

VERMONT AGENCY OF NATURAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Morrisville Hydroelectric Project – Water Quality Certification

Response to Public Comments

August 9, 2016

The Agency of Natural Resources' Department of Environmental Conservation (Department) placed its tentative decision and draft water quality certification on public notice from January 7 – February 19, 2016 for the purpose of receiving written statements and data bearing on the issuance of a water quality certification to Morrisville Water and Light (MWL or the Applicant) for the continued operation of the Morrisville Hydroelectric Project, which includes the Cadys Falls and Morrisville facilities located on the mainstem of the Lamoille River, the Green River facility and the Lake Elmore facility located on the tributaries of the Lamoille River. The Department also conducted a public hearing on February 16, 2016 at the Morrystown Elementary School in Morrystown, Vermont for the purpose of receiving oral testimony.

A total of 139 persons, representing themselves or organizations, presented oral and/or written testimony at the hearing or filed letters with the Department. Written comments were received from the Applicant, the Vermont Natural Resources Council, the Vermont Chapter of Trout Unlimited, American Whitewater, Vermont Paddlers Club, Umiak Outfitters, Lamoille River Paddling Trail Steering Committee, Lamoille River Anglers Association, and a number of individuals.

The following is a summary response to the substantive comments received. Some of the comments have been paraphrased. The full text of these comments is available upon request for review at the Vermont Department of Environmental Conservation – Watershed Management Division. A recording of the hearing is also available upon request.

The Department notes that there may be changes to the certification related to its continuing review and not related to the public comments. Interested persons should carefully review the final decision.

a. FERC Process

Comment 1: Morrisville Water and Light (MWL) and others commented about what they deemed the excessive length of time of the relicensing process for the hydroelectric project, and that it should be completed in a shorter time period by the State.

Response 1: MWL is applying to the Federal Energy Regulatory Commission (FERC) for a new license to operate the Morrisville Hydroelectric Project. FERC issues licenses to hydroelectric projects under the authority of the Federal Power Act (FPA) for a term between 30 to 50 years. As such, FERC, which is the entity that administers the FPA, sets forth the requirements and timeline for the hydroelectric relicensing process, not the State of Vermont. Pursuant to the FPA, an applicant is required to file a notice of intent indicating whether they intend to seek a new license for a hydroelectric project between 5 to 5.5 years before the expiration date of their current license. MWL filed their notice of intent in April 2010 which started the FERC relicensing process.

The FERC licensing process is designed to identify and obtain needed information before the filing of a license application. The information gathered through studies completed by the applicant inform a comprehensive review of the project benefits, environmental effects, and form the foundation for resource agency conditions under a new license.

To complete a comprehensive assessment of the effects of project operations, FERC is required under the National Environmental Protection Act (NEPA) to seek input from the public, nongovernmental organizations, Indian tribes, and state and federal resource agencies to identify environmental issues regarding proposed or existing project operations, and to determine studies needed in order to better understand the issues. The applicant is responsible for working with FERC and other stakeholders to develop scientifically supported study plans that will characterize the effects and potential effects of project operations on resources (i.e. water quality, recreation, aquatic habitat). The FERC relicensing process includes two years of study for the applicant to conduct the requested studies. The information gathered by the studies serves as the basis for a licensing decision by FERC, as well as state and federal resource agencies which have mandatory conditioning authority under FPA.

Additionally, FERC is required to ensure the new license will be in compliance with other federal laws and regulations, including the federal Clean Water Act. Under the federal Clean Water Act, an applicant seeking a federal license or permit must obtain a Section 401 water quality certification from the state certifying agency that the activity and operation will not violate the state's water quality standards before the federal license or permit can be issued. *See* 33 U.S.C. § 1341(a)(1). The term "discharge" includes any release of the water from the hydroelectric turbines into the river. *S. D. Warren Co. v.*

Me. Bd. of Env'tl. Prot., 547 U.S. 370, 375-76 (2006). Therefore, MWL needs the Department to issue the certification before FERC can issue the new license for the hydroelectric project. The information needed to make a determination was provided by the studies conducted by MWL.

2. WATER QUALITY CERTIFICATION

a. *Legal Obligations*

Comment 2: MWL and others commented that, “ANR needs to consider other factors beyond fish habitat when issuing a Water Quality Certification. Those other factors include economic impacts, recreation impacts, and the State’s energy goals.”

Response 2: In order to issue a water quality certification under Section 401 of the federal Clean Water Act, the Department must find “reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards.” 40 C.F.R. § 121.2(a)(3). As applied to the Morrisville Hydroelectric Project, the Department must find reasonable assurance that MWL’s operations will comply with the Clean Water Act and with any other appropriate requirement of state law, in particular Vermont Water Quality Standards (Standards). The Department may set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a federal license will comply with the Clean Water Act and with any other appropriate requirement of state law. 33 U.S.C. § 1341(d).

Vermont is a delegated state that implements the Clean Water Act through the Vermont Water Quality Standards (Standards), adopted by the Secretary of the Agency of Natural Resources pursuant to 10 V.S.A. Chapter 47. The Standards set forth designated uses that waters must be managed to fully support, specific water quality criteria that must met based on the classification of the water, and general water quality criteria to be achieved in all waters regardless of classification.¹ This is consistent with the federal regulations that require delegated states to include “use designations consistent with the provisions of section 101(a)(2) and 303(c)(2) of the Act” and “water quality criteria sufficient to protect the designated uses.”² As a result, the Standards require the Department to

¹ Agency of Natural Resources. Vermont Water Quality Standards. 2014.

² 40 C.F.R. § 131.6. The complete list of elements required under 40 C.F.R. § 131.6 include the following:

- (a) Use designations consistent with the provisions of section 101(a)(2) and 303(c)(2) of the Act.
- (b) Methods used and analyses conducted to support water quality standards revisions.
- (c) Water quality criteria sufficient to protect the designated uses.
- (d) An anti-degradation policy consistent with 40 CFR § 131.12.
- (e) Certification by the State Attorney General or other appropriate legal authority within the State that the water quality standards were duly adopted pursuant to State law.
- (f) General information which will aid the Agency in determining the adequacy of the scientific basis of the standards which do not include the uses specified in section 101(a)(2) of the Act as well as information on general policies applicable to State standards which may affect their application and implementation.

manage waters to support designated uses, achieve water quality criteria, and prevent degradation of high quality waters.

The certification process does not authorize the Department to balance designated uses with other factors that have the potential to impede the Department's mandate to manage waters to fully support designated uses and achieve water quality criteria. Although the environmental impacts associated with replacement energy from reduced generation potential, economic impacts associated with reduced generation potential, and the State's renewable energy goals are important issues, the Department is not authorized to balance these factors against the designated uses or water quality criteria provided in the Standards. These considerations are more appropriate for the FERC environmental assessment, not the water quality certification determination.

Comment 3: American Whitewater (AW) and Vermont Paddlers Club (VPC) commented that in issuing a decision and certification for the Morrisville Hydroelectric Project, the Department disregarded the FERC environmental assessment that was based on studies and a multi-year public NEPA process, the whitewater boating study and the recommended operations issued by FERC.

Response 3: The Department did not disregard the FERC Environmental Assessment, but the Department's legal obligations to review the project differ from those of FERC under the Federal Power Act. Although these processes are interrelated, the scope of review is different. The Department is charged with a specific review to determine whether the continued operation of the project will violate the federal Clean Water Act and appropriate state law.

The Department's decision regarding MWL's application for continuing operation of the Morrisville hydroelectric project was based on review of the Applicant's FERC license application, which includes the studies associated with the FERC relicensing process, as well as the FERC Environmental Assessment, and other supporting documents received through April 29, 2016. Based on these materials, the Department determined the conditions necessary to provide reasonable assurance that the Standards will not be violated.

b. Status of Project Waters

Comment 4: A number of people commented that current operations at the Morrisville Hydroelectric Project facility have not resulted in environmental harm or impact to aquatic habitat, and the MWL has been good stewards of the river resource.

Response 4: Several of the waters affected by MWL's operations are not currently meeting management objectives to support designated uses required under the Standards as a result of operation of the Morrisville hydroelectric project. As indicated in Finding 72, the Department issues a six-part list of Priority Surface Waters Outside the Scope of the Clean Water Act Section 303(d). Part F lists surface waters where aquatic habitat

and/or other designated uses of the Standards have been altered by flow regulation to the extent that one or more designated uses are not supported. The Cadys Falls bypass reach, the reaches bypassed by the Morrisville facility, Elmore Brook, Lake Elmore, Lake Lamoille, Green River and Green River Reservoir are listed due to flow alterations from operations of the Morrisville Hydroelectric Project.³

For example, the current operations of Cadys Falls facility dewater approximately 1690 feet of the river from the dam to the powerhouse tailrace. Similarly, operations of the Morrisville facility result in flows in the primary and secondary bypass reaches that are inadequate to support and protect aquatic habitat, aesthetics, and recreation.

Additionally, over the past several years there have been multiple conservation flow violations below the tailrace of the Cadys Falls facility. These violations significantly decreased the flow in the Lamoille River below the powerhouse. These events often resulted in high-stress conditions (very low flows during high temperature periods), which have the potential to adversely impact aquatic resources.

Comment 5: Vermont Natural Resource Council (VNRC), Vermont Chapter of Trout Unlimited (VTTU) and others commented that operations currently result in the dewatering of the bypass reaches that do not regularly support aquatic habitat, boating, recreation or other uses. Additionally, they collectively state the current flow regimes are out of compliance with the Standards. Further they comment that MWL has been using the Lamoille River for over a century for power generation, and in that time project operations have had adverse impacts on water quality and aquatic habitat of the river and violate Standards.

Response 5: Noted. The Department made similar findings regarding the impacts of operations (see response 4). To address these impacts, the issued certification includes operational conditions that will ensure the affected waters are restored and will fully support the designated uses of aquatic biota, wildlife, and aquatic habitat, aesthetics, and recreation. These conditions require MWL to implement appropriate conservation flow requirements in the bypass reaches of the Cadys Falls and Morrisville facilities to prevent these reaches from being dewatered. In addition, the downstream flow and water level management conditions at the Green River facility will restore and protect downstream waters in the Green River. Also by condition of the certification, MWL must operate the Cadys Falls facility and Morrisville facility in true run-of-river mode, with outflow equaling inflow on an instantaneous basis. MWL will need to automate the facilities to ensure compliance with the conditions, which will reduce the risk of flow violations that have occurred at the project and will better protect the public trust resources (Lamoille River and Green River) that are utilized by MWL for power generation.

³ State of Vermont, List of Priority Surface Water, Part F. Surface Waters Altered by Flow Regulations. 2016. http://dec.vermont.gov/sites/dec/files/wsm/public-notice/mapp/Part%20F_draft_2016_complete.pdf

3. BYPASS FLOWS

a. Aquatic Habitat

Comment 6: MWL commented that it “[h]as proposed changes to its long-standing operations that would increase conservation flows significantly” at Cadys Falls and Morrisville to meet water quality standards.

Response 6: As stated in response 4 and 5, current operations violate the Standards and do not support designated uses that must be fully supported in the waters affected by the project. Therefore, changes in operation are needed in order for the Department to issue a certification for continued operation of the hydroelectric project.

MWL has proposed increasing conservation flows at the Morrisville and Cadys Falls facilities. MWL has proposed a bypass flows of 36.5 cfs at the Morrisville facility, with 28 cfs in the primary bypass and 8.5 cfs in the secondary bypass channel, and 54 cfs at the Cadys Falls facility. Although MWL’s proposed flows represent an increase from current operations, the Department analyzed the study results and determined that they are insufficient to fully support two designated uses: aquatic biota, wildlife, and aquatic habitat; and aesthetics.

As explained in response 2, the Department is charged with finding reasonable assurance that operations of the facilities will not violate Standards. Pursuant to the Standards’ Streamflow Protection Criteria, “[a]ny 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” (Standards, Section 3-01(C)(1)(c)).

Operation of the project affects the bypass reaches through diversion of water from the river channel, resulting in a change from the natural flow regime. As these reaches are Class B waters, flows in the bypass reaches must ensure the full support of designated uses, including aquatic biota, wildlife, and aquatic habitat, aesthetics, and recreation, and ensure that water quality criteria, such as dissolved oxygen, are met.

The Standards provide that “the preferred method for ensuring compliance with [the Streamflow Protection Criteria for Class B waters] 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.” (Standards, Section 3-01(C)(1)(c)).

MWL conducted habitat flow studies (Findings 105-113 & 115-119) and aesthetics studies (findings 188 & 191) to evaluate flows that would ensure compliance with the Standards.

Designated Use: Aquatic Biota, Wildlife, and Aquatic Habitat

Based on site specific habitat-flow study at the Morrisville facility, the flows proposed by MWL in the primary bypass would correspond to approximately 61 percent of the maximum observed habitat provided for the most limiting species. At the Cady's Falls facility, the flows proposed by the Applicant corresponds to approximately 42 percent of the maximum observed habitat provided for the most limiting species. The Department analyzed the study results and determined the proposed bypass flows do not provide high quality aquatic habitat and do not fully support aquatic biota, wildlife, and aquatic habitat (See Findings 201 & 205).

Additionally, as described in Finding 196, the MWL proposed bypass flows are below the 7Q10 drought flow. The 7Q10 flow is the period of lowest stream flow during a seven-day interval that is expected to occur once every 10 years. During this time of low flow, the amount of dissolved oxygen in the water would be expected to be the lowest encountered under normal conditions. Historically, 7Q10 flow statistic has been used to set standards for dilution of wastewater effluent. These conditions are generally considered to be the worst natural case.

The instream flow scientific literature is clear that 7Q10 flows are not protective of aquatic life and are inadequate to conserve biological integrity. The conditions typically associated with a 7Q10 flow would result in significant portions of the stream channel being dewatered, including side channels that are important to early life stages of many fish species. It may also be difficult for fish to migrate or move up or downstream, leaving fish crowded in deeper pools and increasing water temperature. Annear et al. (2004) concluded while fish communities can generally survive near-drought conditions that occur infrequently for short periods, setting such a flow as a long-term condition will not sustain them.⁴

Designated Use: Aesthetics

Based on the results of the aesthetic flow studies, a flow of 59 cfs in the primary bypass and 8.5 cfs in the secondary bypass at the Morrisville facility (Finding 219) and a flow between 78.4 and 131.7 cfs at the Cadys Falls facility are needed to provide good aesthetic value. MWL has proposed flows of 28 cfs in the primary bypass reach of the Morrisville facility, 8.5 cfs in the secondary bypass reach of the Morrisville facility, and 54 cfs at the Cadys Falls facility. Since MWL's proposed flows are significantly lower than the flows needed to provide good aesthetic value, the Department determined that the proposed bypass flows do not provide good aesthetic value in the primary bypass at

⁴ Annear, T., Chisholm, I., Beecher, H., Locke, A., Aarrestad, P., Burkardt, N., Coomer, C., Estes, C., Hunt, J., Jacobson, R., Jobsis, G., Kauffman, J., Marshall, J., Mayes, K., Stalnaker, C., and Wentworth, R.. *Instream Flows for Riverine Resource Stewardship*. Instream Flow Council, Cheyenne, WY, at pp. 177-179 (Revised Edition 2004).

the Morrisville facility, nor in the Cadys Falls bypass. As a result, the Department determined that the bypass flows proposed by MWL do not meet Standards.

Comment 7: MWL commented that the “[p]roposed bypass flows are dramatically higher than existing flows, and are not required by the Vermont Water Quality Standards and the ANR Streamflow Procedure.” Additionally, MWL commented that the “[p]roposed bypass flows are the Cadys Falls and Morrisville facilities are unusually high for a hydroelectric facility in Vermont.”

Response 7: Under the Applicant’s original FERC license issued August 28, 1981, bypass flows were not required at the Morrisville and Cadys Falls facilities. In accordance with Section 3-01(C)(1) of the Standards, the bypass flows required in the water quality certification for the Project are based on site-specific habitat-flow studies and were selected by the Department because they will provide full support of uses such as aquatic biota, wildlife and aquatic habitat and aesthetic use, and comply with other applicable water quality criteria.

In the absence of a site-specific study, the Department would “accept the U.S. Fish and Wildlife Service recommended minimum flows of 0.5 csm (cubic feet per second per square mile) (summer), 1.0 csm (fall and winter), and 4.0 csm (spring) as a presumption that stream values and uses are protected with little or no further field examination of the water in question or hydrologic computations,” as dictated by the *Agency Procedure for Determining Acceptable Minimum Stream Flows*. Application of the 0.5 csm flow value for year round release would equate to a conservation flow of 120 cfs at the Morrisville facility and 134 cfs at the Cadys Falls facility. These flow values would be 38 cfs and 34 cfs higher than the conservation flows conditioned in the water quality certification for each facility, respectively.

Furthermore, these flow requirements are not unusually high for hydroelectric facilities in Vermont. The bypass flows required in the water quality certification are 0.34 csm for the Morrisville Facility and 0.37 csm for the Cadys Falls Facility. The Department has required many hydroelectric projects in Vermont to pass conservation flows equal to or greater than the bypass flows required in the water quality certification for the Morrisville and Cadys Falls facilities. For example, the following projects are required to pass flows in the summer ranging from 0.35 csm to 0.43 csm: Emerson Falls (0.35 csm; FERC No. 7809), Pierce Mills (0.37 csm; FERC No. 2396), Searsburg-Deerfield (0.38 csm; FERC No. 2323), Killington (0.40 csm; FERC No. 8354), North Troy (0.41 csm; FERC No. 10172), Barton Village (0.43 csm; FERC No. 7725). Other projects have used the default values as the basis for their proposed conservation flow values when undergoing FERC licensing and are subsequently required to pass 0.5 csm in the summer. Examples of such projects are the Alder Brook Hydroelectric Project (FERC No. 13565), Troy Hydroelectric Project (FERC No. 13381) and the Vermont Tissue Mill Hydroelectric Project (FERC No. 14308). In addition, the Department sometimes requires higher flows than the default values, as is the case for the Arnolds Falls Project (FERC No. 2399) on

the Passumpsic River, which is required to pass a minimum flow of 0.55 csm in the summer.

In the case of the Morrisville and Cadys Falls facilities, the conservation flows determined to be necessary to meet applicable water quality standards are based on site-specific studies, as is the case at many FERC licensed hydroelectric facilities in Vermont. These required flows are lower than the default values set in the *Agency Procedure for Determining Acceptable Minimum Stream Flows* and equal to or lower than many facilities that have undergone FERC licensing in Vermont. The site-specific approach does not provide a uniform and predictable number like a standard setting approach such as the U.S. Fish and Wildlife Service methodology because each reach of river has different physical characteristics and potentially different species of fish associated with the affected reach. The amount of flow needed to meet water quality standards varies by site when using the site specific approach, but the bar of fully supporting designated uses is the same.

Comment 8: MWL commented the ANR did not consider the following “ANR Procedure for Determining Acceptable Minimum Stream Flows specifies how hydroelectric shall be reviewed during the Section 401 Certification process, and outlines ANR “*responsibilities to strike a balance between competing water uses in the public interest*” in order to meet the Vermont Water Quality Standards. Morrisville commented that Section F of this Procedure specifically requires the Agency to consider any “*public benefits or detriment realized by continued release of less than acceptable conservation flows. The Agency may conclude that the greatest public benefit are realized by continued release of less than acceptable conservation flows.*” Specifically, the benefits from MWL operation of flood protection, renewable energy generation, decreasing Vermont’s dependence on non-renewable energy sources, and maintenance of existing public uses of the waters for boating.

Response 8: The Agency has added Findings 83 and 199 to demonstrate the consistency of the Agency’s bypass flow recommendations with the *Agency Procedure for Determining Minimum Stream Flows* (July 14, 1993) (the “Flow Procedure”).

The Flow Procedure declares that “[t]he intent of this procedure is to assure a consistent process is used in determining acceptable minimum stream flows when there are existing or potential competing uses of the water.” *Id.* The Flow Procedure explains that because minimum flows adequate to maintain fisheries interests are generally sufficient to simultaneously maintain acceptable aesthetic qualities and recreational uses, the procedures included in the Flow Procedure therefore “focus primarily on determining fisheries related minimum flow requirements.” *Id.* It is important to note that the Flow Procedure may not result in a uniform number being reached in every case.

As applied to hydroelectric and hydromechanical bypasses, the Flow Procedure puts forth a broad policy goal that “[h]ydropower facilities shall be encouraged to operate in a true

run-of-the-river mode to reduce conflicts with other uses and values,” and provides the following specific guidance for the Agency:

Bypasses shall be analyzed case-by-case. Generally, the Agency shall recommend bypass flows of at least 7Q10 in order to protect aquatic habitat and maintain dissolved oxygen concentration in the bypass and below the project. Higher or lower amounts of bypass flows shall be prescribed as a function of the uses and values to be restored or protected in the bypassed reach. In assessing values, consideration shall be given to the length of the bypass; wildlife and fish habitat potential; the aesthetic and recreational values; the relative supply of the bypass resource values in the project area; the public demand for these resources; and any additional impacts of such flows upon citizens of the State of Vermont. Bypass flows shall be at least sufficient to maintain dissolved oxygen standards and wastewater assimilative capacity.

The Procedure does provide language referenced by MWL regarding “Agency responsibilities to strike a balance between competing water uses in the public interest” in the context of explaining how “any deviations from minimum flow requirements as defined in the General Procedure will require an assessment of water and energy conservation alternatives.” Flow Procedure, page 5. MWL has not provided the Department with any assessments of water and energy conservation alternatives or asked the Department for guidance on conducting such an assessment. Regardless, any balancing conducted under the Flow Procedure cannot eliminate a use. As a result, the Department cannot approve flows that will not support designated uses and therefore violate the Standards in order to “properly balance the many competing water uses.”

The Department acknowledges that increased bypass flows may impact energy generation at the Project, particularly if the Applicant chooses not to invest in optimization equipment, such as installing minimum flow units. However, the Department “shall recommend bypass flows of at least 7Q10 in order to protect aquatic habitat and maintain dissolved oxygen concentration in the bypass and below the project,” and any “[h]igher or lower amounts of bypass flows shall be prescribed as a function of the uses and values to be restored or protected in the bypassed reach.” Flow Procedure, page 5. The Department has required conservation flows at the Project that are higher than 7Q10. The Applicant proposed flows lower than 7Q10.

In determining the flow requirements for the bypass reaches at the Morrisville and Cadys Falls facilities, the Department evaluated the affected waters, the uses and values to be restored or protected in the bypass reaches (Finding 195) and considered the characteristics of the bypasses as specified in the Procedure (Finding 199). As described above, the Department evaluates flows under the Standards, which sets forth designated uses for Class B waters and management objectives for fully supporting these uses. The waters affected by the Project are Class B waters that are listed on the Part F list because

they are surface waters where aquatic habitat and/or other designated uses of the Standards have been altered by flow regulation to the extent that one or more designated uses are not supported.⁵

The Department also assessed the values as required by the Flow Procedure by considering the length of the bypasses at each reach (1800 feet at Cadys Falls, 400 feet and 900 feet in the Morrisville bypasses), the habitat potential in these segments, potential aesthetic values, and other designated uses set forth in the Standards. The section of the Lamoille River impacted by the project includes high gradient habitat that is unique for the reach and a high diversity of habitat in a river that in general has a low supply of habitat, which makes the protection of downstream habitat particularly critical.

In contrast, the Applicant has proposed bypass flows less than 7Q10. The Applicant has not demonstrated how the characteristics of the bypass as a function of the uses and values to be restored would support a bypass flow prescription below 7Q10 in the Morrisville and Cadys Falls bypasses, nor how these flows would meet Class B water quality criteria and fully support Class B designated uses.

MWL also references Part F of the Flow Procedure, entitled “Prior Permits/Approvals/Practices.” This section provides that “The Agency may conclude that the greatest public benefits are realized by continued release of less than acceptable conservation flows determined under this interim procedure.” Flow Procedure, page 6. This section does not apply to MWL’s application for a new FERC license. Instead, this section applies to amendments or FERC licenses as opposed to renewals or new licenses. Even if Part F were to apply to the Project, Part F requires compliance with the Standards at “the earliest practical date.” Therefore, any application of Part F does not allow for a permanent diminishment in flows that would violate the Standards.

Comment 9: Vermont Natural Resources Council (VNRC) and Vermont Chapter Trout Unlimited (VTTU) commented, “At Morrisville, the utility has proposed 28 cfs in the primary bypass. Aquatic habitat would be maximized at 91 cfs. The draft certification requires 70 cfs. The final certification should maximize aquatic habitat by requiring a conservation flow of 91 cfs, or inflow, in the primary bypass.” Similarly, VNRC and VTTU commented that “[C]adys Falls MWL has proposed a bypass flow of 54 cfs. Aquatic habitat would be maximized at 163 cfs. The draft certification calls for 100 cfs. The final certification should maximize aquatic habitat by requiring 163 cfs or inflow.”

⁵ The Cadys Falls bypass reach, Morrisville facilities bypass reaches, Elmore Brook, Lake Elmore, Lake Lamoille, Green River and Green River Reservoir are listed due to flow alterations from operations of the Morrisville Hydroelectric Project. State of Vermont, List of Priority Surface Water, Part F. Surface Waters Altered by Flow Regulations. 2016. http://dec.vermont.gov/sites/dec/files/wsm/public-notice/mapp/Part%20F_draft_2016_complete.pdf

Response 9: The Department agrees that higher conservation flows in the bypasses would better maximize aquatic habitat. However, the Department’s mandate is to manage Class B waters to fully support designated uses, achieve water quality criteria, and ensure that high quality waters do not degrade as a result of an issued water quality certificate. The waters affected by the Project are not currently supporting designated uses or achieving all water quality criteria and therefore the Department’s requirements are tailored to ensure that these designated uses will be supported and the applicable water quality criteria will be achieved and maintained.

In regard to the aquatic biota and wildlife designated use, the Department is required to manage waters to achieve and maintain a level of quality that fully supports aquatic biota and wildlife sustained by high quality aquatic habitat with additional protection in those waters where these uses were sustainable at a higher level based on Water Management Type designation. (Standards, Section 3-04(A)(1)). *See* Findings 65 and 66 of the Certification.

In regard to the aquatic biota and wildlife criterion, the Department must manage Class B waters to ensure the Class B criterion for aquatic biota, wildlife and aquatic habitat is met. That criterion requires “[n]o change from the reference condition that would prevent the full support of aquatic biota, wildlife, or aquatic habitat uses. Biological integrity is maintained and all expected functional groups are present in a high quality habitat. All life-cycle functions, including overwintering and reproductive requirements are maintained and protected.” (Standards, Section 3-04(B)(4)). As the project waters have not been assigned a water management type, an additional criterion is “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.” (Standards, Section 3-04(B)(4)(d)).

In order to issue a water quality certification, the Department must find “reasonable assurance that the activity will be conducted in a manner which will not violate [the Standards].” 40 C.F.R. § 121.2(a)(3). Although the site specific flow-habitat study results indicate that habitat is maximized (for the range of flows evaluated) by the higher conservation flows articulated by VNRC and VTTU for both the Morrisville primary bypass and the Cadys Falls bypass reach, the Department has required conservation flows in the water quality certification based on its determination that these flows will fully support designated uses, achieve water quality criteria, and therefore provide “reasonable assurance.”

In order to make this determination, the Department used site-specific habitat-flow studies that established the relationship between flow and available habitat for target fish species which included brook, brown and rainbow trout. The results of the habitat-flow studies show a substantial increase in aquatic habitat in bypass reaches for trout species at the flows conditioned by the Department. Further, the studies conducted by MWL allow for a science-based approach that has been used at other hydroelectric facilities across

Vermont and the country. The details and findings of this study are detailed in Findings 103 through 112 for the Morrisville facility and Findings 113 through 118 for the Cadys Falls facility.

Comment 10: Comments were received that the increase in bypass flows required in the certification would not lead to an increase in aquatic habitat or benefit fish of the Lamoille River.

Response 10: See response 9.

Comment 11: VTTU commented, “If Department reduces its required conservation flows any further, it could arguably be out of compliance with the parameters required by state regulations.”

Response 11: Noted. See response 6 above about the Departments bypass flow determination.

Comment 12: Testimony from the public hearing included a comment that the “[A]NR consider Lake Lamoille to be best managed for a warm water fishery with ‘possibly’ some trout fishing. If so, why is ANR (in the 401 analysis) recommending release rates and measuring habitat quality based on cold water species at the Morrisville dam bypasses which is just upstream and contiguous with the lake? The document seems to recognize the cold and warm regimes in this reach of the Lamoille River and does not appear to mandate the restoration of a cold water fishery in Lake Lamoille. Although the 303(d) list considers the reach flow impaired. Given the above management approach shouldn’t ANR manage to improve or extend the cold water habitat where it makes sense like below the Cadys Falls dam; thereby extending the cold water habitat up that bypass to the dam (assuming the lake temperature fluctuations allow for that) but also manage the Morrisville Dam bypasses for warm water species more consistent with the fishery being managed for in Lake Lamoille and most likely the aquatic community present in the 15 acre impoundment above the dam?”

Response 12: The warm water fish community of the Lake Lamoille includes species that typically utilize lentic habitats to carry out their life history requirements, and are not representative fish species of a riverine environment.⁶ The primary and secondary bypass reaches of the Morrisville hydroelectric project exhibit riverine characteristics or lotic habitat as described in Finding 104.⁷ Fish that enter the bypass reach as a result of high flow conditions are likely to become trapped due to inadequate flows that do not maintain connectivity and allow fish in the bypass to freely exit. As a result, one of the objectives of the habitat-flow study is to ensure adequate flows to prevent fish from becoming trapped in the pool. *See* Findings 106 and 107. As explained in Finding 85, the Lamoille River upstream of the Morrisville facility supports a cold water fishery of wild brook, brown and rainbow trout. This population of fish upstream are the most likely to enter the bypass by being washed over the dam during a high flow event. In addition, finding 92

⁶ Lentic habitat is still water habitats that typically do not have distinct channels of flowing water through them.

⁷ Lotic habitat is characterized by moving or flowing waters that often has distinct riffles, runs, and pools as found in a river or stream.

states that there is potential for trout fishing in the tailrace of the Morrisville facility. Thus, in evaluating flow conditions at the Morrisville facility, the Department clearly stated its reasons for including cold water fish species.

b. Aesthetics

Comment 13: MWL commented, “Spilling water over the dam for aesthetic flow is not appropriate because of the limited visibility from public locations and because it will be difficult, if not impossible to accomplish.”

Response 13: Aesthetics is a designated use of Class B waters that the Department must manage waters to fully support. Specifically, the Department must manage Class B waters to achieve and maintain a level of quality that fully supports water characteristics, flows, water level, bed and channel characteristics, and water of a quality that consistently exhibits good aesthetic value (Standards, Section 3-04(A)(2) and (B)(6)(d)). The Department is mandated with ensuring Class B waters fully support the aesthetics designated use and achieve the aesthetics criterion regardless of the dams’ level of visibility. Moreover, the dams are in fact viewable from public access points to the river at both facilities. Thus, good aesthetic value must be maintained in these waters and the Department has determined that spilling a portion of water over the crest will support the aesthetics designated use and achieve the aesthetics criterion.

While spilling over the crest of the dam assures aesthetics are maintained, it is not the only reason the Department has requested that a portion of the bypass flow be spilled in this manner. Spilling water over the crest of the dam also supports other designated uses and achieves other water quality criteria. For example, this practice maintains dissolved oxygen concentrations by re-oxygenating the water and supports aquatic biota, wildlife, and aquatic habitat use providing aquatic habitat at the base of the dam. *See Agency Procedure for Determining Acceptable Minimum Stream Flows*, page 5.

Additionally, water was spilled over the crest of the dams at both the Cadys Falls and Morrisville facilities during the aesthetic flow studies conducted as part of the relicensing. Therefore, characterizing spilling the water over the dam as “impossible” is not accurate. Investment in automation and water level sensors are necessary at both facilities to ensure compliance with the condition, but that necessity does not render this condition “impossible.”

4. WATER LEVEL MANAGEMENT

a. Green River Reservoir

Comment 14: MWL commented that the conditions in the Certification for Green River facility that eliminates the winter drawdown will diminish its flood protection function, and cause increased spillage over the dam crest. MWL claims the dam is not designed for frequent or continuous spillage.

Response 14: The Department and FERC have both requested that MWL provide additional information to evaluate downstream flood protection and the potential risk of increased spillage of the Green River dam. MWL has not provided any information in response to these requests. As a result, the Department relied on the FERC Part 12D dam safety inspection report from January 2014 for the Green River facility. The safety inspection was completed by an independent consultant and found the dam to be in good overall condition. Additionally, as noted by FERC in its final Environmental Assessment, the dam will continue to be subject to regular inspections and oversight of FERC’s Division of Dam Safety and Inspection.⁸

Nevertheless, by condition of the certification MWL is permitted to drawdown the reservoir 1.5 feet in the winter and refill during April. This will permit MWL to attenuate some flow to refill the reservoir. The Department’s water balance model for the Green River Reservoir indicated that, on average, it took approximately 16 days to refill the reservoir to the target elevation based on the 10 years of flow data included in the model.

Furthermore, the water quality certification conditions require MWL to automate the operations of the Green River facility. The automation of the facility will trigger the facility to begin operation when inflows reach the minimum hydraulic capacity of the turbines. Completing this upgrade will reduce the amount of time the water is spilling and therefore reduce any risk potentially caused by such spillage.

The facility is currently manually operated by MWL, so it is reasonable to conclude that investing in automation equipment at the facility will reduce the percentage to time the facility is spilling as compared with current operations. Additionally, investments in equipment capable of matching inflows from 5 cfs to 60 cfs will further reduce the percentage of time spillage occurs at the dam.

Comment 15: One comment received stated, “The ANR’s nearshore habitat assessment found lower coverage of some biota in Green River Reservoir than in certain other unidentified ‘reference waterbodies.’ Of the 51 lakes and ponds listed in *A Survey of the Nation’s Lakes EPA’s National Lake Assessment and Survey of Vermont Lakes* (prepared by the ANR in 2009), the Green River Reservoir had greater macrophyte cover than six of those lakes and macrophyte cover very close to 15 others. In total, Green River Reservoir had macrophyte cover greater than or roughly equal to 40% of assessed lakes and ponds in Vermont.”

Response 15: The Department’s nearshore habitat assessment was conducted to assess whether the Green River Reservoir is supporting the aquatic habitat designated use and achieving the aquatic habitat criterion. The criterion requires “no change from reference condition 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.” (Standards, Section 3-04(B)(4)). *See also* Finding 62. Although

⁸ Final Environmental Assessment for the Morrisville Hydroelectric Project, (FERC No. 2629), Federal Energy Regulatory Commission, December 16, 2014.

macrophyte cover is one factor to consider in determining whether a waterbody supports the aquatic habitat designated use and meets the aquatic habitat criterion, it is not the only factor considered by the Department in evaluating the certification application.

The Green River Reservoir is classified as a large mesotrophic waterbody. The Department compared its findings from Green River Reservoir to undeveloped sites at other large mesotrophic reference waterbodies where the Department had previously conducted littoral habitat assessments, as described in Finding 152. The waterbodies used as a reference do not have a winter drawdown. The reference waterbodies include Berlin Pond (Berlin, VT), Lake Dunmore (Leicester and Salisbury, VT), Lake Eden (Eden, VT), Lake Fairlee (Fairlee, VT), Glen Lake (Castleton, VT), Harveys Lake (Barnet, VT), Joes Pond (Cabot and Danville, VT), and Lake Salem (Derby, VT).

The method used to assess both the nearshore habitat of Green River Reservoir and the comparison “reference lakes” was different and significantly more intensive than the method used by EPA for the National Lake Assessment. Further, factors, such as lake class (i.e. oligotrophic, mesotrophic, eutrophic) and size must be taken into account before comparing lakes, as the productivity of the nearshore area differs between lake classes and size. Additionally, development has significant impacts on littoral habitat structure. Many of Vermont’s lakes have been heavily developed, as comprehensive shoreland regulations have been enacted only recently. In addition to lake size and class, the “reference lakes” utilized by Department also controlled for effects caused by development. It is unclear whether the analysis conducted by the commenter took into account the factors discussed above.

b. *Lake Elmore operating conditions*

Comment 16: VNRC suggested that Lake Elmore flow and water level management described in Condition B could use some clarification to ensure that water level in the lake will be crested controlled run-of-river and not controlled by gate operations.

Response 16: Noted. The water quality certification has been revised by explicitly stating that no gate operations will occur without Department approval, except in emergency.

5. **CONDITION B OPERATIONS**

a. *Green River Facility Comments Received on or before February 19, 2016*

Comment 17: MWL commented that it “[h]as proposed changes to its long-standing operations that would increase conservation flows significantly” at Green River facility to meet water quality standards.

Response 17: Concerning MWL’s proposal for operations at Green River facility, the Department and MWL are largely in agreement on the seasonal conservation flows to be released below the facility. However, MWL’s proposal still includes a 10-foot winter

drawdown and year round generation flows similar to current operations. The site specific habitat-flow study and littoral habitat study indicate that the current generation flows and the winter drawdown have significant impacts to the aquatic habitat of the Green River (Finding 133 – 136) and Reservoir (Finding 152) and do not meet water quality standards. Thus, they were not included in the certification.

Comment 18: MWL commented that conditions for Green River impose high downstream conservation flows and restricts generation flows such that power generation at the facility would be reduced.

Response 18: The Department’s seasonal conservation flow requirements at the Green River facility were determined using the site-specific habitat-flow study which is detailed in Findings 120 -141. The seasonal conservation flows required by the water quality certification are similar to seasonal median flows from the Green River gauging record. *See* Finding 29. These flows are needed to provide high quality aquatic habitat in the Green River and meet Standards. Further, the dual flow analysis conducted as part of the Department’s review indicates that generation flows of the current magnitude eliminate most of the aquatic habitat in the Green River for target species. Therefore, this hydropeaking operation does not meet Standards. Although the conservation flows may reduce power generation at the facility, these flows are necessary for the Department to find reasonable assurance that the Project will be operated in a manner which will not violate the Standards and therefore necessary for the Department to issue the water quality certification. Additionally, investment in a variable speed low flow turbine, may offset the impact of higher conservation flows on power generation.

Comment 19: MWL commented that they had “[p]roposed to increase conservation flows at Green River to meet seasonal median flows and provide sufficient dissolved oxygen in the River, while continuing to perform a winter drawdown and dam release.”

Response 19: Noted. The seasonal conservation flows proposed by MWL for the Green River facility are similar to those required by the Department in the water quality certification conditions. Additionally, MWL proposed to address the dissolved oxygen issue below the facility, which the Department is requiring under Condition G of the Certification. However, the impacts of the current winter drawdown on the nearshore aquatic habitat of the Green River Reservoir have been documented and determined to not meet Standards. The details of the Agency’s determination can be found in Finding 146 through 155.

Comment 20: MWL commented that “[t]he Draft WQ Certification. Tables 1a through 1e (for the Green River Reservoir flow management conditions) would allow MWL to prevent unsafe spillage over the dam from mid-December through May,” but would not allow this operation the rest of the year. MWL further states that no justification is given for the inconsistency, which it assumes is unintentional and request that the certification be revised to include the following

“Generation flows in excess of the conservation flow shall not exceed inflow unless the reservoir level exceeds 1219.75 feet.”

Response 20: As stated in response 14, MWL has not provided the Department (or FERC) with any information about the dam not being designed to spill. The operating tables for Green River under Condition B of the Certification have the flow and water level management needed to meet Standards. MWL indicates that the minimum flow release by one turbine is 60 cfs. A flow of that magnitude will impact aquatic habitat needed for spawning and provide minimal habitat for fry and other relatively immobile species/life stages during the summer and early fall. *See Findings 120-141.* The condition requires flows during certain critical aquatic lifecycle stages necessary to fully support aquatic habitat and wildlife. These critical lifecycle stages occur in Spring, Summer, and Fall. Therefore, permitting generation flows in order to prevent spillage over the dam between May and mid-December would not provide high quality habitat or meet Standards.

Comment 21: VTTU commented that a flow of 283 cfs from the Green River facility “[w]ill not ensure there is “no change from reference conditions that would have an undue adverse effect on the composition of the aquatic biota. Peaking most assuredly has an undue adverse effect on the aquatic habitat. The two cannot coexist.”

Response 21: Noted. See Findings 120-141 that discuss the habitat-flow study.

Comment 22: Comments recommended that the Department use a water balance model to develop operational conditions for the Green River facility. Additionally, other comments presented outputs from independent water balance models for the Green River conditions included in the draft certification.

Response 22: The Department developed a water balance tool to analyze the impacts of various reservoir management scenarios at the Green River Reservoir facility on reservoir water levels and downstream flows.

The water balance follows the fundamental form, $Inputs - Outputs = \Delta Storage$. By knowing or estimating any two of these components, the tool allows the user to calculate a third (or a particular component of the third when combined with additional information, e.g., water level for a given storage volume). The tool models reservoir conditions with 10 years of observed mean daily inflows from 1923-1932.

Conceptually, the model is configured as:

$Q_{in} + \text{Direct ppt} - Q_{out} - \text{Evaporation} = \text{change in storage (current time step)} \rightarrow \text{Water Level} \rightarrow \text{less } Q_{spill} \rightarrow \text{“Start of day” storage (next time step)}$

The components of the model are as follows:

Initial storage: The starting storage was set at the volume associated with a pre-defined initial water surface elevation.

Q_{in}: Total area-adjusted inflows based on USGS gage 04291000 that operated on the Green River a few miles downstream of the dam from 1923 – 1932 prior to its construction. Mean Daily values were divided evenly into 15-minute time steps.

Direct ppt: Direct precipitation to the reservoir is not an explicit input here due to lack of data, but to some degree this is already reflected in pre-reservoir gaged flows. Overland runoff process at that time would have increased losses to evapotranspiration and attenuate delivery of the precipitation inputs when compared with direct input to reservoir water surface.

Q_{out}: Prescribed outflow protocols based on time of year, inflows, and reservoir water levels. The model does not include discretionary storage and outflows that are possible while maintaining minimum conservation flows and high water requirements. Groundwater seepage is assumed to be negligible and not included here.

Evaporation: Taken from NWS TR-34 report that gives estimated depth of monthly evaporation (inches) in Essex Junction, VT. Volume of evaporation is calculated dynamically as a function of reservoir surface-area using digital bathymetry data.

“End of time step” storage: The net volume of water within the reservoir after accounting for inflows and outflows. This volume is used to estimate water level for spillage.

Water level: A stage-storage table was developed from digital bathymetric data to calculate surface-area and perimeter length at 2-foot contours from 1220 ft. (dam crest) to 1210 ft. These were used with HydroCAD’s tool to calculate reservoir storage volume for irregularly shaped ponds, at 0.2 ft. water level intervals. The water balance model relies on an algorithm that queries a unique two-point linear interpolation equation for the pair of stage-storage data points between which lies the storage volume in question.

Q_{spill}: Estimated discharge spilled over the dam crest based on water level, calculated as $Q_{spill} = C * L * H^{1.5}$, where L is spillway length (60-ft), H is depth of water in feet above spillway crest, and C is the weir coefficient calculated in HydroCAD at heads of 0.49 ft. ($C = 3.08$), 0.98 ft. ($C = 3.10$), and 1.48 ft. ($C = 3.30$) for a broad-crested rectangular weir (of “Profile 47”), and linearly interpolated for all heads between these values (extrapolated for heads above or below 0.48 ft. and 1.48 ft.). This formula provides discharge in cubic feet per second.

“Beginning of time step” storage: Initial storage for the next time step calculated from the previous time step’s end of time step storage, less Q_{spill} .

Additionally, the Department reviewed the water balance model outputs that were presented in AW's and VPC's comments on the draft water quality certification. The Department identified several inaccuracies in how the outflows from the Green River were modeled in the summer season. This indicated that the commenter did not fully understand the operating conditions for the Green River or hydraulic limitations of the facility (*See* Response 23).

Comment 23: Several commenters had questions and comments about the operation tables for the Green River facility included in Condition B of the draft water quality certification. Comments are compiled below.

- “The Draft Water Quality Certification would result in reservoir levels that do not reach full pool until June, July, or even October depending on the year. The result will leave a visible varial zone around the reservoir that degrades aesthetic and recreational values during the peak recreation season.”
- “Lead to rapid reservoir lowering and refilling during Loon nesting time, resulting in flooding Loon nests.”
- “Fail to fill the reservoir in most years until mid-summer or fall, resulting in potential impacts to fauna and flora utilizing the varial zone of the reservoir.”
- “Eliminate all natural variability in the Green River flow regime at all scales for extended periods of time (months) during the spring and summer, resulting in impacts to water quality, life history cues for aquatic species, and geomorphology.”
- “Eliminate significant numbers of natural pulse flows in the Green River, including the entire spring snowmelt pulse in some years, resulting in degraded paddling opportunities and ecological impacts.”
- “DEC seeks to manage the Green River as if it were a lake rather than a dynamic river system with natural variances, eliminating the natural ebb and flow by flattening out the natural river hydrograph.”
- “Typically, minimum flows are required in hydropeaking projects with bypass reaches in order to prevent the complete dewatering of the natural river channel below the dam. Conversely, true instantaneous run-of-river would pass inflows below the dam without the need for calculated minimum flows.”
- “The spring conservation flow of 60 cfs is a fairly good example of an analysis that is not grounded in reality, since it has already been shown that the Green River watershed cannot support such a flow for an entire spring. It may be necessary to reevaluate spring conservation flows and choose a flow or flow regime that is feasible.”
- “the effect of the DEC prescriptions will be to flatten out the natural hydrograph, eliminating the natural peaks and low flow periods that provide important biological cues and help restore aquatic habitat.”

Response 23: In response to comments received above, the Department determined it was appropriate to hold a technical meeting to discuss the Green River facility operations, review the water balance model developed by the Department, and how the Department

intended to address comments received on the draft water quality certification in the final water quality certification. The meeting was held on March 29, 2016, and stakeholders and members of the public that submitted comments or attended the public hearing were invited to participate.

In that meeting, Department technical staff members explained that they reviewed the hydraulic limitations of the existing equipment in order to consider operational scenarios for the Green River facility. The Green River facility is equipped with two vertical Francis units, each with a minimum hydraulic capacity of 60 cfs and a maximum capacity of 156 cfs. *See* Finding 20. In addition, there is an eight-inch diameter steel pipe with flow controlled by a valve that discharges near the powerhouse. Currently, this pipe discharges the minimum flow of 5.5 cfs. The total capacity of the pipe is approximately 30 cfs. Due to limits in the valve and turbine capacity, the existing equipment at the facility is not able to discharge flows between 30-60 cfs, except for spilling at the dam. Finding 20 has been revised to include the maximum capacity of the pipe.

Additionally, the Department technical staff members used this meeting as an opportunity clarify some of the operations tables for the Green River facility. Each table has three different components of operations, the target reservoir water surface elevation, downstream flow management, and conservation flow. The “target reservoir water surface elevation” refers to the elevation that the reservoir should be held at during normal operations. The “downstream flow management” portion of the tables refers to operation when inflow exceeds the minimum hydraulic capacity of the existing turbines. Under modified run-of-river operations, all flow that exceeds the minimum capacity of the existing turbines must be passed through the turbines. This will protect the natural flow pulses of the Green River and support recreational boating when flows are naturally high enough to permit. Lastly, “conservation flow,” refers to operations where inflow is less than the minimum capacity of the existing turbines and flow needs to be passed through the eight-inch steel pipe that currently passes the 5.5 cfs minimum flow. Condition B has been revised to clarify the components of the operations tables.

The Department technical staff members also clarified the reason for including different conservation flow requirements triggered by elevation of the reservoir in the operation tables. There are multiple management objectives that the Department must balance, such as maintaining a stable reservoir to support common loon nesting, recreation and aquatic habitat and maintaining a downstream flow regime that supports aquatic habitat and provides recreational boating opportunities downstream. The balancing of these objectives is further complicated by the fact that the Green River facility utilizes runoff from a relatively small 14 square mile watershed with a substantial portion of the watershed covered by the 653-acre reservoir with an evaporation rate that is often equal to or greater than inflow during hot, dry periods. Reservoir elevation triggers were therefore included to enable the use of a minimal amount of water from storage to maintain conservation flows downstream to protect aquatic biota and habitat of the Green River during the low flow and high temperature periods that are particularly stressful for

aquatic life. Alternatively, if a stable reservoir elevation was required, the downstream flow regime would not receive flow adequate to support high quality aquatic habitat and fully support aquatic biota, wildlife, and habitat.

Additionally, the Department technical staff members addressed comments regarding concerns that the conservation flow requirement for April and May, which states “60 cfs guaranteed from storage,” would conflict with other management objectives. The Department staff acknowledged that this was an error in the draft certification and the condition should have read “60 cfs or inflow if less.” However, given the above information regarding the limitations of the Green River facility, specifically that the facility cannot pass flows in the range of 30-60 cfs, the Department presented revised operating conditions for April and May to address this issue. Additionally, the Department staff presented the outputs from the water balance model.

Condition B of the certification has been revised to include changes made in response to comments on the draft certification. Since there was great interest in the Green River facility, the Department provided stakeholders and members of the public that submitted comments or attended the public hearing 30 days to review the conditions proposed for the final certification and submit additional comments. Responses to comments received during this period are below.

b. *Green River Facility Comments Received between March 30, 2016 and April 29, 2016*

Comment 24: AW and VPC commented, “We believe that these are fundamental changes, rather than minor clarifications as DEC suggests, to the downstream flow management regime that are sufficiently substantial so as to trigger an obligation by DEC to reissue the Draft Water Quality Certification to provide the public with a full and fair opportunity to comment in accordance with Section 13.3(c) of the Department’s Water Control Permit Regulations dated February 26, 1974 and Section IX of the Department’s Section 401 Water Quality Certification Practice.”

Response 24: As stated above, the revision to operating conditions were made in response to comments on the draft water quality certification. The Department is not obligated to re-notice a draft certification when revisions are made in response to comments received. Moreover, the regulation cited by the commenters requires that the Department give notice of *an application for certification*, not notice of the draft decision. Vermont Water Pollution Control Permit Regulation § 13.11(c) (emphasis added). Nevertheless, the Department hosted a public meeting to explain the revisions made to the draft decision with AW, VPC, and other stakeholders and provided AW, VPC, and other commenters and attendees of the public hearing with an extension to submit comments on the Department’s revisions. All were provided with 30 additional days to review the revised operating conditions and submit comments. The Department received four comment letters during this time.

Comment 25: AW and VPC commented, “DEC should utilize existing project conditions when analyzing the impact of project operations on all values, seeking to protect Loon habitat, bass

spawning and littoral habitat in the reservoir, as well as stocked and native trout spawning downstream. It should also seek to protect the existing opportunities for recreational use of the river for whitewater boating under existing project conditions in the same manner in which it seeks to protect these other values. Instead, DEC is making a judgment about which values it seeks to protect and which values it seeks to restrict by protecting Loon nesting, reservoir recreation, and angling, while limiting opportunities for whitewater boating.”

Response 25: The Department is charged with certifying that operations of the Green River facility, and the Morrisville Hydroelectric Project as a whole, are in compliance with the Vermont Water Quality Standards pursuant to Section 401 of the federal Clean Water Act. In order to issue a certification, the Department must find “reasonable assurance” that the facility’s operations will be conducted in a manner which will fully support designated uses, achieve and maintain water quality criteria, and not degrade high quality waters. As a result, the Department must manage the affected waters to fully support all Class B designated uses, including aquatic habitat and wildlife and recreation.

The Department’s review utilized information from the studies conducted by MWL to determine the impact of current operation on all designated uses and water quality criteria. This information served as the foundation for the Department determination regarding operational conditions to protect all existing and designated uses, including recreational boating of Green River and aquatic habitat and wildlife. The conditions included in the certification protect the existing use of recreational boating because it ensures the use will be available when flows are naturally high and fully supports recreation downstream by conditioning the facility to operate in such a manner that is compatible with and suitable for boating.

Comment 26: VNRC commented, “The draft 401 does include Green River operating conditions for both existing equipment and modified equipment that could match inflow, but does not include any requirements that the applicant implement, or even investigate, modifications to the current facility to achieve an operation resembling true run-of-river. The final 401 should include a provision to conduct such an investigation within a reasonable timeframe. This investigation also could evaluate options to generate power using conservation flows, offsetting at least some of the generation lost by eliminating the winter drawdown and peaking operations.”

Response 26: The Department has determined that automation of the existing equipment at the Green River facility will enable the facility to operate in a manner that provides the Department with reasonable assurance that the facility will not violate the Standards. The certification includes a column entitled “equipment capable of matching inflow” in response to MWL’s stated interest in investing in a minimum flow turbine. The Department agrees with VNRC that investment in a variable capacity flow turbine to pass conservation flows would offset the generation lost from the winter drawdown and peaking operations. However, the Department’s mandate is to find reasonable assurance that Project operations will not violate the Standards. The decision to investigate optimization equipment is not necessary to find reasonable assurance that Project

operations will not violate the Standards, but rather is a business decision appropriate for MWL.

Comment 27: VTTU commented that they “[s]upport keeping the Reservoir at a constant elevation to protect shoreline habitat. However, we hope this emphasis on Reservoir elevation does not come at the expense of the River below.”

Response 27: Noted. Condition B of the Certification for Green River facility allows for a minimal amount of water to be used from storage as to not unreasonably curtail flow in the Green River. In determining the operating conditions needed at Green River to provide reasonable assurance that operations would not violate Standards, the Department developed a water balance model to review operational scenarios. Based on this model, the Department technical staff estimated that the evaporation rate from the reservoir could be as high as 5 cfs during certain times of year, which can be equal to or greater than inflow during this time of year. The finding that the evaporation rate was relatively high compared to inflow is not surprising given the relatively large surface area of the reservoir (650 acres) and small contributing watershed area (14 square miles). Therefore, the conditions developed by the Department permit use of water from storage to provide conservation flows to the river by including an elevation trigger to ensure river flows are adequate to protect aquatic biota and habitat during the time of year that a high rate of evaporative water loss would be expected from the reservoir.

6. RECREATION

a. *Recreation Plan*

Comment 28: The Lamoille River Paddlers’ Trail Steering Committee and others commented that specific conditions to be addressed by recreational plan should be incorporated into the water quality certification to provide the public and MWL with a clear understanding of the requirements of Condition J (Recreational Plan).

Response 28: Noted. Finding 241 of the water quality certification provides the requirements that need to be addressed by MWL in the recreation plan. However, the Department has added language to Condition J specifying components that will be required to be addressed in the recreation plan to provide clarity to both the public and MWL as to what the recreation plan shall address.

Comment 29: Lamoille River Paddlers’ Trail Steering Committee requested that an opportunity be given to the public to view and comment on MWL draft recreation plan prior to Department approval.

Response 29: Noted. The Department will provide an opportunity for stakeholder groups to provide comment on the draft recreation plan. Interested individuals should submit their contact information to Jeff Crocker, Supervising River Ecologist (Jeff.Crocker@vermont.gov).

b. Primitive Camping Facilities

Comment 30: The Lamoille River Paddler’s Trail Steering Committee commented that in the draft water quality certification no primitive camping facilities have been proposed to accommodate through paddlers and recommend that primitive campsites be established at Clark Park area and on MWL property at Cadys Falls for use by paddlers.

Response 30: Noted. Finding 241 and Condition J have been edited to require MWL to evaluate providing primitive camping sites for through paddlers as part of developing the recreational plan.

c. Flat Water Paddling

Comment 31: Umiak Outfitters commented that they have received “[f]eedback from paddlers that go to Lake Lamoille to paddle, but then return saying that the water level was recently drained too low to get out on the water.” Additionally, they commented that they consider Lake Lamoille underutilized by paddlers because of the water level management.

Response 31: Noted. Condition B of the water quality certification requires the Cadys Falls and Morrisville facilities to be operated in true run-of-river mode and set a target elevation for Lake Lamoille with the flashboards in place. The elevation of Lake Lamoille cannot be drawdown below this elevation during normal operations. This condition will support recreational boating as well as aquatic biota and habitat in Lake Lamoille.

Comment 32: Multiple comments were received that commented on the excessive length of the portage trails around the Morrisville and Cadys Falls facilities and the lack of signage at the take-out and put-ins currently discourages recreational paddling near the facilities. Further, the commenters stated that the proposal by MWL to have the portage trail bypass the section of river between the Morrisville and Cadys Falls facilities is “unwarranted,” and would create a portage route that is more “arduous.” Additionally, it would expose paddlers to the “[h]azards of walking along busy roads with limited pedestrian facilities.”

Response 32: Noted. Condition J of the water quality certification requires Morrisville to address issues with the length of the portage trails at Morrisville and Cadys Falls facilities, as well as the need for signage at the put-in and take-outs at both facilities. Additionally, MWL will be required to provide access and a put-in below the Morrisville facility and a take-out at the Cadys Falls facility so that recreational paddlers can access this reach of river and Lake Lamoille.

d. Whitewater boating on the Green River

Comment 33: AW, VPC and others commented that “Whitewater paddling is a recreational use of the Green that is protected under Vermont’s Anti-Degradation policy. Any activity that degrades the Green’s ability to support whitewater paddling is illegal.” Additionally, AW and

VPC states that “scheduled whitewater boating is in an existing use on the Green River that is protected by the Anti-Degradation Policy.”

Response 33: The Interim Anti-degradation Implementation Procedure requires the Department to conduct Tier 1 review to protect existing uses of waters. An important clarification is that the existing use being protected is recreational boating, not scheduled or dam-release whitewater boating. The conditions required in the certification require modifications to the operations of the facility, which will protect recreational boating as an existing use of the Green River that can be engaged in when flows naturally permit. Recreational boating, specifically whitewater boating will continue, but not under the current flow regime that does not provide reasonable assurance that the Green River can support other designated and existing uses required by the Vermont Water Quality Standards.

Comment 34: Comments submitted by AW and VPC comment, “[d]espite providing no basis for conducting a Tier 2 review, DEC makes the following finding” and cites Finding 255 and 256.

Response 34: As stated in response 33, a Tier 1 review is the applicable review for existing uses under the Anti-degradation Implementation Procedure, not a Tier 2 review. *See* Vermont Agency of Natural Resources Department of Environmental Conservation Interim Anti-Degradation Implementation Procedure Section VIII(F) (2010). The Finding 255 cited in the comments references to Finding 250 which provides, “[U]nder Tier 1 review, the Secretary may identify existing uses and determine the maintenance necessary to protect these uses. (Procedure VIII(F)).” The Department conducted a Tier 1 review in the certification, found that recreational boating is an existing use, and determined the maintenance necessary to protect this use. As a result, the Department has required operating conditions in the certification for the Green River facility that will protect high flow events for whitewater boating, except for a brief refill period in April (*See* Response 42).

Comment 35: AW, VPC, and others commented that, “The ANR has mischaracterized the hydrology of the Green River and current proposed dam operations. The 7-8 whitewater releases per year that the boating community has requested are consistent with naturally occurring high flow events.”

Response 35: It is unclear how the commenters believe the Department “mischaracterized” the hydrology of the Green River. The Department has done extensive analysis on the hydrology of the Green River and analyzed the effects of a whitewater release on the reservoir and river (*See* Response 20, 22, 23, and 37). The operating conditions for the Green River facility in the water quality certification require MWL to match inflow within the range of the hydraulic capacity of the facility (60 cfs-283 cfs) except for a brief refill period in April. After the brief spring refill period all high flow events through mid- December will be protected and will allow for recreational

boating. Additionally, natural pulses will occur without modification to the timing, magnitude, or duration of the flow regime.

Comment 36: AW, VPC, and others commented that, “There is no evidence that periodic whitewater releases are harmful to aquatic habitat.” Additionally, that “There is no real scientific consensus that hydropeaking is actually bad for fish. The ANR use of the phrase ‘well-documented’ isn’t appropriate.”

Response 36: The adverse impacts on fish and other aquatic life of artificially regulated flow regimes characterized by rapid variations are well established in the scientific literature. The Certification cited several peer-reviewed papers that assess the effects of artificial regulated flow regimes on fisheries.⁹ The fact that these references are older does not render them irrelevant. For example, Young et al. (2011) reestablishes the effects artificially regulated flow regimes characterized by rapid variations and cites numerous scientific studies.¹⁰ Specific problems include loss of habitat, disruption of spawning activity, disruption of fish migration and movement, decreased invertebrate production, downstream displacement, stranding of fish, mussels and macroinvertebrates, dewatering of spawning areas and incubating eggs, recruitment failures in stream fishes, species shifts, and decreased abundance, diversity and productivity of aquatic organisms.

Most of the investigations have studied rivers subjected to hydropeaking; whitewater releases are similar although usually less frequent. Even at a reduced frequency, these large, rapid and un-ramped flow events are still problematic. Each river has its own characteristics, and as part of the FERC relicensing process, the applicant completed a site-specific habitat-flow study and a dual flow analysis to assess the effects of a regulated flow regime with base and generation flow pulses. The results were evaluated by the Department for compliance with the Vermont Water Quality Standards under Section 3-04(B)(4) Water Quality Criteria for Class B waters: Aquatic Biota, Wildlife and Aquatic Habitat. The analysis indicates that releases of the magnitude needed for whitewater, when starting at base flow condition, reduces the effective habitat for all the fish species and life stages analyzed, and, in some cases, eliminates nearly all the suitable habitat for a species or life stage. Therefore, the Department cannot include scheduled

⁹ Cushman, R.M. 1985. Review of ecological effects of rapidly varying flows downstream of hydroelectric facilities. *North American Journal of Fisheries Management* 5:330-339.

Hunter, M.A. 1992. Hydropower flow fluctuations and salmonids: review of the biological effects, mechanical causes, and options for mitigation. Technical Report 119. Washington Department of Fisheries, Olympia, Washington.

¹⁰ Young, P.S., J.J. Cech Jr. and L.C. Thompson. 2011. Hydropower-related pulsed-flow impacts on stream fishes: a brief review, conceptual model, knowledge gaps, and research needs. *Reviews in Fish Biology and Fisheries* 21: 713–731.

whitewater releases as a condition of the certification because the flows do not support the aquatic habitat use for Class B waters.

Comment 37: AW, VPC, and others commented, “Whitewater releases would not cause a significant or harmful fluctuation in the pool height of the Green River Reservoir.”

Response 37: While a whitewater release that is conducted without proper ramping may not result in a significant change in the height of the Green River Reservoir, the Department analyzed the change in reservoir height, using a ramping protocol similar to that used for the West River releases in Jamaica, Vermont, for a one and two-day release during an August median flow period in which inflow was assumed to be 7 cfs. The results indicate that a one-day release would drop the elevation of the reservoir 6 inches and a two-day release would drop the reservoir elevation approximately 12 inches. Furthermore, these releases would have a direct effect on downstream flow and aquatic habitat during the release and after the release. As indicated above, the habitat-flow study indicated that the magnitude of the artificial release needed for whitewater reduces the effective habitat for all the fish species and life stages analyzed, and that flow releases of this magnitude would not meet criteria for high quality habitat in Class B waters, nor would they support the management objectives for aquatic biota, wildlife, and aquatic habitat, a designated use that must be fully supported in Class B waters. Additionally, after the release the conservation flow for the Green River would be reduced in an effort to maintain a stable reservoir elevation. Given that evaporation rates from the reservoir are estimated to be as high as inflows during the summer season, these conditions may further degrade the aquatic resources of the reservoir and river. Green River utilizes runoff from a relatively small watershed and water availability is limited.

Comment 38: AW and VPC stated that the “DEC completely disregards the whitewater boating study conducted as part of the relicensing process. Without relying on any site-specific studies showing that the proposed whitewater releases conflict with other river values, DEC proposes to eliminate all scheduled whitewater boating opportunities on the Green River.”

Response 38: The whitewater boating study conducted as part of the FERC relicensing process was focused on determining the acceptable range of flows for boating conditions and this study did not seek to address environmental impacts, nor compatibility with other designated and existing uses.

The applicant also completed a site-specific dual flow analysis as part of the FERC relicensing process. The Department evaluated the site-specific dual flow analysis to determine whether the operations could be conducted in a manner which will not violate the Standards. In particular, the Department evaluated the analysis for its compliance with the Vermont Water Quality Standards under Section 3-04(B)(4) Water Quality Criteria for Class B waters: Aquatic Biota, Wildlife and Aquatic Habitat. The results of this study indicated that releases of the magnitude needed for scheduled whitewater boating reduces the effective habitat for all the fish species and life stages analyzed, and

that flows release of this magnitude would not meet criteria for high quality habitat in Class B waters, nor support aquatic biota, wildlife, and aquatic habitat, a designated use that must be fully supported in Class B waters.

It must be recognized that special releases are not without their harmful effects. Whitewater paddling consistent with natural resource conservation will be available during natural high flow events.

Comment 39: Many commenters submitted the comment that “Whitewater boating opportunities will have a positive economic impact in the Morrisville area. Whitewater releases could draw 50 or more participants, who would support restaurants and other local businesses.” Similarly, AW and VPC state, “DEC provides no analysis or discussion of the *value* of whitewater boating on the Green River, and provides no rationale for its conclusory statements that the proposed whitewater releases are incompatible with its goals for the Green River.” (Emphasis added)

Response 39: The Department must find reasonable assurance that operations of the Morrisville Hydroelectric Project will not violate the Standards. The Standards require that the Department manage waters to fully support designated uses, achieve water quality criteria, and maintain high quality waters. The certification process does not authorize the Department to balance designated uses or water quality criteria with other factors that have the potential to impede the Department’s mandate to manage waters to fully support designated uses and achieve water quality criteria. The Standards do not authorize the Department to consider the economic impacts, positive or negative, when issuing a water quality certification. Nor does the process authorize or permit the Department to balance social benefits or values against environmental impacts when designated uses are not being supported or water quality criteria are not being achieved.

Comment 40: In their comments, AW and VPC proposed that the final water quality certification permit MWL to operate in store-and-release mode from October 1 to March 31.

Response 40: Currently, the draft water quality certification permits store-and-release operations at Green River from December 16 through March 31, and a modified run-of-river mode from October 1 through December 15. The modified run-of-river operations are to protect brook and brown trout spawning in the Green River. Permitting a store-and-release operation during a time when trout are spawning would not protect reproductive requirements and thus, not fully support the aquatic biota, wildlife and aquatic habitat designated use.

Comment 41: In their comments, AW and VPC proposed that the final water quality certification be amended to require MWL to operate during the winter store-and-release period when inflow exceeds 126 cfs up to the facilities maximum hydraulic capacity.

Response 41: The operating conditions for store-and-release period (December 16 – March 31) do not prohibit MWL from matching inflow when flows are between 126 cfs and the maximum hydraulic capacity of the facility, but gives MWL discretion on

whether to operate within this range. AW and VPC are free to work with MWL to increase whitewater opportunities during this period, provided operations comply with conditions of the water quality certification, which assure Standards will not be violated.

Comment 42: In their comments, AW and VPC proposed the final water quality certification require MWL to achieve target reservoir elevation by April 1.

Response 42: The reason for achieving the target reservoir level is to protect Common Loon nesting and spawning and incubation of Bass. Loon do not begin nesting until after May 1 and Bass spawning typically occurs in mid-May. The Department's refill conditions for April with target elevation reached by May 1 will protect these activities. In addition, it may be difficult to achieve refill this early due to the timing of spring runoff.

Comment 43: In their comments, AW and VPC proposed that the final water quality certification require MWL to pass inflow above 126 cfs during reservoir refill.

Response 43: The Department's analyzed this scenario using its water balance model. The model indicated in 80% of the years analyzed that the target reservoir elevation would not be reached by the end of April. Not refilling the impoundment before May 1 could interfere with the reproductive functions of aquatic biota and wildlife, specifically bass spawning and incubation and the ability of common loons to successfully nest. This proposal would not provide reasonable assurance that aquatic biota, wildlife, and habitat would be fully supported.

Comment 44: In their comments, AW and VPC proposed the final water quality certification permit MWL to generate up to 186 cfs or inflow if greater during store-and-release mode.

Response 44: The Green River habitat-flow study results show that flows of the magnitude proposed would not support high quality aquatic habitat when starting from the base conservation flow condition. Therefore, these flows will not support the aquatic biota, wildlife, and aquatic habitat designated use or achieve the aquatic habitat and wildlife criterion.

Comment 45: AW and VPC commented that MWL should be required to install and fund a USGS gauging station above and below the dam with online readings for public information.

Response 45: MWL, in their license application to FERC, proposed providing a notification system on their website when flows at the Green River facility are expected to be above the minimum flow needed for boating. Condition J of this certification has been revised to include this requirement in the Recreational Plan.

Comment 46: AW and VPC commented that MWL should be required to improve access to the river below the culvert at the Garfield Road (cleanup and develop a sustainable trail down to the river), improve the parking area in the old gravel pit at Garfield, and secure a takeout and limited parking at the bottom of the river near the confluence of the Green with the Lamoille River.

Response 46: Noted. Condition J of the final water quality certification has been revised to include a requirement to provide access to the river for recreational users and parking as part of the recreation plan.

Comment 47: AW and VPC commented, “While we appreciate efforts by ANR to partially address the concerns raised in our prior comments, the proposed changes do not sufficiently restore opportunities that would be available under natural conditions if true run-of-river conditions existed.”

Response 47: As stated in Finding 59, the Green River is designated as Class B waters. Class B waters are managed to achieve and maintain a high level of quality that fully support designated uses, including boating. The Class B criteria for boating, as presented in Finding 67 requires “a high level of quality that is compatible with boating shall be achieved in Class B waters.” The comments of AW and VPC seems to infer that Class A(1) standards should apply to the Green River. The management objective for the Department for Class A(1) waters for boating, fishing, and other recreational uses states, “highest quality as compatible with water in their natural condition.” (Standards Section 3-02(A)(4)). This standard does not apply to the Green River as it is managed as Class B waters.

The operating regime in the final water quality certification is close to run-of-river except with some deviation during the winter period and during the beginning of April. Whitewater events require fairly high discharges and these will still be available naturally during most of the year and during the vast majority of the recreational boating season.

Comment 48: AW and VPC commented that, “DEC’s proposed flow regime fails to comply with Vermont law, regulations, and policy absent a provision that would allow for scheduled whitewater boating opportunities as recommended by the Whitewater Boating Study and FERC Environmental Assessment.”

Response 49: The Department is charged with finding reasonable assurance that operations of the Green River facility, and the Morrisville Hydroelectric Project as a whole, will not violate the Standards pursuant to Section 401 of the federal Clean Water Act. As stated previously, scheduled whitewater boating is not an existing use and the Department has imposed conditions in the certification to ensure that the recreational boating existing use is protected. Furthermore, scheduled whitewater boating opportunities impede the Department’s ability to manage these waters to fully support all designated uses of the Standards, including aquatic biota, wildlife and aquatic habitat use. However, the operating conditions for Green River will provide a downstream flow regime that provides opportunity for boating when flows are naturally high enough to facilitate whitewater boating, except for a short period in April when a refill is necessary to support Loon nesting and bass spawning. Thus, the certification conditions a flow regime that enables the Department to find reasonable assurance that the Project will be

operated in a manner which will fully support boating, fishing, and other recreational uses.

Comment 50: The VNRC commented that while whitewater releases cannot be provided under the operating conditions for Green River included in the draft certification, opportunities for boating will occur during natural high flow periods exceeding the minimum boatable flow. VNRC further commented that, “providing scheduled releases for boating would degrade water quality and habitat in violation of the VWQS. Accordingly, the draft 401 strikes the appropriate balance between boating and water quality and habitat protection.”

Response 50: Noted. See responses 49.

Comment 51: VTTU stated “[t]hat they would have no issue with these peaking releases if evidence existed that they did not cause massive harm to aquatic habitat. But layman observation, local scientific studies, and peer reviewed studies indicate otherwise.”

Response 51: Noted. See responses above.

7. PHASE-IN OF CONDITIONS

Comment 52: MWL requested that the water quality certification be revised to allow bypass flow conditions to be phased in over a 5 to 10-year period. MWL states that increases in conservation flows and changes in water level management from the current operation will require physical modifications to the facilities as well as operational changes.

Response 52: The Department reviewed MWL’s proposal for phasing in of the bypass flow conditions which included installation of automation equipment and bypass flow turbines at each facility. While the Department agrees that upgrades proposed by MWL will improve efficiency and operations of the facilities, the length of time for implementation of the bypass flows cannot be supported by the Department because upgrades are not necessary in order to MWL to implement bypass flows at the facilities. In addition, MWL indicated that its phase-in schedule was largely driven by economic factors.

The Department’s authority to consider such phasing proposals when issuing as Section 401 water quality certification is limited. The federal Clean Water Act and implementing regulations allow states to establish compliance schedules for the purpose of achieving water quality based effluent limits (WQBELs) and compliance with the Act. *See* 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.47(a). The federal regulations provide that any schedule of compliance for a WQBEL “shall require compliance as soon as possible.” 40 C.F.R. § 122.47(a). A 2007 EPA memo and the EPA’s NPDES permit writer’s manual identify factors that permit writers should consider when assessing whether a compliance schedule for achieving compliance with a WQBEL is consistent with the Act. Among others, the considerations outlined in the memo include the following: (1) a finding that

the discharger cannot immediately comply with the WQBELs; and (2) a finding that the compliance schedule requires the discharger to comply as soon as possible. In demonstrating that the schedule requires compliance as soon as possible, the permitting authority should consider “the steps needed to modify or install treatment facilities, operations, or other measures and the time those steps would take.” None of the factors identify economic considerations as a basis for a compliance schedule.

Vermont law generally tracks federal law on the issue on phasing and compliance schedules. The Standards provide that “a permit issued pursuant to Vermont’s federally-delegated NPDES program may, when appropriate, specify a schedule leading to compliance with the Vermont and Federal Clean Water Acts and regulations.” (Standards, Section 1-04(C)). A “schedule of compliance shall require compliance at the earliest possible time, as determined by the Secretary.” (Standards, Section 1-04(C)).

As a result, the Secretary has the authority to incorporate compliance schedules in permits for achieving compliance with water quality based standards. However, the law and other guidance documents are clear that compliance schedules may only be established for the purpose of achieving compliance (i.e. and not economic considerations) and must ensure compliance “as soon as possible.”

In this case the Department has concluded that compliance with the conditions can be achieved in less time than proposed by MWL. Although the installation of automation equipment at the facilities is important for proper and compliant operations, but this can be completed in a shorter period of time than proposed by MWL. Further, interim alternatives for passing flows are available. Additionally, installation of bypass flow turbines at the three facilities will allow MWL to use bypass flows for generation, but are not critical prerequisites needed in order to pass conservation flows the meet Standards.

Comment 53: VNRC commented, “The timeframes for implementing changes should be reasonable to accommodate the need to modify the civil works and monitoring and control instrumentation to fully implement the conservation flow requirements. Interim steps should be included since some changes can be made almost immediately while others take longer to design and construct.”

Response 53: Noted. See response 52.

Comment 54: VNRC commented, “While an implementation schedule is typically addressed in a flow and water level management plan (required by Condition D), in this case we recommend revising Condition B (and possibly Condition D) to include specific compliance dates for all flow and water level management requirements. MWL should be subject to meaningful penalties if those deadlines are not met.”

Response 54: The Department agrees that a schedule to implement the flow and water level management plan will be important to bring the facilities into compliance with the water quality certification. However, the Department has not included a schedule with compliance dates in Condition B, and will address the schedule issue as it typically would in the flow management plan (Condition D).

The Department agrees with VNRC that deadlines and penalties are important to ensure that the Applicant adheres to the conditions included in the certification. However, the Department has sufficient authority pursuant to 10 V.S.A. Chapter 201 to adequately enforce the conditions in the certification.

The Secretary has authority to enforce permits, assurances, or orders implementing the water quality standards. 10 V.S.A. § 8003(a)(3). The Secretary may issue an administrative order when the Secretary determines that a violation exists pursuant to 10 V.S.A. § 8008 and an administrative penalty may be included in an administrative order. 10 V.S.A. § 8010. Accordingly, the Secretary has enforcement authority over water quality certifications and may issue penalties for violations of conditions in those certifications. The Department has determined that use of its enforcement authority is a more appropriate mechanism than automatic penalties to address non-compliance with the Certification.

Additionally, if MWL is found not to be in compliance with requirement of water quality certification or delays implementation of the flow and water level requirements, Condition A of the certification reserves the ability of the Department to require the operator to discontinue operations until the Department determines that the project can operate in compliance with conditions of its certification.

- **Comment 55:** VTTU commented, “One cannot phase in compliance with Vermont Water Quality Standards. Either a party complies or does not. ‘Phasing in’ is unacceptable.”

Response 55: Noted. See response 52.

8. IMPACT OF CONDITIONS ON GENERATION

a. *Comprehensive Energy Plan*

Comment 56: MWL commented the Department should include other factors in its review of the water quality certification, such as the State’s energy goals.

Response 56: The Department is charged with certifying that operations of the Morrisville Hydroelectric Project are in compliance with the Vermont Water Quality Standards under Section 401 of the federal Clean Water Act. This process does not

authorize the Department to authorize or consider other factors such as the State’s renewable energy goals.

Moreover, the Vermont’s Comprehensive Energy Plan provides that “existing dams retrofitted for hydropower, as well as those undergoing relicensing, are also required to meet Water Quality Standards.”¹¹ (referenced herein) Further, the Plan recognizes that “[p]rojects going through relicensing will likely need to change operations in order to provide adequate flows in the bypass reach, and to operate closer to run-of-river mode. In relicensing, projects that had previously stored water in impoundments, for use during peak demand, may no longer be able to do so to the same extent; and projects that had used flows to the detriment of aquatic habitat may need to sacrifice some production.” This section of the Plan concludes that “[t]his issue needs to be considered by hydro plant operators, especially utilities, as they plan for their future electricity portfolios.”

Accordingly, the Department is not authorized to consider the State’s energy plan under a Section 401 review for a water quality certification, but even if the Department were to consider the State’s energy goals, the energy plan actually *supports* the Department’s determination that the hydroelectric project must meet water quality standards.

Comment 57: MWL states that the conditions in the Certification for Green River facility will reduce power generation by approximately a third.

Response 57: The Department is charged with finding reasonable assurance that operations of the Morrisville Hydroelectric Project, including the Green River facility, will be conducted in a manner which will not violate the Standards under Section 401 of the federal Clean Water Act. This process does not authorize the Department to evaluate or consider the reduction in power generation as a result of operational changes needed to meet water quality standards.

b. Environmental Impacts of Replacement Electricity

Comment 58: MWL and others commented the Department needs to consider the lost generation of the project and the potential environmental impacts of replacing this energy in issuing a water quality certification for the Morrisville Hydroelectric Project.

Response 58: The Department is charged with finding reasonable that operations of the Morrisville Hydroelectric Project will be conducted in a manner which will not violate the Standards under Section 401 of the federal Clean Water Act. This process does not authorize the Department to evaluate or consider the potential environmental impacts associated with replacement of the energy production lost as part of this decision.

¹¹ Vermont Comprehensive Energy Plan. 2016, Vermont Department of Public Service, pg. 385 – 386.

c. Economic Impacts

Comment 59: MWL commented that the proposed operational changes will “[r]esult in a significant loss of renewable energy production” which will significantly affect the utility, its ratepayers and the local and state economy.

Response 59: The Department is charged with finding reasonable assurance that operations of the Morrisville Hydroelectric Project will be conducted in a manner which will not violate the Standards under Section 401 of the federal Clean Water Act. This process does not authorize the Department to evaluate or consider the loss of energy production as part of this decision. Likewise, the process does not authorize the Department to consider issues of economics or potential increase in utility rates associated with the decision where the affected waters are not fully supporting designated uses or achieving and maintaining water quality criteria.

Moreover, FERC, which is authorized to consider these factors, determined that the Department’s recommended flows at the Cadys Falls and Morrisville facilities are appropriate nonetheless. FERC’s jurisdiction to consider these public interest factors is derived under the Federal Power Act, as amended in 1986 with the adoption of the Electric Consumer Protection Act. In particular, FERC is authorized to review the effect on energy production and environmental mitigation of operational changes in order to “balance” the use of the public resource for the public interest. The FERC analysis presented in the final Environmental Assessment of the Project concluded that the protection and enhancement of the environmental resource under the Department’s recommended bypass flow regime for Cadys Falls and Morrisville facilities are worth the decrease in energy production.¹² Therefore, FERC recommended bypass flows for Cadys Falls and Morrisville are the same as recommended by the Department in the water quality certification. Additionally, FERC recommended the flows be included as a term and condition in the new license for the Morrisville Hydroelectric Project.

9. OTHER

a. Capacity testing at Green River facility

Comment 60: MWL commented that the draft water quality certification does not mention the ability of utility to conduct capacity testing for ISO-New England.

Response 60: The capacity test, as currently conducted at the Green River facility, is inconsistent with the operating conditions of the water quality certification, and the capacity test would be a violation of the Standards and the conditions contained within the water quality certification.

¹² Final Environmental Assessment for the Morrisville Hydroelectric Project, (FERC No. 2629), Federal Energy Regulatory Commission, December 16, 2014.