

Area 2

Rock excavation is 100% complete for the fishway and Visitor's Building. Backfill was placed around piers and under slabs; and reinforcing steel and concrete were placed in slabs and walls in 50% of this area.

Area 3

Rock excavation was completed for the fishway and counting house. Work is continuing on fishway and counting house slabs and walls.

Area 6

Reinforcing steel and concrete were placed for the bridge trench drain.

MEMORANDUM

Sent to Tech Comm
12-16-83 DEC 12 1983

TO D. E. Nichols Westborough DATE 8 December 1983

FROM A. J. Millette Westborough FILE _____

SUBJECT BELLOWS FALLS FISHWAY -- START-UP TESTING

Bellows Falls fishway was successfully operated on Tuesday 29 November 1983, and is capable of being placed in-service at this time. The operation was witnessed by Steve Rideout and Dave Westerling, USF&WS and Ken Cox, Vermont Fish & Game Department.

The fishway behaved as predicted within the range of design flows and velocities. Equilibrium within the fishway was reached within 30 minutes of opening the headgate and 2 weir bypass gates to accommodate low water level in the forebay (289.1 NGVD). A stable flow pattern of approximately 30 CFS was observed with optimum pool depths of 6' and elevation difference from pool to pool of 12" throughout (see attached photos).

The Visitor's viewing windows were tight and dry with only a teaspoonful of water accumulating at the edge of the stainless steel frame on one window sill after four hours of operation. The fish counting window was tight and dry with about a tablespoonful of water accumulating at the neoprene gasket near the center of the window sill. Two cracks in the concrete below the counting window exhibited slight weeping and will be raked and filled with hydraulic cement. Any weeping through fishway walls was impossible to detect due to rain wetting the concrete. Cold weather contraction of the structure tends to maximize leakage; therefore I expect no problems under normal spring and summer operation.

The attraction water system behaved as predicted and created a distinct plume along the east tailrace wall from the entrance downstream to the tailrace staff gage. Attraction water flow was at the high range of fishway design into a tailrace water level of 232.6', 3.6' above normal due to the high river flow and spilling at the dam. Under this extreme condition, turbulence and backrolling was observed within the fishway entrance above the floor diffuser. This could be due to accumulated sediment in the diffuser not completely washed during the 40 minute operation. Minor spilling of the sluiceway at extreme flow was eliminated by cutting the total attraction water flow from 232 to 193 CFS, and opening the diffuser gates 100%.

It is recommended the attraction water flow be tested further at normal tailwater level and gate openings be re-programmed if necessary. Minor modification may be necessary at the sides of the sluiceway floor inlet to eliminate spilling; although the sluiceway spill does not adversely affect the fishway entrance flow pattern.

We are preparing a punch-list of outstanding items to complete this project. Most of the punch-list work will be completed over the next two months with some weather sensitive items held until spring. The project should remain open pending completion of punch-list work.

D. E. Nichols
Page 2
8 December 1983

We have met the "Settlement Agreement" condition to have the fishway ready for operation by 1 May 1984.

Congratulations and thanks to NEPSCO Maintenance & Construction crews for a high quality job and a smooth start-up. Also a special thanks to Chet Stone, NEPSCO Foreman, and Joe Juscen, Bellows Falls Chief Operator, for their special efforts to make the start-up test a successful one.

a. g. Millette

AJM/kaa
Attachments

Copies/M. R. Anderson
H. H. Bloomfield
D. Z. Breck
R. H. Briggs
R. E. Charpentier
P. D. Dowling
W. K. Irwin
J. Juscen Jr.
G. P. Sasdi
R. M. Shepard
C. R. Stone
H. W. Sullivan Jr.
L. C. Underwood
J. E. Whitcomb

K. Cox /Vermont Fish & Game Department
J. Larsen /Alden Research Laboratories
S. G. Rideout/U.S. Fish & Wildlife Service
D. Westerling/U.S. Fish & Wildlife Service