

**State of Vermont
WATER RESOURCES BOARD**

**RE: Clyde River Hydroelectric Project
Docket Nos. WQ-02-08(A) and (B) (Consolidated)**

**AMENDED WATER QUALITY CERTIFICATE:
FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER**

This decision pertains to an application for a Section 401 Water Quality Certificate (Certificate) from the State of Vermont filed by Citizens Communications Company (Citizens or Applicant) in conjunction with its request for relicensure by the Federal Energy Regulatory Commission (FERC) of the Clyde River Hydroelectric Project (Project). The Applicant filed its application with the Department of Environmental Conservation (Department), Vermont Agency of Natural Resources (ANR) on January 24, 2002, and was granted a Certificate by the Secretary of ANR on August 1, 2002, pursuant to 10 V.S.A. § 1004 (Secretary's Action). This Certificate was timely appealed to the Water Resources Board (Board), which conducted a *de novo* contested case hearing with respect to the issues raised on appeal.

In order to obtain a Certificate, the Applicant was required to show that its Project complies with the Vermont Water Quality Standards (VWQS) and other state law provisions applicable under § 401 of the Federal Water Pollution Control Act, 33 U.S.C. § 1251 *et seq.*, commonly known as the Clean Water Act (CWA). As explained more fully below, the Board concludes that there is sufficient credible evidence in the record before the Board upon which to find that the Project, as proposed by the Applicant and conditioned by the Secretary of ANR, is largely in compliance with the VWQS and other applicable law. However, the Board concludes that certain Findings and Conditions imposed by the Secretary of ANR and identified by the Appellants, must be modified to ensure that compliance with the VWQS and other applicable state law will be achieved during the period of the license with respect to the operation of the Newport 1, 2, 3 facilities and the Seymour Lake Dam. Accordingly, the Board grants the Applicant's request for a Certificate, but modifies the Secretary's Action in part, by amending certain Conditions to reflect the Board's own Findings of Fact and Conclusions of Law (Amended Certificate).

I. PROCEDURAL HISTORY AND JURISDICTIONAL STATEMENT

The parties to this appeal are the Applicant, ANR, and two sets of Appellants, the Seymour Lake Association (SLA) and the Vermont Natural Resources Council (VNRC) joined by the Northeast Kingdom Chapter of Trout Unlimited (NEKTU).

The Project is an existing hydroelectric facility on the Clyde River, a water body within the boundaries of the State of Vermont, subject to the Secretary of ANR's jurisdiction and protection under the CWA and 10 V.S.A. § 1004. The Secretary of ANR issued a Certificate to the Applicant on August 1, 2002. On August 15, 2003, timely appeals were filed by SLA and

VNRC/NEKTU pursuant to 10 V.S.A. § 1024(a), thereby vesting jurisdiction in the Board. SLA's appeal was docketed as WQ-02-08(A) and VNRC/NEKTU's appeal as WQ-02-08(B).

A prehearing conference was held on October 15, 2002. A Prehearing Conference Report and Order was issued on October 25, 2002 (Prehearing Order), consolidating SLA's and VNRC/NEKTU's appeals for hearing, dismissing a third appeal¹, and setting forth the Chair's preliminary rulings regarding the scope of the proceeding and a schedule of filing deadlines leading to a hearing on the merits. The Prehearing Order is hereby incorporated by reference.

On October 29, 2002, the Board conducted a site visit of the Project, focusing on the Seymour Lake Dam and Newport 1, 2, 3 facilities. A Site Visit Report was approved by the Board on January 7, 2003, subject to the right of the parties to object to its inclusion in the record. There were no objections to the Site Visit Report, in whole or in part, it was incorporated into the record.

Throughout the months of January and February, the parties prefiled direct and rebuttal testimony and exhibits in this matter. They also filed specific evidentiary objections. In particular, on February 25, 2003, VNRC/NEKTU filed a Motion to Limit the Scope of the Proceeding (Motion). That Motion was heard by the Chair, along with other evidentiary objections, at a second prehearing conference on March 11, 2003. The Chair granted VNRC/NEKTU's Motion in a Second Prehearing Conference Report and Order issued on March 26, 2003 (Second Prehearing Order). The Second Prehearing Order is hereby incorporated by reference.

The Board conducted an evidentiary hearing on April 1, 2 and 8, 2003. A transcript was prepared by Capitol Court Reporters, Inc., and is a part of the Board's record in these consolidated appeals. As a preliminary matter on April 1, 2003, the Board heard oral argument on and reviewed certain objections to the Chair's rulings contained in the Second Prehearing Order, including the Chair's ruling of VNRC/NEKTU's Motion. The Board unanimously affirmed the Chair's ruling granting VNRC/NEKTU's Motion.

On April 8, 2003, ANR filed on behalf of itself, the Applicant, and SLA, a Stipulated

¹ A third Appellant filed a timely appeal, Public Employees for Environmental Responsibility (PEER). It's appeal was docketed as WQ-02-08(C). PEER, however, was subsequently determined to lack standing and the Board's Chair dismissed its appeal. See Re: Clyde River Hydroelectric Project, Docket No. WQ-02-08(A), (B) and (C), Prehearing Conference Report and Order at 4-9 and 18, Order, Item 1 (Oct. 25, 2002). PEER did not appeal the Chair's ruling as provided in the Prehearing Order and Rule 23 of the Board's Rules of Procedure (Procedural Rule). Therefore, the Chair's ruling became final.

Agreement setting forth Proposed Findings of Fact and Certificate Conditions settling the disputed issues in SLA's appeal, Docket No. WQ-02-08(A). At the hearing on April 8, 2003, VNRC indicated that it did not object to the Stipulated Agreement. Accordingly, the Board has incorporated the Proposed Findings of Fact and Conditions relevant to the reconstruction and operations of the Seymour Lake Dam into the Board's Amended Certificate.

The parties filed proposed Findings of Fact, Conclusions of Law, and Orders on March 21, 2003, and supplemented these on May 7, 2003, following the hearing.

The Board deliberated in this matter on April 15, May 12, June 3, June 24 and July 10, 2003. On July 10, 2003, the Board declared the record complete and adjourned the hearing. This matter is now ready for decision.

II. ISSUES

The issues in these consolidated appeals may be summarized as follows:

1. Whether the Certificate issued by the Secretary of ANR fails to provide adequate flow in the bypass reach of the Newport 1, 2, 3 facility to achieve compliance with the VWQS?
2. Whether the Certificate issued by the Secretary of ANR fails to provide adequate upstream and downstream fish passage at the Newport 1, 2, 3 facility to achieve compliance with the VWQS?
3. Whether the proposed changes to reconstruction and operation of the Seymour Dam comply with the VWQS?

The specific Findings and Conditions in the Certificate to which VNRC/NEKTU initially filed objections were: Findings 153, 177, 183, 188, 270, 281, 283-291 and Conditions B (as it relates to Newport 1, 2, and 3), D, L, and M, as well as any and all tables, charts, or other information contained or referred to therein. See Prehearing Order at 12-13. These Findings and Conditions were addressed to the operations of the Newport 1, 2, 3 facility only. Most of the Findings of Fact and Conditions contained in this Amended Certificate address Issues 1 and 2, the key matters in dispute in VNRC/NEKTU's appeal.

On March 10, 2003, VNRC/NEKTU withdrew its appeal of issues related to wetlands adjacent to Clyde Pond and the management of Clyde Pond with the addition of flashboards. Specifically, VNRC/NEKTU withdrew its objections to Findings 188 and 270.

The specific Findings and Conditions in the Certificate to which SLA filed objections

were: Findings 254-256 and Condition H. See Prehearing Order at 12. These address the reconstruction and operation of the Seymour Lake Dam. By the terms of the Stipulated Agreement, the parties have filed proposed Findings of Fact 47, 60, 63, 255, and 256 and amended Conditions F and H for the Board's consideration. The Board concludes that these stipulated Findings of Fact and Conditions resolve the concerns set forth in SLA's appeal and also dispose to the Board's satisfaction the question of whether the proposed reconstruction and operation of the Seymour Lake Dam complies with the VWQS, Issue 3.

None of the parties contest those Findings and Conditions in the Certificate that relate to other aspects of the Project, such as those that relate to the management of Echo Lake, the West Charleston facility, and the historical operations of Newport 11.

Accordingly, the Findings of Fact and Conditions set forth below specifically amend the Findings and Conditions of the Certificate issued by the Secretary of ANR. In all other substantive respects, the Findings and Conditions of the Certificate are incorporated herein by reference. Where greater clarity could be achieved by specifically repeating in the Board's decision certain Findings and Conditions from the Certificate, with or without modifications, the Board has taken the liberty to include such text in its Amended Certificate.

III. FINDINGS OF FACT

To the extent that any proposed finding of facts are explicitly included below, they are granted; otherwise, they are denied. See Secretary, Agency of Natural Resources v. Upper Valley Regional Landfill Corporation, 167 Vt. 228, 241-42 (1997); Petition of Village of Hardwick Electric Department, 143 Vt. 437, 445 (1983).

The Board takes official notice of and incorporates by reference the following Findings that are contained in the Certificate and which were *not* contested by the parties. See Prehearing Order at 12-13. They are Findings 1-46, 48-59, 61-62, 64-152, 154-176, 178-182, 184-254, 257-280, 282 and 292-297.

The Board adopts and incorporates herein the Findings of Fact that are contained in the parties' Stipulated Agreement, filed on April 6, 2003, which revise certain Findings and Conditions with regard to the Seymour Lake Dam contained in the Certificate. These comprise revised Findings 47, 60, 63, 255 and 256.

I. Background/General Setting

Certificate Findings 1-8 were not contested and therefore are incorporated by reference.

II. **Project and Civil Works**

Certificate Findings 9-38 were not contested and therefore are incorporated by reference. These findings are generally descriptive of the civil works at Seymour Lake, Echo Lake, West Charleston, and Newport 1, 2, 3.

III. **River Hydrology and Streamflow Regulation**

Certificate Finding 39 was not contested and therefore is incorporated by reference.

Seymour Lake

Certificate Findings 40-46 and 48 were not contested. Some of these Findings are repeated here, with minor changes, in order to provide a context for Finding 47, which was amended by Stipulated Agreement.

40. Under the existing FERC license, Seymour Lake can be regulated as a storage facility for the Clyde River Project. The license established maximum and minimum water level requirements. With a dam crest elevation at 1279.0 feet msl, maximum lake elevation may not exceed 1279.5 feet msl (crest plus 6 inches) and minimum elevation may not fall below 1278.33 feet msl (minus 8 inches) for operational purposes. The license also requires that the gate in the dam be maintained open at least one inch from its sill to allow for a continuous discharge of water and that any gate adjustments be made gradually to prevent streambed scouring.
41. The outlet gate has historically been controlled by both the Applicant and members of the SLA. Typically, the SLA has only made adjustments to the gate during the summer season. In certain cases during extreme low-flow periods or prior to spring runoff, the pond has been lowered below the minimum elevation required in the license, and flow releases below the lake have not always been maintained as required. (*Hydropower in Vermont: An Assessment of Environmental Problems and Opportunities*, Department of Environmental Conservation, 1988)
42. The storage function of Seymour Lake was discontinued before 1987. However, the Applicant manages the gate as necessary to prevent the lake from exceeding the maximum stage set in the license. The lake stage is normally maintained in the low end of the required range to provide some buffering of high flows. Under the next license, the Applicant proposes to formally discontinue the storage function of Seymour Lake.
43. In 1951, the Legislature ordered the State Public Service Commission (now Public Service Board) to define the natural maximum and minimum water levels of Lake Seymour after the Applicant had extensively enlarged the outlet channel to enable drawdowns. 30 V.S.A. § 401. The Public Service Commission defined the true natural low water elevations and the magnitude of the normal water level fluctuation above that

elevations, considering the water levels as they were before the first damming of the lake outlet in 1921. (*Public Service Commission Order No. 2564, September 15, 1951.*)

44. The artificial raising or lowering of the water level outside of the defined natural range, is prohibited by statute. 30 V.S.A. § 402. The defined natural range established by the Public Service Commission was marked by pins installed at the natural lake outlet and set 6 inches above the 8 inches below the present dam crest. (*Public Service Commission Order No. 2564, September 15, 1951.*) These levels were subsequently incorporated in the 1963 license.

Certificate Finding 45 was not contested and therefore is incorporated by reference.

46. The Applicant proposes to reconstruct the dam as a concrete gravity structure with the spillway lowered to elevation 1278.67 feet msl, or four inches below the current design elevation 1279.0 feet msl, and lengthened in order to increase the hydraulic capacity of the spillway. The Applicant estimates that the hydraulic grade line from the lake to the dam drops about two inches during the normal flow conditions. (*Draft Design Criteria for the Seymour Lake Dam Replacement Project, Duke Engineering & Services, Inc., October 2001.*)

47. Under the existing FERC license, the Applicant maintains the existing slide gate open at least one inch to provide for continuous downstream flows. With the lake level at the dam crest, this results in an estimated flow release of 4 cfs. The Department had requested that the new dam design not incorporate a gate and that consideration be given to providing an alternate method for providing downstream conservation flows.

Certificate Finding 48 and Tables 2a and 2b were not contested and therefore are incorporated by reference.

Echo Lake

Certificate Findings 49-56 are incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Flooding – Seymour and Echo Lakes

Certificate Findings 57-59 are incorporated by reference. Findings related to Seymour Lake were not contested. The Echo Lake portion of the Project was not the subject of any appeal filed with the Board.

60. A January 2002 analysis done for Seymour Dam by Duke Engineering & Services (Duke Engineering) suggested that the earlier study may have had deficiencies. Two significant factors in the outlet flood hydraulics of Seymour Lake are the effects of downstream tailwater on the dam and the existence of a water level differential between

the lake and the dam. These two conditions are not factors at Echo Lake. At Seymour Dam, the dam crest is only about 4.5 feet above the downstream streambed. As a consequence, the dam crest becomes submerged on the downstream side during highwater conditions. By letter dated January 6, 1999, the Department had asked the Applicant to identify the significance of submergence. The 1,200-foot stream channel between the lake and the dam also affects lake water levels. These two factors were taken into account in the Applicant's January 2002 analysis.

Certificate Findings 61-62 were not contested and therefore are incorporated by reference.

63. A preliminary dam design done by Duke Engineering lengthens the dam crest from the current 30.6 feet to 52.0 feet. Combined with the lowering of the crest by four inches, the new design substantially increases the spillway capacity. The design also incorporates a bulkhead bay with a five-foot width equivalent to the existing gate bay. The sill elevation for the bulkhead bay was 1275.0 feet msl, or 0.3 feet lower than the existing gate sill. Although the basis of the design is to only discharge water via the spillway (crest controlled run-of-river operation), excepting for the 4 cfs conservation flow, pursuant to a stipulated agreement between the Applicant, the Department, and the SLA discussed below in Finding 256, the design will be revised to include a gate.

Certificate Findings 64-66 and Table 3 were not contested and therefore are incorporated by reference.

West Charleston

Certificate Findings 67-78 are incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Newport 1, 2, 3

Certificate Findings 79-89 are incorporated by reference. These findings, concerning historical and proposed operation of this portion of the Project, were not contested.

Newport 11

Certificate Findings 90-91 are incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Summary of Operating Proposal

Certificate Finding 92 and Tables 4a and 4b are incorporated by reference. This

finding concerning the relicensing proposal operating mode and limitations for the two existing generating facilities, West Charleston and Newport 1,2,3, was not contested.

IV. Standards Designation

Certificate Findings 93-104 were not contested and therefore are incorporated by reference.

V. Water Chemistry

Certificate Findings 105-114 and Table 5 were not contested and therefore are incorporated by reference.

Landlocked Atlantic Salmon

Certificate Findings 115-126 and Tables 6a, 6b, 6c, and 7 were not contested and therefore are incorporated by reference.

Echo Lake/ Seymour Lake

Certificate Findings 127-30 are incorporated by reference. Findings related to Seymour Lake were not contested. The Echo Lake portion of the Project was not the subject of any appeal filed with the Board.

Smelt Run a Seymour Lake

Certificate Findings 131-133 were not contested and therefore are incorporated by reference.

West Charleston

Certificate Finding 134 is incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Bypass

Certificate Findings 135-143 are incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Newport 1,2,3 and Newport 11

Certificate Finding 144 was not contested and therefore is incorporated by reference.

Newport 1,2,3 Bypass

Certificate Findings 145-152 are incorporated by reference. Where greater clarity could be achieved by repeating, with or without amendment, certain Findings from the Certificate related to the Newport 1,2,3 Bypass in order to provide a context for the Board's own findings regarding this topic, the Board has included such Findings below.

145. The Newport 1,2,3 facility bypasses approximately 1,800 feet of the Clyde River. The upper 400 feet of the reach, from Newport Dam to the breached mill dam, consists primarily of moderate-gradient gravel riffles with ledge outcroppings. Three channels form at the base of Newport Dam and converge to pass under Crawford Road. Below the breached mill dam, for a distance of 250 feet, is the steep bedrock cascade known as Arnolds Falls, then a plunge pool and a small cascade, which is adjacent to the mill ruins. The next 500 feet, extending to the impoundment behind the abandoned dam, is a section of slight-to-moderate gradient with riffles and braided conditions. The substrate is composed of cobbles and rock with pockets of gravel in the lower braided reach. The ponded area behind the abandoned dam is about 300 feet in length with a bed material of deposited sediment. Below the dam is a 100-foot long section of cascade, then a boulder/rock riffle grading into the Newport 1,2,3 tailrace.
146. Because this reach of the river is virtually dry for most and sometimes all of the year, the Department of Fish and Wildlife (DFW) does not currently manage this reach for any fish resources or fisheries. Spawning gravels and pools in the bypass have habitat potential for all life stages of brown trout, rainbow trout, and landlocked Atlantic salmon. Gravel areas are degraded by the existing flow regime, which results in dewatering, sedimentation, and vegetative encroachment into these substrates.
147. With provision of access and a compatible flow regime, the bypass could provide habitat for fish and other aquatic life. An objective of the DFW has been to establish conditions in this reach that would result in the support of spawning and juvenile landlocked Atlantic salmon and resident brown trout populations. (*Clyde River Futures Project Preliminary Report*, April 1991) Nevertheless, the Secretary of ANR has not approved a revised basin plan for the Clyde River in accordance with 10 V.S.A. § 1253(d) and recommended a Water Management Type (WMT) for the bypass reach that recognizes the salmonid fishery as “an exceptional resource value in need of restoration or protection” and reflects DFW’s water management goal.
148. Before the construction of dams, salmon would probably have been able to ascend what is now the bypass of the Newport 1,2,3 facility, under certain flow conditions, at least as far as the base of Arnolds Falls. The abandoned concrete dam at the lower end of the bypass presently obstructs passage. (*Letter from Gordon Beckett, U.S. Fish and Wildlife Service to Frank Thomas, Harza Engineering, February 8, 1993.*) Removal of

this abandoned dam would allow migratory salmonids to ascend into the bypass, and utilize the reach as spawning and nursery habitat. Notching the remnant dam and providing a flume, as necessary, would enable downstream migrating fish that passed over the Newport Dam to move safely through the bypass reach to that portion of the Clyde River below the Newport 1,2,3 facility.

149. By letters dated February 28, 1992 and March 13, 1992, ANR requested that the Applicant conduct a flow demonstration at the Newport 1,2,3 bypass for evaluation of the habitat/flow relationship for the following target species and life stages: landlocked salmon, rainbow trout and brown trout; upstream and downstream migration, spawning, incubation, fry, juvenile, adult (bright fish and kelts).
150. The Applicant conducted this habitat assessment study in May 1993, and the study results are presented in the response to AIR No. 6 (*Schedule b Information Appending Application for License, October 1993*). The study consisted of habitat assessments at four locations (U-2, U-3, U-4, and U-7) and zone of passage assessments at four locations U-1, U-5, U-6, and U-8) in the bypass, at eight flows over the range from leakage (about 2.5 cfs) to 506 cfs. For the assessment of spawning and incubation habitat, since suitable substrate was generally located in small discrete pockets, the percent wetted area criterion used for the other life stages and in the Newport 11 bypass for all life stages was not deemed appropriate. Instead, the final assessment is a qualitative description of spawning/incubation potential at each observed flow rather than a quantification in terms of useable habitat as developed for the other assessments.
151. Where wading was possible, numerous depth measurements were made and velocities were estimated. At locations U-2, U-3, U-4, and U-7, wetted width measurements were taken at each study flow. For each flow, the wetted widths were then multiplied by the percent of habitat that was assessed as “good” by the study team to develop estimates of useable habitat expressed as weighted wetted widths (WWW), which reflects both habitat quality and quantity.
152. Observations of salmon spawning and incubation habitat suitability were that a flow of about 300 cfs or more is required to provide suitable depths and velocities over the gravel areas in U-2, which is the location representing the impounded reach upstream of the abandoned dam adjacent to the powerhouse, and that the lowest conservation flow that provides any significant spawning habitat is 149 cfs at the remaining stations. For U-2, the assessment was done under the assumption that the dam would remain in place. The substrate type behind the abandoned dam is silt and, therefore, is presently of limited spawning value. For all locations, few areas were useable for spawning at a flow of 30 cfs, and none at 2.5 cfs.
153. For review of habitat conditions for fry, juvenile, and adult salmonid life stages, ANR divided the Newport 1,2,3 bypass into segments: the segment above Arnolds Falls and the segment below Arnolds Falls to the head of the impounded reach. The segments

are represented by U-7 and by U-3 and U-4, respectively. The upper segment (from Crawford Road to the head of the cascade), when contrasted to the lower segment, is narrow and steep and about half the length. Together the two segments characterize 42% of the bypass length.

Table 10 at Finding 162 of the Certificate, incorporated by reference, lists the median monthly flows for times of the year when the flow regime is particularly significant to the life stages of fish. As shown in Table 5 at Finding 114 of the Certificate, incorporated by reference, rainbow trout and certain other species spawn the incubate their eggs during the spring, whereas landlocked Atlantic salmon and brown trout spawn during the fall and incubate their eggs during the winter. Habitat for adult and juvenile fish is often most limited during the period of lowest flow. August is usually the lowest flow month during the summer, when high water temperatures and lower dissolved oxygen can add further stress. February is the lowest flow month during the winter, when ice and cold temperature conditions are additional stressors. The amount of habitat available at the Applicant's proposed 5 cfs was compared to the amount naturally available to the trout/salmon life stages of interest during the period that the life stages would be present in the Clyde River. The fry stage is present from spring emergence through the fall when the juvenile life stage begins. Both for juvenile and adult life stages, the February, April/May, and August medians were considered.

For fry, the amount of habitat available at the August median flow was used to assess the range of habitat available at alternate flows, including that proposed by the Applicant. Table 9a of the Certificate, incorporated by reference, displays the amount of habitat available at the study flows and at the August median flow. In the upper segment, the estimated amount of fry habitat available at the August median flow of 98 cfs is 21 feet over a corresponding transect wetted width of 70 feet. At 30 cfs, 34 feet of "good" useable habitat is available, and the amount declines to 22 feet at a flow of 2.5 cfs. Fry habitat decreases as flows increase above the August median flow, reflecting the low velocity tolerance of this particular life stage. The lower segment is a wider channel and, as a result, requires higher flows to provide comparable habitat quality. Compositing locations U-3 and U-4, the amount of good fry habitat was found to be relatively constant ($46.0 \pm 8\%$ useable feet) over a flow range of 75-301 cfs even though the average wetted width increased by 64%. The amount of habitat at 30 cfs was about half of the amount available at the August median flow, and the amount declined another 13% down to 2.5 cfs.

Referring to Table 9b of the Certificate, incorporated by reference, for juvenile habitat in the upper segment over the range of flows between 30 cfs and 149 cfs, the amount of habitat remained within 8% of the amount available at the August median flow of 98 cfs (50 feet useable for a 70 foot wetted width), with the amount of habitat actually increasing with declining flows. With flows dropping from 75 cfs to 30 cfs, the amount of habitat actually increased slightly. Only a small amount of habitat remained available at 2.5 cfs, however. During the average spring flow conditions, the amount of

habitat is roughly a quarter of the amount available under average August and February conditions. In the lower segment, the juvenile habitat decreased by almost two-thirds with flows dropping from the August median flow to 30 cfs and by 59% more when dropping from 30 cfs to 2.5 cfs. Under average spring flow conditions, about half again as much habitat is available compared to average August conditions.

Referring to Table 9c of the Certificate, incorporated by reference, in the upper segment over the range of flows from 30-149 cfs, the trend is the opposite of what was observed with juveniles: the amount of habitat increases with increasing flows. Similar amounts of habitat are available at 30 cfs and 75 cfs, but the amount of habitat improves by about 12% when flows rise to the August median flow and by roughly the same amount when flows rise to the February median flows. However, there was virtually no adult habitat at a flow of 2.5 cfs; the wetted width had contracted to 30 feet. Spring flow conditions were judged to reduce the amount of habitat in this section to 20 feet over the wetted width of 80 feet. In the lower segment, adult habitat decreased by almost three quarters with flows dropping from the August median flow to 30 cfs and was almost nil at 2.5 cfs. The February median flow provided about 16% more habitat than the August median flow, and the April/May median more than tripled the amount of adult habitat.

The incorporated Tables, referenced above, present the assessment data upon which the Department based its analysis. The values for median flow conditions were interpolated. The last column represents the total amount of habitat included in both the upper and lower study segments assuming the wetted widths at the transects are representative. These two segments represent 42% of the bypass reach.

Put in perspective, the total bypass reach for the Newport 1,2,3 facility represents 1.1 % of riverine habitat and 4.4% of potentially available spawning and incubation habitat of the Clyde River, while the percentage of habitat for salmon spawning and nursery habitat above Clyde Pond is estimated to be as much as 80%, if made accessible to migrating salmonids.

Certificate Findings 154-152 were not contested and therefore are incorporated by reference.

Newport 1,2,3 - Downstream

Certificate Findings 155-176 and Table 10 were not contested and therefore are incorporated by reference.

177. Operation of the Newport 1,2,3 facility currently includes daily flow fluctuations that subject aquatic organisms to both high and low flows on a rapidly changing basis. A non-steady state analysis addressing the effects of hydropeaking has not been

conducted for the reach below Newport 1,2,3. However, provision of a reasonable base flow requirement and ramping protocols to slow the transition between peak and base flows, as provided for in this Amended Certificate, should minimize the impacts on aquatic habitat.

Certificate Findings 178-179 were not contested and therefore are incorporated by reference.

Fish Passage

Certificate Findings 180-181 are largely adopted by the Board and incorporated by reference. However, the Board makes amendments to the findings as follows.

180. The Applicant has presented conceptual designs for fish passage facilities. These facilities consist of downstream passage at Newport 1,2,3 via a fish pipe from Newport Dam to the vicinity of the Newport 1,2,3 powerhouse and upstream passage via a trap, hold, and truck operation at the Newport 1,2,3 station.
181. The target species relative to fish passage include landlocked Atlantic salmon, steelhead rainbow trout and brown trout. The period of operation for upstream fish passage facilities (adult salmonids) is April 1 - May 21 and September 1 - December 15, for each year beginning with the first year of upstream fish passage operations. The period of operation for downstream fish passage (pre-smolts, smolts, and kelts) is April 1 - June 15 and September 15 - December 31, for each year beginning with the first year of downstream fish passage operations.

Ramping

Certificate Finding 182 was not contested and therefore is incorporated by reference.

183. Specific ramping protocols for the two bypasses is an outstanding need.

That portion of Certificate Finding 182 relating to ramping at the West Charleston facility was not challenged by the parties, so it is incorporated by reference. That portion relating to ramping at Newport 1,2,3, however, was contested and therefore is addressed here.

At Newport 1,2,3, the Applicant had previously indicated that the bypass flows would recede slowly as the pond level of Clyde Pond would drop over a 6.5-hour period after restart of the station. The issue was more or less moot under the Applicant's flow proposal of 5 cfs as that flow is too low to provide continuous support of aquatic biota.

(License Application, *Resource Agency and Interested Parties Additional Study Requests and Citizens Utilities Company Responses*, Section 6, March 1992)

However, with the imposition of a base flow of 30 cfs in the Newport 1,2,3 bypass reach and the requirement that the remnant dam be breached to facilitate downstream migration of salmonid, a ramping protocol is necessary at the Newport 1,2,3 facility in order to assure that migrating fish will not become stranded in the bypass reach.

Flushing Flows

Certificate Findings 184-185 were not contested and therefore are incorporated by reference; however, minor changes are made to Finding 185, consistent with the Board's other Findings.

184. As a consequence of dewatering and reduced high flows, deposition of sediment and encroachment of terrestrial vegetation into the channel of the Newport 1,2,3 bypass has altered physical habitat conditions for fish and other aquatic organisms.
185. It is reasonable to expect that the reduced utilization of storage at Clyde Pond will result in a greater frequency of high flows in the bypass and, as a result, an improved ability to scour and transport sediment through the reach. Encroachment by terrestrial vegetation can only be counteracted, however, by increasing the river's base flow so that the channel area is restored to an aquatic habitat condition.

VII. Wildlife and Wetlands

Certificate Findings 186-188 are not contested and therefore are incorporated by reference. Certificate Finding 188 was initially objected to by VNRC/NEKTU but subsequently withdrawn.

Clyde Pond

Certificate Findings 189-210 and Tables 12 and 13 were not contested and therefore are incorporated by reference.

VIII. Shoreline Erosion and Desilting

Certificate Findings 211-217 were not contested and therefore are incorporated by reference.

IX. Recreational Use

Certificate Findings 218-234 were not contested and therefore are incorporated by reference.

XI. **Other Uses**

Certificate Finding 240 was not contested and therefore is incorporated by reference.

XII. **Rare and Endangered Plants and Animals**

Certificate Finding 241 was not contested and therefore is incorporated by reference.

XIII. **State Comprehensive River Plans**

Certificate Findings 254-249 were not contested and therefore are incorporated by reference.

XIV. **Analysis**

Bodies of Water

Certificate Findings 250-254 were not contested and therefore are incorporated by reference. These findings address Seymour Lake, the Applicant's proposal for replacement of the dam, and the concerns of SLA. They were not contested. Finding 254 was contested by SLA in its Notice of Appeal, but not proposed for amendment by the parties in their Stipulated Agreement. Therefore, it is incorporated by reference.

255. The Department was unable to locate any data or information on the flood history of Seymour Lake preceding the alteration of its natural outlet. SLA and the Town of Morgan had expressed an interest in the incorporation of a gate in the new dam in order to increase the dam's hydraulic capacity during severe flood events. Operation of the gate would, however, counter the effort to provide for a naturally varying lake level in Seymour Lake and would potentially cause flooding and disruption of habitat below the dam and possibly even effect Echo Lake. It would also create the potential for Seymour Lake to be drawn down below SLA's target elevation and even the low pin. As a result of the January 2002 analysis discussed in Finding 60 above, the Department requested that the Applicant collect site-specific data to calibrate the hydraulic model primarily with respect to the tailwater rating and the water surface profile from the lake to the dam. The resulting analysis suggested that an operable gate is not necessary to reduce high lake stages. Nevertheless, because of the significance of the issue to SLA, Conditions F and H have been amended so as to set forth monitoring requirements and a consultation process between the Applicant, the Department, and SLA which the Board finds are reasonable to assess the performance of the new dam and to verify the conclusions of the current analysis, while ensuring compliance with the VWQS.
256. The current design proposal for the dam reconstruction includes a bulkhead bay, 5.0 feet wide with a sill elevation of 1275.00 feet msl. Pursuant to a stipulated agreement between the Applicant, the Department, and SLA, the design will be revised to include

a gate but the frame, stem and wheel will not be installed and the gate will not be operated for at least the two year period following construction of the new dam. The Department's staff believe and the Board finds, however, that it is prudent to initially incorporate the non-operable gate in the new dam and consider operation of the gate should future monitoring and analysis indicate that it is necessary to prevent excessive lake levels. If it is determined that a gate must be used periodically to prevent significant flooding, the gate manipulation shall be limited to use for this purpose only.

Certificate Findings 257-260 were not contested and therefore are incorporated by reference.

Certificate Findings 261-265, related to Echo Lake, are incorporated by reference. This portion of the Project was not the subject of any appeal filed with the Board.

Certificate Findings 266-267, related to maintenance activities and flow management at Seymour and Echo Lakes, are incorporated by reference. Findings related to Seymour Lake were not contested. The Echo Lake portion of the Project was not the subject of any appeal filed with the Board.

Certificate Findings 268-269, related to flow management at Charleston Pond, were not the subject of any appeal filed with the Board.

Certificate Finding 270, related to hydrologic impacts of management of Clyde Pond, was initially objected to by VNRC/NEKTU but subsequently withdrawn. However, this objection was withdrawn and therefore this Finding is incorporated by reference.

Certificate Findings 271-272, regarding impacts on the littoral zone of Clyde Pond and wetlands in the Project area, were not contested and therefore are incorporated by reference.

Water Chemistry

Certificate Findings 273-276 were not contested and therefore are incorporated by reference.

Bypassed River Reaches

Certificate Finding 277 was not contested and therefore is incorporated by reference.

Certificate Findings 278-279, regarding the Applicant's bypass flow proposal at the West Charleston facility, is incorporated by reference. This Finding was not the subject of any appeal filed with the Board.

Newport 1,2,3.

Certificate Finding 280, which finds that the Applicant's proposed bypass flow of 5 cfs does not provide an adequate flow regime to support designated uses and values, was not contested and therefore is incorporated by reference.

281. Based on the findings provided above, this Amended Certificate is being conditioned to provide year-round viable habitat conditions in the Newport 1,2,3 bypass reach. The flow needed for base habitat support for fish and other aquatic organisms is 30 cfs. The ANR_Flow Procedure supports the Secretary of ANR's position that flows should be at least equivalent to 7Q10, which, in this case, is estimated to be 28 cfs. This bypass reach will continue to offer limited habitat value for salmonids as it is isolated from the river system due to the dams and other obstructions at and between the upper and lower end of the reach. However, the notching of the remnant dam will improve egress by fish that have passed over Clyde Pond and are migrating downstream through the bypass reach. The total removal of the dam would improve fish migration and spawning upstream of the Newport 1,2,3 powerhouse at least as far as Arnolds Falls should flows in the bypass reach be suitably increased, however, the Board is not requiring removal of the remnant dam at this time and such removal will be necessary only if the Secretary has determined that such removal is required as a result of the assessment studies required in Conditions L and M.

The 5 cfs. flow proposal would not be adequate to support the aesthetic values of the river. Based on the flow demonstration at the Board's Site Visit and the Applicant's videos showing various flow regimes, the Board finds that the existing leakage flow and the Applicant's proposed flow of 5 cfs do not provide visual or aural benefits. A flow of 30 cfs, however, will substantially improve the appearance of this reach to the point of providing good aesthetic value.

Downstream River Reaches

Certificate Finding 282 is incorporated by reference. This Finding relates to the support of designated uses and values at the West Charleston portion of the Project which was not the subject of any appeal filed with the Board.

283. *Newport 1,2,3.* The proposal to maintain 363 cfs downstream of the Newport 1,2,3 tailrace from April 1 through June 7 will protect walleye spawning and egg incubation, although a flow of 430 cfs, the station capacity, would provide a higher level of protection closer to the optimum level observed during the habitat study performed in 1993.

The proposal to maintain 100 cfs from June 8 through September 30 will be adequate to provide high quality aquatic habitat.

The proposal to maintain 150 cfs coupled with artificial flow fluctuations from October 1 through December 15 would disrupt the behavior of spawning salmonids. Peaking operations have been observed to disrupt upstream migration of fish. Because of the use of the Clyde River by landlocked salmon during the fall spawning run, it is critical to provide suitable flow conditions at that time of year for upstream migration and habitat use. For these reasons, this Amended Certificate is being conditioned so as to require true run-of-river operations from October 1 - December 15. To attain that regime by October 1, it will be necessary for Clyde Pond water levels to be managed in such a way that the pond is at the dam crest by October 1.

The proposal to maintain 120 cfs from December 16 through March 31 will be adequate to provide high quality habitat.

284. These findings are contingent upon implementation of acceptable ramping protocols that address the effects of hydropeaking on stranding, habitat and fish behavior.
285. The flow proposal would be adequate to support the aesthetic values of the river.

Ramping Plans and Flushing Flows

286. Without ramping plans for each of the project bypasses, there is no assurance that fish and egg kills will not continue to occur at the Project.
287. With the change in the flow regime in the lower Clyde River, flushing flows to restore the Newport 1,2,3 bypass should not be necessary. Because drawdowns are being

reduced, the reach will more frequently experience high natural flows above the plant capacity. This and the increase in base flows through the reach will make the channel somewhat less conducive to the support of terrestrial plants.

288. Ramping protocols that address the effects of hydropeaking on stranding, habitat and fish behavior are necessary for the Newport 1,2,3 bypass and tailrace reach and will be a requirement of Condition D of the Amended Certificate.

Fish Passage

289. The Applicant proposes to construct and operate a trap-and-truck facility, as well as outmigrant facilities, at the Newport 1,2,3 dam and powerhouse. A successful program

will substantially enhance the Department's current efforts to reestablish historic salmon runs to the Clyde River and to improve the lake fishery. Over time, the passage facilities are expected to reduce the Department's reliance on upstream fry stocking. The Clyde River upstream of Clyde Pond to Charleston Pond offers proportionally a much greater amount of spawning and nursery habitat compared to the lower Clyde. *See Finding 151.*

Trap-and-truck facilities have been used at other hydroelectric facilities with varying degrees of success. One reason that such facilities can be problematic is that they are subject to human failure, whether this be mechanical, work-force related, or otherwise. As proposed by the Applicant, operation of the trap-and-truck facility requires the taking of migrating fish out of the trap, placing them in a truck, driving them to the designated release area, and placing the fish into Clyde Pond. Serious mortality in salmonids can occur from the stress of poor handling, temperature shock, and disorientation. Therefore, for such a facility to work well, it is imperative that any plan for its design and implementation must receive careful scrutiny, approval, and evaluation. Additionally, because a trap-and-truck facility is so dependent upon the daily intervention of persons hired to trap, truck, and release fish during upstream migration periods, it is essential that any contract to provide those services be carefully scrutinized and those services monitored for compliance with the upstream fish passage plan.

290. Fish Passage facilities are necessary to prevent an interference with the propagation of fish and to minimize fish mortality during downstream movement. Lack of facilities would result in an undue adverse effect on the species composition or propagation of fish and, therefore, constitute a violation of the VWQS, Section 3-04(B)(4) *Aquatic Habitat*.

In order to facilitate the downstream passage of fish, the Applicant proposes to install a pipe to transport fish over a quarter of a mile from the Newport Dam to the tailrace of the Newport 1,2,3. While this proposal is expected to transport many fish during their downstream migration, it is not without flaws. Some fish will pass directly through the penstock and the turbines, while a certain percentage of fish will pass directly over the Newport Dam into the bypass reach. With respect to those fish that do make it into the bypass reach, there is the additional obstacle of the abandoned dam adjacent to the Newport 1,2,3 powerhouse (remnant dam). In order to facilitate safe passage from the bypass reach to the river below, this dam must be notched so that it will concentrate bypass flows during times of spillage at the Newport Dam. Additionally, if deemed necessary by the Department, a flume must be installed to provide safe and effective downstream passage past the ledges below the notch.

291. To provide reliable fish passage, this Amended Certificate is being conditioned to

require both the approval of final plans for the facilities and passage effectiveness studies.

Recreation

Certificate Findings 292-296 were not contested and therefore are incorporated by reference.

Debris

Certificate Finding 297 was not contested and therefore is incorporated by reference.

Public Trust and Constitutional Considerations

298. The Clyde River falls within the definitions of “waters of the State” and “waters of the United States” as defined under state law and the CWA. The Clyde River is also a “navigable” water under the CWA and a “boatable” water under Vermont state law. It is also an important fishery resource.

IV. CONCLUSIONS OF LAW

A. Standard and Scope of Review

Title 10 V.S.A. § 1024(a) provides that an appeal of a § 401 water quality certificate (certificate) to the Board “shall be *de novo* and shall be conducted as a contested case.” The Vermont Supreme Court has held that “[i]n a *de novo* proceeding, the [reviewing] Board is required to hear the matter as if there had been no prior proceedings.” In re Killington Ltd., 159 Vt. 206, 214 (1992). However, the *scope* of any such appeal is limited to the issues identified by an appellant in its notice of appeal, unless the Board determines that substantial inequity or injustice would result from such limitation. Procedural Rule 19(C). Furthermore, in the interests of administrative efficiency, the issues set forth in a notice of appeal may be clarified and narrowed at a prehearing conference, as was done in this case and in previous complex hydroelectric proceedings. Procedural Rule 28(A)(2); see Re Hannaford Bros. Co. And Lowes Home Centers, Inc., Docket No. WQ-01-01, Findings of Fact, Conclusions of Law, and Order at 18-20 (Jan. 18, 2002) (Hannaford); In re Lamoille River Hydroelectric Project, Docket Nos. WQ-94-03 and WQ-94-05, Prehearing Conference Report and Order at 3 (Sept. 26, 1994) (Lamoille).

Both the standard and scope of review were addressed in the initial Prehearing Order issued on October 25, 2002. See Prehearing Order at 10-16, Sections VII(C), VIII, and X. No party objected to the Prehearing Order and on November 18, 2002, the Board determined that the Prehearing Order was final and binding. Order at 1 (Nov. 21, 2002).

Accordingly, in these consolidated appeals, the Board has afforded all parties an opportunity “to respond and present evidence and argument on all issues involved,” as required by the Vermont Administrative Procedural Act (APA). 3 V.S.A. § 809(c). As in any proceeding that is quasi-judicial in nature, the process of decision in a certificate appeal must be governed by the principle of the exclusiveness of the record. The applicability of a *de novo* standard has required the Board to collect anew evidence to create a comprehensive record upon which its decision is based.

In the course of this process, the Board may and in fact did consider information from the ANR’s administrative record offered as evidence by the parties and admitted by the Board, including both the draft Certificate issued on November 13, 2001 (Exhibit C-8), the final Certificate issued by the Secretary of ANR on August 1, 2002 (Exhibit C-3), and a number of the documents upon which Secretary relied in reaching his decision. Nevertheless, even though the Board considered this evidence, as in any *de novo* proceeding, it was not restricted to the record considered by the Secretary nor was it *required* to give deference to the Secretary’s decision. Chioffi v. Winooski Zoning Board, 151 Vt. 9, 11 (1989) (emphasis added). Indeed, the parties offered and the Board admitted new testimony and exhibits on contested issues. However, the fact that the Board has reached an outcome similar to that of the Secretary of ANR, based on *both* uncontested findings and its own record on contested issues, does not mean that the Board has deferred to the Secretary’s final decision and all of the conclusions contained therein. For example, the Board specifically excluded from the record evidence on the economic and social impacts of the Project.

In conclusion, the Board has weighed the evidence, including the conflicting and sometimes inconclusive testimony of expert witnesses, and determined that an Amended Certificate should be issued to the Applicant, containing modifications to some of the Conditions imposed by the Secretary in the Certificate.

B. Burden of Proof

The general rule in administrative proceedings is that the applicant or petitioner bears the burden of proof. Lamoille, Findings of Fact, Conclusions of Law, and Order at 45 (Nov. 5, 1996), citing Petition of Lyndonville Village, 121 Vt. 185, 190-191 (1959). Citizens is the applicant in this consolidated proceeding and, therefore, it bears the burden of proof.

The burden of proof includes both the burden of production and burden of persuasion. The burden of production in this *de novo* proceeding means the burden of producing sufficient evidence upon which the Board can make positive findings that the Project, including the proposed operational protocol, complies with the applicable provisions of the CWA. At a minimum, limitations imposed by state water quality standards adopted pursuant to § 303 of the CWA are “appropriate” requirements of state law. P.U.D. No. 1 of Jefferson County and

City of Tacoma v. Washington Department of Ecology, 511 U.S. 700, 114 S.Ct.1900 (1994) (Tacoma) However, “appropriate” requirements of state law may and do encompass more than the VWQS, as VNRC/NEKTU have argued.

The burden of persuasion refers to the burden of persuading the Board that certain facts are true. Lamoille at 46. The party with the burden of persuasion must establish the elements of its case by a preponderance of the evidence. That generally occurs when the factfinder is satisfied that a proposition is more likely to be true than not true. Id. and authorities cited therein. The Vermont Supreme Court has provided further guidance with respect to the allocation of the burden of proof, specifically the risk of non-persuasion in an administrative proceeding. “The fact that a party has the burden of proof does not mean that he must necessarily shoulder it alone; it simply means that he, and not the other party, bears the risk of non-persuasion.” In re Quechee Lake Corporation, 154 Vt. 543, 553 (1989) (Quechee Lakes). Thus, as in the Quechee Lakes decision, the Board may consider all of the evidence, including that provided by parties other than the applicant in determining whether the burden of persuasion has been met.

Where, as in these consolidated appeals, only certain specific issues have been appealed to the Board for its *de novo* review, the Applicant must produce evidence and persuade the Board, in connection with those preserved issues only, that the Project and proposed operational protocol complies with applicable provisions of law. See Hannaford at 10,18-20. For the reasons set forth below, the Board concludes that Citizens has met its burden of production and the record as a whole supports the conclusion that an Amended Certificate should issue.

C. Compliance with the Clean Water Act

Section 401 of the CWA provides: “Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into navigable water, shall provide the licensing or permitting agency a certificate of the State in which the discharge originates, or will originate, . . . that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306 and 307 of the Act.” 33 U.S.C. § 1341(a)(1). FERC is the licensing agency in this case. Pursuant to the U.S. Supreme Court’s Tacoma decision, FERC is required to incorporate the Certificate, as issued by the State, into the federal license for a hydroelectric facility. Tacoma at 722. Citizens, as an applicant for relicensure of its hydroelectric facility on the Clyde River, is required to obtain a Certificate from the State of Vermont.

In Tacoma, the Court stated that a state’s water quality standards must include both designated uses and water quality criteria, and that a project for which a federal license is required must comply with both the designated uses and the water quality criteria. Tacoma at 715. A project must also comply with other applicable state law that relates to water quality.

Lamoille at 47. The State of Vermont has adopted water quality standards that are applicable to Citizens' Project. As set forth in the Prehearing Order, the applicable VWQS are those adopted June 10, 1999, and effective July 2, 2000 (2000 VWQS). Prehearing Order at 4. Other appropriate requirements of state law may include, but are not limited to, consideration of constitutional, common law, statutory, or regulatory provisions that bear some relationship to water quality. See Lamoille at 47-48 and 66-68. In these consolidated appeals, VNRC/NEKTU have asserted that, in addition to the VWQS, the Board must take into consideration relevant fish and wildlife statutes, the Public Trust Doctrine, and the Constitutional right to fish.

Despite the fact that they were built many years ago, Citizens' hydroelectric facilities on the Clyde River have never been reviewed for compliance with the VWQS or other applicable state law. It is only now that a relicensing application has been prepared for FERC that Citizens is required to obtain a certificate from Vermont.

The U.S. Court of Appeals for the Ninth Circuit identified the significance of such a relicensing decision when reviewing the first dam built on the Columbia River. It stated:

Relicensing, then, is more akin to an irreversible and irretrievable commitment of a public resource than a mere continuation of the status quo. (Citation omitted.) Simply because the same resource had been committed in the past does not make relicensing a phase in a continuing activity. Relicensing involves a new commitment of the resource, which in this case lasts for a forty-year period.

Confederated Tribes and Bands v. FERC, 746 F.2d 466, 476-77 (9th Cir. 1984).

A fundamental objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The goals of the CWA include a statement demonstrating that Congress intended that individual States should play a leading role in formulating State-specific water quality policies: "It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of the States to prevent, reduce, and eliminate pollution...." 33 U.S.C. § 1251(b).

The State of Vermont has exercised this responsibility for the protection of its water resources, in part through the authority delegated to the Secretary of ANR to issue water quality certificates pursuant to 10 V.S.A. § 1004 and the *de novo* appellate authority of the Board to hear appeals of those certificate decisions, 10 V.S.A. § 1024(a). That authority includes the right to impose conditions to assure compliance with the VWQS and any "other applicable requirement[s] of state law" relating to water quality. 33 U.S.C. § 1341(d).

The U.S. Supreme Court has affirmed that state authority to issue and condition water

quality certifications is broad and includes authority to require minimum stream flows and appropriate conditions to protect aesthetics. It also includes consideration of project *activities as a whole* once jurisdiction has attached. Tacoma at 711. This means that the activities which are subject to state review include not only the civil works but also Project-created influences both upstream and downstream of the dams and others structures involved in the Project. Importantly, this includes activities such as the reduction or increase in flow levels in the river channel, on a daily or seasonal basis.

With this framework in mind, the Board now reviews the Project for compliance with the VWQS, followed by review under other applicable requirements of state law.

D. Compliance with the VWQS

The entire length of the Clyde River impacted by the Project is classified as Class B waters in the 2000 VWQS. This classification applies to *all* segments of the Project, including the bypass reaches. No part of the Clyde River has undergone recent review by the Secretary of ANR as part of a comprehensive basin planning process as required by 10 V.S.A. § 1053(d) and consequently no rulemaking has been initiated by the Board to amend the VWQS to designate certain portions of the Clyde River by one of three Class B Management Types (WMT), as provided in the VWQS, Section 1-02(D).²

The VWQS identify designated uses for each water body or segment thereof, and provide that the State of Vermont must manage for these uses whether or not they are being attained. Such designated uses include in the case of the Clyde River, aquatic biota, wildlife, and aquatic habitat; aesthetics; recreational uses, and agricultural and industrial uses. The VWQS also set out criteria necessary to support these designated uses. In addition to the designated uses and the criteria necessary to support them, the VWQS set forth other relevant requirements and general policies for the management of the waters of Vermont, including reference to the state water quality policy at 10 V.S.A. § 1050. The Board is therefore mindful of the clear directive that it is not enough to merely maintain the minimum allowable level of water quality which secures all designated uses, but to strive to improve and enhance the water quality of state waters.

Certificate review under the CWA and VWQS limits the Board's consideration of Project impacts to only those related to water quality. In other words, the Board may not consider economic and social impacts in determining whether to grant, deny, or modify a certificate. Unlike the Secretary of ANR who has been statutorily granted two roles under 10 V.S.A. § 1004 – one, as certifying agent and, two, as the agent to “coordinate the state interest

² 10 V.S.A. §1053(d) was amended in 1999 by Act No. 114 (Adj.Sess.) to change the deadline by which the Secretary needed to complete revisions to all 17 basin plans for state waters from January 1, 2000, to January 1, 2006.

before the FERC” – the Board is limited in its appellate role to acting as the certifying agent. This distinction is important, because while the Secretary may request economic and social impacts data and analysis from the Applicant and other state agencies in order to formulate the “state interest” in FERC licensing proceedings, the Board has been granted authority under 10 V.S.A. § 1024(a) to perform only the first role in its appellate capacity and therefore the evidence and argument which are relevant to its consideration must be water-quality related.³ The Board dealt decisively with the issue of whether it could consider economic and social impacts evidence in its Lamoille decision. In that case, the Board held that it was “not authorized by applicable state law to consider evidence regarding economic and societal impacts in deciding whether an existing hydroelectric facility should receive a § 401 certificate.” Lamoille at 51. The Board reiterated this position at the hearing on April 1, 2003, in its affirmance of the Chair’s preliminary ruling on evidentiary objections. See Second Prehearing Order at 1-5.

Finally, it is important to note that all parties to this proceeding agree that the Anti-Degradation section of the VWQS is not at issue in these consolidated appeals. Section 1-03(A) of the VWQS sets forth the General Policy regarding anti-degradation: “All waters shall be managed in accordance with these rules to protect, maintain, and improve water quality.” There is no dispute that the waters at issue are Class B waters and that the existing water quality of these waters does not exceed any applicable water quality criteria. See VWQS, Section 1-03(C). Accordingly, the parties, prior to the hearing in these consolidated appeals, conceded that compliance with Section 1-03 was not an issue in this proceeding. See Second Prehearing Order at 4. Therefore, the Board will consider other sections of the VWQS that are in dispute.

With the above context in mind, the Board addresses the issues central to the consolidated appeals in light of the VWQS management goals and objectives for the Clyde River.

1. Whether the Certificate issued by the Secretary of ANR fails to provide adequate flow in the bypass reach of the Newport 1, 2, 3 facility to achieve compliance with the VWQS?

³ There are, however, other circumstances, none of which are within the ambit of the present consolidated appeals, which would allow the Board to consider economic and social impacts data or evidence. The CWA and state law provide that consideration of economic and social factors may be relevant in the classification and reclassification process, when applying the Anti-Degradation Policy of the VWQS, and when applying a Use Attainability Analysis. Also, the Secretary of ANR may take such information into consideration when reserving assimilative capacity for a use in allocating pollutant loads.

In order to answer this question, it is necessary first to understand what specific designated uses and values must be protected in the Clyde River and what standards must be achieved in order to assure their protection.

As noted above, the Clyde River is classified as Class B waters. Pursuant to 10 V.S.A. § 1252(a), Class B waters are defined as and to be managed for the following designated uses: “Suitable for bathing and recreation, irrigation and agricultural uses; good fish habitat; good aesthetic value; acceptable for public water supply with filtration and disinfection. Section 3-04(A) of the VWQS sets forth the management objectives for achieving and maintaining a level of water quality that fully supports the designated uses for Class B waters. The designated uses which VNRC/NEKTU claim are impaired by the Project, including the Applicant’s proposed operating protocol, are aquatic biota, wildlife, and aquatic habitat (primarily, although not exclusively, fish and fish habitat); aesthetics; and recreational uses (primarily, fishing).

The narrative standards which must be achieved and maintained for each of these designated uses in Class B waters is the following:

1. Aquatic Biota, Wildlife, and Aquatic Habitat - aquatic biota and wildlife sustained by high quality aquatic habitat with additional protection in those water where these uses are sustainable at a higher level based on Water Management Type designation.
2. Aesthetics - water character, flows, water level, bed and channel characteristics, exhibiting good aesthetic value and, where attainable, excellent aesthetic value based on Water Management Type designation.

....

6. Boating, Fishing, and other recreational uses - Suitable for these uses with additional protection in those waters where these uses are sustainable at a higher level based on Water Management Type designation.

VWQS, 3-04(A).

As the Secretary of ANR has not recently adopted or revised a basin plan for Clyde River and consequently WMTs have not been adopted by the Board for the segments of the river affected by the Project, the VWQS require that with respect to aquatic biota, wildlife and aquatic habitat: “no change from reference conditions that would have an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes.” VWQS, Section 3-04(B)(4)(d); see also VWQS

Section 1-01(B)(39).⁴ With regard to aesthetics, the criterion that must be achieved if all Class B waters that have not been designated by WMT is: “water of a quality that consistently exhibits good aesthetic value.” VWQS, Section 3-04(B)(5). No specific standard is established for “fishing,” although the Clyde River is protected and managed as cold water fish habitat. VWQS, Section 3-05 and Appendix A.(B)(1). In order for a river to be suitable for fishing, there must be suitable habitat for fish and the aquatic biota upon which they feed. This requires that there be adequate minimum habitat flows, which in turn may provide good aesthetic value. The question, then, is what minimum flow regime is necessary to support the designated uses in that portion of the Project affected by the Newport 1,2,3 facility and its operations.

Section 1-02(E) of the VWQS sets forth the hydrology policy intended to be applied in conjunction with other criteria in the VWQS. It states, in relevant part:

- (1) The proper management of water resources now and for the future requires careful consideration of the interruption of the natural flow regime and the fluctuation of water levels resulting from the construction of new, and the operation of existing dams, diversions, and other control structures. These rules, in conjunction with other applicable law, provide a means for determining conditions which preserve, to the extent practicable, the natural flow regime of waters.

VWQS, Section 1-02(E)(1) (Emphasis added.) Furthermore, Section 2-02(B)(1), which addresses situations where the natural flow regime has been altered by human-made structures, provides that where there is no minimum flow agreement, the following default value shall apply:

For waters where the natural flow regime is altered by human-made structures and where no minimum flow agreement or requirement has been established, compliance with the applicable numeric water quality criteria shall be calculated on the basis of the 7Q10 flow value or at the absolute low flow resulting from flow regulation, whichever

⁴ As noted previously, the Secretary of ANR has not approved a revised basin plan for the Clyde River in accordance with 10 V.S.A. § 1253(d) and VWQS Section 1-02(D)(5) nor recommended Water Management Type or Types (WMT) that reflects the State’s water management goals for the bypass reach and other waters influenced by the Newport 1,2,3. Accordingly, there is no ANR policy determination that either: (1) establishes salmonid fisheries as “an exceptional resource value in need of restoration or protection” in the area influenced by the Newport 1,2,3 facility and assigns a recommended WMT to support this resource management goal, for example, WMT B-1; or (2) establishes that these waters should be managed according to WMT B-3 as a reach in which “moderate” changes and differences from the reference condition for aquatic biota, including fish assemblages, may occur, as in hydrologically-modified bypass reaches.

is less, unless an alternate flow statistic is specified in Section 3-01 of these rules.

VWQS, Section 2-02(B)(1).

In order to implement these policies, the VWQS contain hydrology criteria for streamflow protection. For Class B waters which have not been designated by WMT, the relevant portion of hydrology criteria is Section 3-01(C)(1)(c), which provides:

Any change from the natural flow regime shall provide for maintenance of flow characteristics that ensure the full support of uses and comply with the applicable water quality criteria. The preferred method for ensuring compliance with this subsection is a site-specific flow study or studies. In the absence of site specific studies, the Secretary may establish hydrologic standards and impose additional hydrologic constraints, consistent with any applicable Agency of Natural Resources rule or procedure, to ensure compliance with the requirements of this subsection.

The VWQS recognize that human activity has, can and does affect the waters of the state. As such, in evaluating compliance with the numeric criteria, the VWQS utilize a different baseline for waters that are altered by human-made structures. In cases where there is no minimum flow agreement, as in the case of the Newport 1,2,3 facility, compliance with the numeric criteria is calculated on the basis of the 7Q10 flow value unless an alternate flow value is set by VWQS, section 3-01. No such alternate flow value has been set.

ANR utilizes the “Agency Procedure for Determining Minimum Stream Flow, dated July 14, 1993 (Agency Procedure) to determine minimum stream flows for, among other things, hydroelectric bypasses. The procedure states, in part, that: “Bypasses shall be analyzed case-by-case,” but that unless otherwise indicated, the ANR shall recommend bypass flows of at least 7Q10 to protect aquatic habitat and maintain dissolved oxygen in the bypass and below a project.

Section 3-01(B)(1)(c) of the VWQS recognizes that, in the absence of site-specific studies, procedures of the Secretary of ANR may establish hydrologic standards to ensure the full support of designated uses. Thus, the Board cautiously accepts the concept that default minimum flow values may be used, in the absence of conclusive site-specific studies, although site-specific studies are generally preferred.

The minimum flow rate of 30 cfs in the Newport 1,2,3 bypass exceeds the 7Q10 value. Although there is some disagreement about what the correct 7Q10 value actually is, a range of values has been estimated from 18.2 cfs (the Applicant’s proposed value) to values higher than 30 cfs (VNRC/NEKTU’s proposed values). Having considered the conflicting expert opinions in this proceeding, the Board concludes that the Applicant’s default value is not adequate to support designated uses within the bypass reach. Therefore, the Board concurs with the

Secretary of ANR that a minimum flow value of 30 cfs must be imposed to support good aquatic habitat in the bypass reach and that a flow regime and management plan need to be imposed to support high quality aquatic habitat in other reaches downstream and upstream of the bypass reach. This does not mean that *all* life stages of salmonid will be supported *in the bypass reach*; rather, the minimum flow value has been set so as not to result in “an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes” generally within the segment of the riverine system influenced by the Newport 1,2,3 facility. Thirty cfs will allow for a complete or nearly complete wetted channel width, deeper pools, and less terrestrial vegetative growth in the bypass channel than has historically been the case. Thus, there will be significantly improved habitat for aquatic biota and wildlife that do utilize the bypass reach. In conclusion, the 30 cfs minimum flow requirement represents a substantial improvement over existing and historic conditions in the Newport 1,2,3 bypass reach and, coupled with the various other management requirements of this Amended Certificate, represents a substantial improvement in fisheries habitat both downstream and upstream of the bypass reach, thereby achieving high quality aquatic habitat overall.

Accordingly, the Board concurs with and adopts the minimum flow value and the water level and flow management plan set forth in Condition B and Table B of the Certificate, with the proviso that any revisions to that plan shall require the Department to provide public notice and an opportunity for comment prior to the approval of such revisions.

The Board further concludes that the imposition of a *minimum* flow value of 30 cfs in the bypass reach of the Newport 1,2,3 facility provides good aesthetic value. While this flow value, in and of itself, will not support good spawning and incubation habitat for salmonids in the bypass reach, in the Board’s opinion, recreational fishing will be greatly enhanced by the provision of previously inaccessible high quality habitat for migrating fish in those reaches of the Clyde River above Clyde Pond. Accordingly, the Board concludes that the Certificate issued by the Secretary of ANR, as amended by the Board, provides adequate flow in the bypass reach to achieve compliance with the VWQS.

The Board observes that throughout the course of this proceeding, there has been considerable debate and briefing concerning the applicability of the term “background condition” as it was applied in a decision issued under a version of the VWQS pre-dating the standards applicable in this proceeding. In re Passumpsic River Hydroelectric Project, Memorandum of Decision at 8 (Aug. 15, 1995) (Passumpsic). Accordingly, the Board believes that some clarification of the import of that decision is in order.

Passumpsic stands for the proposition that the term reference condition, as previously defined in the VWQS, did not refer to pre-dam conditions for purposes of application of the VWQS in § 401 water quality certification proceeding for hydroelectric dams. In part, the Board’s reasoning was based on the fact that dams “may have significantly altered historical

riverine habitat, converting many to lacustrine ecosystems.” Id. at 3. The Board recognized that impoundments created as a result of dams “would fail to meet one or more specific water quality criteria in the VWQS if they were to be evaluated using a pre-dam interpretation of the term “background conditions.” As ANR has noted in its Supplemental Conclusions of Law, “comparing an impoundment created by a dam to the reference condition of a river would be a comparison of apples to oranges.” Such a comparison would lead to absurd results.

The present case, however, is distinguishable from that in Passumpsic. First, the Board in its revision of the VWQS eliminated the term “background condition” and instead adopted the use of the term “reference condition.”⁵ Second, the Board’s decision did not specifically address the question of how bypass reaches should be evaluated.

In the Board’s opinion, an assessment of the bypass section of a river can be properly compared to other sections of the existing river, including downstream and upstream reaches that “have been minimally affected by human influences,” as well as other “reference” streams. It would be improper and legally inconsistent with the VWQS to find, as the Applicant has argued, that reference conditions for a bypass reach are distinct from other sections of the same river or comparable rivers, and should be compared with other bypass reaches, particularly where the goal of the VWQS is to support designated uses. Thus, in evaluating the impacts of the Newport 1,2,3 facilities on designated uses, the Board is mindful that the entirety of the Project’s influences, including the impacts of various flow regimes both upstream and downstream of the Newport 1,2,3 facility, need to be taken into consideration when evaluating whether a change in reference conditions would have “an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes.” VWQS, Section 3-04(B)(4)(c).

2. Whether the Certificate issued by the Secretary of ANR fails to provide adequate upstream and downstream fish passage at the Newport 1, 2, 3 facility to achieve compliance with the VWQS?

An assessment of the use of the Clyde River for fish passage is complicated, especially in regard to the reproductive needs and upstream and downstream passage of salmonids. It appears that there is very good fishery habitat in the Clyde River both below the bypass reach and above the Newport Dam. However, fish cannot now gain access to the habitat above the Newport 1,2,3 powerhouse because of obstructions in the bypass reach.

⁵ VWQS, Section 1-01(B)(39): “Reference condition means the range of chemical, physical, and biological characteristics of waters minimally affected by human influences. In the context of an evaluation of biological indices, or where necessary to perform other evaluations of water quality, the reference condition establishes attainable chemical, physical, and biological conditions for specific water body types against which the condition of waters of similar water body type is evaluated.”

There is no conclusive evidence that fish were ever able to ascend the bypass reach at Arnolds Falls. Even if fish could reach the Newport Dam, a human-made conveyance would have to be constructed to allow the fish to pass around the Newport Dam. Thus, an upstream fish passage requirement is a necessary component of this Amended Certificate.

The Applicant has proposed a trap-and-truck facility for the upstream passage of fish. This would require the installation of a trap at the Newport 1,2,3 trailrace and the trucking of fish to a drop off area above the Newport Dam. VNRC/NEKTU oppose this idea. They prefer that the bypass itself be made accessible to fish because there is potential habitat there to support reproduction and also because there is the possibility that fish may be able to migrate upstream as far as the base of the Newport Dam. If fish can reach the Newport Dam, VNRC/NEKTU argue that a fish ladder could be constructed to facilitate the “natural” upstream migration of fish.

The Board has carefully considered the various arguments in support of VNRC/NEKTU’s “adaptive” approach to fisheries management and disagrees with some of its assumptions. First, the Newport 1,2,3 bypass may contain some usable habitat for salmonid spawning and nursery, but it is fragmented and isolated. At best, there are only 58 habitat units in the bypass reach, as compared with 231 habitat units immediately below the Newport 1,2,3 powerhouse, and another 1,345 units above the Newport Dam. Stated differently, the total bypass reach for the Newport 1,2,3 facility represents 1.1 % of riverine habitat and 4.4% of potentially available spawning and incubation habitat of the Clyde River, while the percentage of habitat for salmon spawning and nursery habitat *above* Clyde Pond is estimated to be as much as 80%, if made accessible to migrating salmonids.

Second, the Board is not persuaded that salmonids were ever able to ascend Arnolds Falls, let alone the upper reaches of the Clyde River. On the other hand, there is merit in enhancing the fisheries of the Clyde River by providing upstream passage for migrating fish, and the Applicant has proposed a means for doing so using a trap-and-truck facility. While there are some potential drawbacks to this approach, not the least of which is the chance of human error in both the design of the facility and its operations, the Board believes that, on balance, the trap-and-truck option affords the most certain and readily implementable means of providing upstream passage for fish in the interest of achieving a self-sustaining population of migratory salmonids both downstream and upstream of the Newport 1,2,3 facility.

Nevertheless, given the doubts raised by VNRC/NEKTU concerning the details of the plan’s design and implementation and the quality of any assessment to be done prospectively to evaluate the effectiveness of this mode of fish passage, the Board has specifically conditioned this Amended Certificate, to require that the ANR provide public notice and an opportunity to comment on any upstream passage plan or effectiveness study filed by the Applicant with ANR for approval. If the Applicant’s proposal and the operating protocols that are set forth in this Amended Certificate are not achieving the objective of transporting

migrating fish upstream safely and effectively (with a minimum of delay and injury to fish), all in the interest of achieving a self-sustaining population of migratory salmonids both downstream and upstream of the Newport 1, 2, 3 facility, then VNRC/NEKTU may offer comment on why adjustments to the flow regime or additional measures need to be taken to achieve this objective.

Accordingly, the Board concurs with the Secretary of ANR that approval of a trap-and-truck facility to support the upstream migration of fish is preferable to the iterative and somewhat speculative approach put forward by VNRC/NEKTU. However, the Board amends Condition L. to incorporate additional safeguards and specific standards by which to assure either that the trap-and-truck facility will work effectively as designed and implemented or that the Secretary of ANR can, in the public interest, require the implementation of other measures, including but not limited to, the adjustment of flows and operating protocols, to assure that the fisheries of the Clyde River are not only maintained but enhanced.

The Board also concurs with the Secretary of ANR that the Applicant's proposed means for providing downstream passage of migrating fish will reasonably achieve the objective of safely transporting many migrating fish from Clyde Pond to the tailrace of the Newport 1,2,3 powerhouse. Therefore, the Board concurs with the Secretary of ANR in authorizing a fish pipe for downstream fish passage, but it does so by imposing additional safeguards and specific standards in Condition of M. of the Amended Certificate.

The Board heard credible evidence that some fish in their downstream migration will pass through the penstock and turbines, while others will not enter the fish pipe at all, but rather will pass directly over the Newport Dam. While the estimates concerning the number of fish that are likely to pass through the fish pipe vary, the Board is persuaded that additional measures need to be imposed to assure the safe passage of those fish that do use the Clyde River channel as their means of downstream migration. Accordingly, the Board has adopted Condition M. of the Certificate with the following modifications: (1) within one year of license approval, the Applicant shall notch the remnant dam adjacent to the Newport 1,2,3 powerhouse so as to concentrate bypass flows, and (2) it shall install a flume, if necessary, to provide safe and effective downstream passage past the ledges below the notch during times of spillage at Newport Dam. Additionally, when the Applicant files its downstream passage plan and, subsequently, an effectiveness study for the Department's review and approval, the Department shall provide notice to the public and an opportunity for public comment *prior* to the respective approvals of those documents. Additionally, the Board has modified Condition M. to assure that the Secretary of ANR can, in the public interest, require the implementation of other measures, including but not limited to, the adjustment of flows and operating protocols, and the removal of additional obstacles in the bypass, to assure that the fisheries of the Clyde River are not only maintained but enhanced.

In conclusion, the Certificate issued by the Secretary of ANR, as amended by the

Board, provides adequate upstream and downstream fish passage to achieve compliance with the VWQS in that portion of the Clyde River influenced by the civil works and operations of the Newport 1,2,3 facility.

3. Whether the proposed changes to reconstruction and operation of the Seymour Dam comply with the VWQS?

The Board has considered the Stipulated Agreement of the parties, and the evidence and argument that was prefiled in Docket No. WQ-02-08(A). The Board concludes that the terms and assurances contained in the parties' stipulated Conditions, as supported by their proposed stipulated findings of fact, will not be contrary to law and, indeed, will provide a rational basis for determining how water levels at the reconstructed Seymour Dam will achieve both the objectives of the SLA and assure continuing compliance with the VWQS and the Public Service Board's lake level order.

For these reasons, the Board adopts the parties stipulated Conditions F. and H. and incorporates them into the Board's Amended Certificate.

E. Other Applicable Requirements of State Law

VNRC/NEKTU included in their proposed Findings of Fact, Conclusion of Law, and Order, as well as their supplemental filing, argument concerning the applicability of the Public Trust Doctrine and the Public Right to Fish under Chapter II, Section 67, of the Vermont Constitution. They offered these arguments in support of their position that the Secretary of ANR, and the Board on appeal, have both a common law and Constitutional obligation to protect the feeding and spawning habitat of fish and other aquatic life in the waters of the State.

The Board agrees with VNRC/NEKTU's general premise that as trustees of a public trust resource and also of an important fishery resource, the Board must not only protect those resources for the benefit of all Vermonters, but work for their enhancement. By ensuring that the Project as a whole complies with the applicable provisions of the VWQS, the Board believes that it is meeting obligations its under the law. See Lamoille at 66-67.

V. ORDER - ACTION OF THE BOARD

Based on its review of the record in these consolidated appeals and the above Findings of Fact, the Board concludes that there is reasonable assurance that operation and maintenance of the Clyde River Hydroelectric Project as proposed by the Applicant and in accordance with the Conditions imposed by the Secretary of ANR in the Certificate issued on August 1, 2002, as amended below, will not cause a violation of the Vermont Water Quality Standards and will

be in compliance with §§ 301, 302, 303, 306, and 307 of the CWA, P.L. 92-500, as amended, and other appropriate requirements of state law. The Board takes official notice of and expressly incorporates by reference, with minor amendments, Conditions A, B, C, D, E, G, I-K, and N-W, and incorporates by reference but significantly modifies Conditions L and M, all from the Certificate issued by the Secretary. The Board also adopts and incorporates Conditions F and H from the parties' Stipulated Agreement.

- A. **Compliance with Conditions.** The Applicant and any successors in interest shall operate and maintain the Project consistent with the Findings and Conditions set forth in the Certificate issued by the Secretary of ANR on August 1, 2002, as amended herein, where those Findings relate to protection of water quality and the support of designated and existing uses under the Vermont Water Quality Standards and other appropriate requirements of state law.

- B. **Water Level and Flow Management.** The Project shall be operated in accordance with the minimum flow and water level management schedules tabulated below. Minimum flows shall be released on a continuous basis and not interrupted; minimum flows are the values listed below, or instantaneous inflow, if less, unless otherwise noted. True run-of-river operation, or r-o-r, where referenced, means no utilization of headpond storage and that outflow from the facility is equal to inflow to the pond on an instantaneous basis, as further described in Footnote 3, page 11, of the Certificate, incorporated by reference.

Seymour Lake Dam: Except as allowed in Conditions C and H below, the dam shall be operated in a true run-of-river mode. A provision will be made in the new dam to pass a minimum flow of 4 cfs.

....

Newport 1, 2, 3: If flashboards are retained, the station shall be operated at full capacity any time that the pond level rises above the concrete crest. Operation shall be in accordance with the following table. When the station is not operating, all inflows shall be released at the dam, except for any flows necessary to operate fish passage facilities.

Table B. Newport 1, 2,3 Operation

Period	Operating Range (feet) ¹		Conservation Flow (cfs)	
	High	Low	Bypass	Downstream
Jan 1 - March 31	0	-1.0	30	120
April 1 - June 7	0	-1.0	30	363

June 8 - July 15	0	-1.0	30	100
July 16 - Sept 30	0	-2.0	30	100
Oct 1 - Dec 15	0		30	r-o-r
Dec 16 - Dec 31	0	-1.0	30	120
Note 1 Operating range is relative to the dam crest.				

....

D. **Flow Management Plan.** The Applicant shall develop and file with the Department a flow management plan detailing how the Project will be operated to comply with the conservation flow and impoundment fluctuation limitations described above in Condition B. The plan shall include descriptions, hydraulic design calculations, an implementation schedule, and design drawings. At the West Charleston and Newport 1, 2, 3 facilities, the plan shall address: 1) ramping and measures to be used to control lag times and avoid related non-compliance with the conservation flow requirements; 2) how Clyde Pond will be restored to the dam crest elevation by October 1 and maintained at that elevation after that date to meet the downstream run-of-river flow requirements; and 3) flow management during the refill period following a maintenance drawdown. After Department approval of the plan, the plan shall be filed with FERC no later than 120 days from the date of license issuance. FERC shall either approve the plan or return the plan to the Applicant for revision to incorporate FERC-recommended changes. After revision, the Applicant shall submit the plan to the Department for approval of the changes. The Department shall provide notice to the public of receipt of any proposed revisions to the plan and an opportunity for public comment prior to approval of such revisions. The plan shall then be filed with FERC for final approval, and implemented by the Applicant upon notice of approval. The Department reserves the right of review and approval of any material changes made to the plan.

....

F. **Monitoring Plan for Water Level and Flow Management at Echo and Seymour Lakes.** The Applicant shall record the levels of Echo Lake daily during high flow events, including spring runoff, and weekly during extended dry periods, and at Seymour Lake on a daily basis, to determine if water level conditions consistent with the design projections are occurring. Data reports, in a form acceptable to the Department, for each calendar year, shall be filed for the periods of June 16 to September 15 and September 16 to June 15 respectively, no later than the last day of the month for each reporting period. The Department may require changes to the data collection frequency and may suspend data collection once a sufficient record is available. At Seymour Lake, data shall be collected both at the dam (headwater and tailwater) and at the lake so that the difference in water surface elevation between

points can be determined over a range of flows, and in addition the crest elevation shall be recorded. Should gate operation be approved pursuant to Condition H below, the Applicant shall also record gate setting data. If requested, data reports for Seymour Lake shall also be filed with the Seymour Lake Association.

....

- H. **Replacement of Seymour Lake Dam.** Prior to the replacement of the Seymour Lake Dam, the Applicant shall develop, in consultation with the Department and the Seymour Lake Association, plans for the replacement structure. Final plans, along with a hydrology/hydraulics design brief, shall be submitted to the Department at least 90 days prior to the commencement of construction and shall be subject to Department review and approval with copies to the Seymour Lake Association. The final plans shall include design of the gate, frame, stem and wheel needed to operate the gate, should it be determined to be necessary. The hydraulic performance of the proposed structure shall be supported at a minimum by spillway and gate rating curves and an updated reservoir routing analysis to define the high flow lake stages with the existing and proposed dams, using the new tailwater rating curve and the updated upstream water surface relationship and analyzing appropriate events selected from the 1986-to-present lake water level records and simulating floods with frequencies of 2, 5, 10, 25, 50, and 100 years.

The design shall include a feature that provides the ability to permanently adjust the crest elevation based on post-construction experience. The crest shall initially be set at an elevation that would achieve a normal summer lake level of elevation 1278.86 feet msl, based on the refined analysis. The design shall also include a gate bay to enable future operation of the gate if the Department determines that the modified dam has significantly increased the magnitude, frequency, or duration of shoreline flooding, and this impact cannot be reasonably abated. However, the gate operator shall not be installed and the gate shall not be operated in any way without prior approval by the Department.

The need for gate operation, if any, shall be determined after an initial period of two calendar years of data collection as provided in Condition F above. The two-year period will be an ongoing evaluation process. If, based on the data collected at any time during the two-year period, the Department determines that there has been a significant adverse impact on the water levels, the Department can require the operator to be installed at any time. The Applicant shall schedule annual meetings in July, if requested by any party, and October of the first two calendar years (e.g. 2005 and 2006, if dam is constructed in 2004) following reconstruction of the dam and include the Seymour Lake Association and the Department.

If approval is granted and a gate operator is installed, the Applicant shall draft a gate

management guide, subject to Department approval, detailing the manner and circumstances under which the gate would be operated and providing for ramping if determined by the Department to be necessary to protect downstream habitat and channel integrity.

After sufficient monitoring, the permanent crest elevation shall be set so as to result in the normal summer lake level remaining at elevation 1278.86 feet msl, with any crest adjustments subject to the Department's prior review and approval.

In any event, the Department shall retain the authority to require, based on an evaluation of any data collected by the Applicant, or any other available data, initiation or suspension of gate operation, modification of the gate management guide, or any other modification of the structure or operation of the dam.

....

- L. **Upstream Fish Passage at Newport Facility.** Within two years of license issuance, the Applicant shall design, construct, and initiate the operation of a fish trap-and-truck facility at Newport 1, 2, 3. Applicant responsibility for maintenance and operation of the facility shall continue for the term of the license.

An upstream fish passage plan shall be developed by the Applicant in consultation with the Department, the Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service and shall be submitted to the Department at least 180 days prior to the commencement of construction. The plan shall be subject to Department review and approval. The Department shall provide notice to the public of receipt of the upstream fish passage plan and provide an opportunity for public comment prior to approval of such a plan. This plan shall include:

- 1) Design and construction plans and specifications;
- 2) Plans for operation and maintenance;
- 3) Provisions to minimize injury of fish;
- 4) Provisions to minimize undue delay in moving fish upstream; and
- 5) Provisions to convey fish safely and effectively upstream, without undue injury of fish or delay in transport.
- 6) A copy of any proposed contract between the Applicant and any third party for the trapping and transport of fish. A copy of any finally executed contract shall be filed with the Department.

The upstream fish passage facility shall be operated 24 hours per day, April 1 - May 21 and September 1 - December 15, with the period subject to adjustment based on knowledge gained about migration periods for migratory salmonids.

Within one year of license issuance, the Applicant shall develop and file with the Department, a plan for an effectiveness study. The study plan shall include an implementation schedule; shall be developed in consultation with the Department of Fish and Wildlife and U.S. Fish and Wildlife Service; and shall be subject to Department approval prior to implementation. The Applicant shall be responsible for timely completion of the effectiveness study. The Department shall provide notice to the public of receipt of the effectiveness study and provide an opportunity for public comment prior to approval of such a study.

Based on the outcome of the study, the Department may require modifications to the trap-and-truck facility, its operation, and maintenance in order to attain reasonable effectiveness. Such modifications may include, but are not limited to changes in the flow regime for the Newport 1, 2, 3 facility set forth in Condition B and Table B. If, after review of the effectiveness study, the Department determines in consultation with the Department of Fish and Wildlife and U.S. Fish and Wildlife Service that the trap-and-truck facility fails to achieve its objective of transporting migrating fish upstream safely and effectively, with a minimum of delay and injury to fish and in the interest of achieving a self-sustaining population of migratory salmonids both downstream and upstream of the Newport 1, 2, 3 facility, the Department may direct the Applicant to study and implement alternative means of providing upstream passage including, but not limited to, the increase of flows in the bypass reach in combination with the removal of the remnant dam and other man-made physical obstructions in the bypass reach which prevent safe and effective upstream passage of migrating fish and the provision of fish ladders or other means of moving fish over the Newport Dam.

- M. **Downstream Fish Passage at Newport Facility.** Within two years of license issuance, the Applicant shall install a downstream fish passage facility at Newport Dam to convey fish safely and effectively to the river immediately below the bypass reach. Within one year of license approval, the Applicant shall notch the remnant dam adjacent to the

powerhouse that will concentrate bypass flows, and install a flume, if necessary, to provide safe and effective downstream passage past the ledges below the notch, for fish that enter the Newport 1,2, 3 bypass reach during times of spillage at Newport Dam.

A downstream fish passage plan shall be developed by the Applicant in consultation with the Department, the Department of Fish and Wildlife and the U.S. Forest Service, and shall be submitted to the Department at least 180 days prior to the commencement of construction. The plan shall be subject to Department review and approval prior to construction. The Department shall provide notice to the public of receipt of the upstream fish passage plan and provide an opportunity for public comment prior to

approval of such a plan. The plan shall include:

- 1) Design and construction plans and specifications;
- 2) Plans for operation and maintenance;
- 3) Provisions to minimize entrainment of fish into the penstock and generating unit(s);
- 4) Provisions to minimize impingement of fish on devices or structures used to prevent entrainment; and
- 5) Provisions to convey fish safely and effectively downstream of the facility.

Downstream passage shall be provided 24 hours per day, April 1 - June 15 and September 15 - December 15 and shall be functional at all impoundment operating levels, with the period subject to adjustment based on knowledge gained about migration periods for migratory salmonids.

Within one year of completion of the downstream fish passage facility, the Applicant shall conduct a study to determine its effectiveness. The study plan shall include an implementation schedule; shall be developed in consultation with the Department of Fish and Wildlife and the U.S. Fish and Wildlife Service; and shall be subject to Department approval prior to implementation. The Applicant shall be responsible for timely completion of the effectiveness study. The Department shall provide notice to the public of receipt of the effectiveness study and provide an opportunity for public comment prior to approval of such a study.

Based on the outcome of the study, the Department may require modifications to the downstream fish passage facility at the Newport Dam and also direct that other measures be taken including, but not limited to, changes in the flow regime for the Newport 1, 2, 3 facility set forth in Condition B and Table B.

If, after review of the effectiveness study, the Department determines in consultation with the Department of Fish and Wildlife and U.S. Fish and Wildlife Service that the downstream fish passage facility at the Newport Dam fails to achieve its objective of transporting migrating fish downstream safely and effectively, with a minimum of delay and injury to fish and in the interest of achieving a self-sustaining population of migratory salmonids both downstream and upstream of the Newport 1, 2, 3 facility, the Department may direct the Applicant to study and implement alternative means of providing downstream passage including, but not limited to, the increase of flows in the bypass reach in combination with the removal of the remnant dam and other man-made physical obstructions in the bypass reach which prevent safe and effective downstream passage of migrating fish.

....

W. **Continuing Jurisdiction.** The Board returns jurisdiction over this matter to the

Secretary of ANR to assure Project implementation and compliance with the Certificate issued on August 1, 2002, as amended herein. The Department may add and alter the terms and conditions of this amended Certificate, when authorized by law and as appropriate to carry out its responsibilities with respect to the protection and enhancement of water quality during the license period.

Dated at Montpelier, Vermont, this 11th day of July, 2003.

WATER RESOURCES BOARD
By its Chair

/s/ David J. Blythe

David J. Blythe

Concurring:
John D.E. Roberts
Mardee Sánchez

DISSENTING OPINION, Jane Potvin and Lawrence H. Bruce, Jr.

We respectfully dissent from the Board's decision.

We do not believe that Citizens has met its burden of proof. Like the applicant in the Lamoille proceeding, Citizens must demonstrate that its proposal will comply with each of the applicable provisions within the VWQS for each of the segments of river influenced by project facilities under appeal. In re: Lamoille River Hydroelectric Project, Docket Nos. WQ-94-03 and WQ-94-05, Findings of Fact, Conclusions of Law and Order at 49 (Nov. 5, 1996).

Citizens has not done this.

Unlike the majority of the Board, we believe that the *existing* salmonid fishery of the Clyde River *is* an exceptional resource value in need of restoration and protection, regardless whether the Secretary of ANR has formally recognized it as such. No one disputes that, since the removal of the Newport 11 facility, salmonids have been able to migrate to and use the habitat of the Clyde River as far upstream as the tailrace of the Newport 1,2,3 facility. Therefore, the only question is whether the Applicant should be allowed to appropriate the bypass reach for the next half century almost exclusively for private power production or whether it will be required to increase flows in the bypass reach such that high quality aquatic habitat is made available for spawning and other critical life stages of salmonids.

As the Applicant has noted, the bypass reach has not been designated by rule as a WMT 3. Therefore, the State has made no determination that the bypass reach should be managed any differently than other segments of the Clyde River. Indeed, all parties agree that the bypass reach is a Class B water, designated as cold water fish habitat, subject to the requirement of VWQS § 3-04(B)(4)(d). Therefore, in our opinion, the bypass reach *must* be managed so that there is no undue adverse effect on, among other things, “the species composition or propagation of fishes” in the Clyde River, measured against “reference condition” waters, meaning those minimally affected by human influences, not against similarly impacted bypass reaches. See VWQS 1-01(B)(39).

We believe that this requires the Applicant to present the Board with an operating protocol that will assure the existence of high quality aquatic habitat in the bypass reach so that the existing mix of fish species in the Clyde River may propagate and otherwise be supported in *all* segments of the river influenced by the Newport 1,2,3 facility, beginning first with those portions of the river downstream of the Newport Dam and, eventually, through the introduction of appropriate fish passage, in those segments above the dam. Therefore, in the absence of credible site-specific studies supporting a minimum base flow of 30 cfs or lower in the bypass reach, we conclude that Citizens has not demonstrated that its proposal will achieve compliance with the VWQS, at least with regard to those criteria that address aquatic biota, wildlife, and aquatic habitat in Class B waters.

Does this mean that Citizens should be denied a Certificate? The Board in Lamoille concluded that this was the proper outcome for failure of an applicant to meet its burden of proof. See In re Lamoille River Hydroelectric Project at 69. The effect of such a ruling, however, would be to preserve the status quo while Citizens operates year-to-year with the approval of the FERC; but, in our opinion, the current leakage flow of between 2 to 3 cfs is totally unacceptable.

Accordingly, we would urge a different approach than that taken by the majority. As

an alternative, we would adopt the iterative, “adaptive” approach recommended by VNRC and NEKTU. We would rely on the record as a whole in this matter to support the issuance of an Amended Certificate that would start from the premise that the best way to support the exceptional salmonid fishery of the Clyde is to establish flows and management practices that will allow fish to move, feed, and reproduce with as little direct intervention by humans as possible.

Rather than presume, as the Applicant and a majority of the Board members have, that salmonid have never and will never ascend Arnolds Falls, we would allow the fish themselves to demonstrate whether they can or cannot reach the base of Newport Dam. We would do this by conditioning the Certificate so as to: (1) require the immediate removal of the remnant dam near the Newport 1,2,3 powerhouse; (2) increase the flows in the bypass reach during critical migration periods as recommended by the Appellants and ANR’s own fisheries biologists; (3) require study of the fish for at least five years to see if they get as far as the plunge pool beneath Arnolds Falls and attempt to ascend those falls; and (4) give the Secretary of ANR the authority to require the removal of additional man-made obstacles at and above Arnolds Falls, if deemed appropriate, to facilitate upstream fish passage to the base of the Newport Dam. Depending on the conclusions of an effectiveness study developed by the Applicant in consultation with DFW and USFW, the Secretary of ANR could decide whether a fish ladder should be constructed to move migrating fish over the Newport Dam to Clyde Pond and the upper reaches of the Clyde River *or*, alternatively, whether to abandon the concept of “natural” upstream passage of salmonids in the bypass reach by authorizing the Applicant to construct a trap-and-truck facility, as proposed in this proceeding or modified based on information gathered during the study period.

We prefer this approach because we believe that it is consistent with the long-held policy of the State of Vermont to “protect and enhance the quality, character and usefulness of its surface waters” and to “assure the maintenance of water quality necessary to sustain existing aquatic communities.” See 10 V.S.A. § 1250(1) and (4). We believe that as *public* servants charged with the management of the *public* waters of this State, it is our duty to assure that rivers like the Clyde receive the water quality protection that the *public* expects and deserves. See Vt. Const. Ch. II, § 67. To sustain an exceptional salmonid fishery in the Clyde, while permitting the river’s continued use for hydroelectric generation, demands careful planning, study, and on-going stewardship. Although Citizens has had the benefit of operating hydro-electric facilities on the Clyde River for many years, this is the *first* opportunity that the State has had to issue a Certificate with conditions that assures that the Project operations will comply with the VWQS. Accordingly, we should not hesitate to exercise our authority fully and aggressively, making restoration of the bypass reach and protection of the salmonid fishery a first priority.

