RESPONSE TO COMMENTS
NPDES Permit # MAG360000 and NHG360000
Hydroelectric General Permit

The U.S. Environmental Protection Agency's New England Region (EPA) is reissuing Final National Pollutant Discharge Elimination System (NPDES) General Permits for Hydroelectric Generating Facilities in Massachusetts (MAG360000), jointly with the Massachusetts Department of Environmental Protection (MassDEP), and in New Hampshire (NHG360000). These Permits are being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 et. seq., and Permit #MAG360000 is also being issued under the Massachusetts Clean Water Act, M.G.L. Ch. 21, §§ 26-35.

In accordance with the provisions of 40 CFR § 124.17, this document presents EPA's responses to comments received on the Draft NPDES Permits #MAG36000 and #NHG360000. The Response to Comments (RTC) explains and supports EPA's determinations that form the basis of the Final Permits. From August 20, 2018, through October 19, 2018, EPA solicited public comments on the Draft Permits for the reissuance of the General Permits to discharge equipment cooling waters, equipment and floor drain water, equipment backwash strainer water, and specific maintenance waters from hydroelectric generating facilities to receiving waters in Massachusetts and New Hampshire.

Although EPA's decision-making process has benefited from the comments submitted, the information and arguments presented did not raise any substantial new questions concerning the permit that warrants EPA exercising its discretion to reopen the public comment period. EPA did, however, make certain changes in response to the public comments received on the Draft Permits, listed in Part I, below. The analyses underlying these changes are explained in the responses to individual comments in Part III, below, and are reflected in the Final Permits. The changes to the Final General Permits from the Draft Permits are not considered changes warranting the Agencies to exercise their discretion to reopen the public comment period under 40 CFR § 124.14(b), but rather are considered a logical outgrowth of the comments received.

A copy of the Final Permits and this response to comments document will be posted on the EPA Region 1 web site: https://www.epa.gov/npdes-permits/region-1-final-hydroelectric-generating-facilities-general-permit-facilities.

Copies of the Final Permits may be also obtained by writing or calling George Papadopoulos, U.S. EPA, 5 Post Office Square, Mail Code: 06-1, Boston, MA 02109-3912; Telephone: (617) 918-1579; Email papadopoulos.george@epa.gov.

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I. Summary of Changes to the Final Permit

1. Quarterly ambient pH reporting was added in Parts 1.1, 1.2, 1.3, 1.6 and 2.1, 2.2, 2.3, 2.6. See RTC A.1.

2. Footnotes 2 and 3 in Parts 1.1, 1.2, 1.3, 1.4, 1.6 and 2.1, 2.2, 2.3, 2.4, 2.6 were changed to reflect changes to the pH requirements. State Conditions regarding pH demonstration at Parts 1.8.a and 2.8.a in the Draft Permit were revised and incorporated as Parts 1.7.l and 2.7.1. See RTC A.1.

3. The requirement to monitor for total suspended solids (TSS) in Parts 1.4 and 2.4 was revised. See RTC B.1.

4. Parts 1.7.k and 2.7.k were revised to add that a request for reduction or elimination of monitoring for TSS may be permitted based on a demonstration that TSS levels above 30 mg/L are due to the natural conditions of the river. See RTC B.2 and B.3.

5. The requirement at Part 3.3.a was eliminated, which excluded facilities that withdraw cooling water from an intake with design flow greater than 2 million gallons per day and which use at least 25 percent of the water exclusively for cooling from eligibility for authorization. See RTC D.1.1, D 1.2, and D.1.5.

6. The requirement at Part 3.3.l of the Draft HydroGP was eliminated, which excluded discharges from pump storage facilities from eligibility for authorization on a case-by-case basis. See RTC C.1.

7. The measurement frequency for flow in Parts 1.1, 1.2, 1.3, 1.4, 1.6 and 2.1, 2.2, 2.3, 2.4, 2.6 was changed to “Daily, when discharging” to reflect the intermittent nature of hydroelectric facility operation. Footnote 1 in each Part was revised to reflect this change and to specify how to calculate monthly average flows and to require the reporting of highest of the three monthly average flows on the quarterly Discharge Monitoring Report (DMR).

8. The Best Technology Available (BTA) requirements for cooling water intake structures at Part 4 were revised. The BTA requirements for impingement mortality at Part 4.2 were revised to increase clarity and flexibility and renumbered as Part 4.2.b. Part 4.3 in the Draft HydroGP were revised to increase clarity and flexibility and renumbered as Part 4.2.a. See RTC Part D.

9. An administrative change was made to Part 5.b (Best Management Practices Plan) to improve clarity regarding the requirements of the Annual Report.

10. An administrative change was made to update the hyperlinks at Part 3.3.e to direct applicants to the most recent approved lists of impaired waters in Massachusetts and New Hampshire.

11. An administrative change was made to Part 6.2 to update the NOI submittal requirements consistent with changes to the NPDES Electronic Reporting Tool.

12. EPA updated certain administrative sections of the HydroGP (e.g., to remove dates that have passed and to update addresses and hyperlinks).

II. List of Commenters

- Brookfield Renewable
- Central Rivers Power
- First Light Power Resources
- National Hydropower Association
- Utility Water Act Group

III. Responses to Comments

Comments are reproduced below as received and have not been edited.

A. pH

A.1 Elimination of pH Baseline: Submitted by Brookfield Renewable (Kelly Maloney, Northeast Compliance Manager)

The new suggested pH range limitations of 6.5 to 8.0 S.U. for hydroelectric generating facilities located in New Hampshire and 6.5 to 8.3 S.U. for hydroelectric generating facilities located in Massachusetts in the Draft HYDROGP are unnecessarily restrictive and do not appropriately account for baseline environmental conditions and water quality aspects not otherwise affected by hydroelectric project operations. Specifically, the pH level of the discharge waters for hydroelectric facilities is ultimately much more dependent upon background levels in the subject rivers than on any pH alteration. Furthermore, the Draft HYDROGP, as written, eliminates previous permit language that allows the

permit holder the flexibility to verify upstream/natural pH water conditions in the event of pH non-compliance, in order to demonstrate that the non-compliance is related to the current natural conditions as opposed to project operations.

Hydroelectric facilities in the state of New Hampshire located on the Upper Androscoggin River and in Massachusetts on the Deerfield River experience natural pH levels periodically outside of the new suggested pH ranges. Due to seasonal/naturally occurring pH changes that have been observed on the Upper Androscoggin River in New Hampshire and the Deerfield River in Massachusetts, the pH of influent water varies and has been recorded to naturally be above or below these draft permitted limits. As such, the pH limitations in the draft general permit should be more flexible and Brookfield Renewable recommends a pH range of 6.0 to 8.5.

In addition, under previous permits, [Great Lakes Hydro America, LLC] GLHA and [Bear Swamp Power Company, LLC] BSPC were able to verify the natural conditions of the Upper Androscoggin and Deerfield Rivers as being outside the permitted range in instances of non-compliance. This flexibility adequately recognizes that the permit holder should not be accountable for conditions beyond its control. However, the EPA's current proposal would result in permit violations even under naturally occur events. To this end, Brookfield Renewable also requests that additional language be added back into the HYDROGP where, in the event of pH non-compliance, the permit holder can verify upstream/natural conditions, and the following language be reinserted where the pH range of + or -.5 units outside the background range is acceptable.

> *"The pH shall be in the specified range or within 0.5 units of the background pH. For purposes of this permit, the background pH is the receiving water pH measured upstream of the facility at a location that is representative of upstream conditions unaffected by the facility. If the discharge pH exceeds the specified range, the permittee may use the background pH to demonstrate compliance by showing that the discharge pH is within 0.5 units of the background pH. The background pH and the discharge pH shall be measured on the same day. The background pH results shall be submitted as an attachment with the DMR State certification requirement."*

Response to Comment A.1:

First, the pH ranges in the Draft HydroGP are based on State Water Quality Standards and are the same as those specified in the 2009 HydroGP: a range of 6.5 to 8.3 S.U. for Class A and B waters in Massachusetts and a range of 6.5 to 8.0 for New Hampshire facilities. *See* 314 CMR 4.05(3)(a)(3); 314 CMR 4.05(3)(b)(3); NH RSA 485-A:8 II. Thus, contrary to the comment, they are not "new suggested pH range limitations." The Final HydroGP retains the pH limits in accordance with CWA Section 402(o).

The Draft HydroGP also proposed a condition that would potentially allow facilities discharging at pH values outside of the permitted ranges to contact their respective State and request an alternate pH range. *See* Draft Permit at Parts 1.8.a and 2.8.a. The comment asserts that hydroelectric facilities may discharge at pH values outside of the permitted range where the ambient pH of the river is already outside of the permitted range and that the operations and activities of the hydroelectric facilities do not affect this baseline condition. The comment requests that the Final HydroGP retain pH language in the 2009 HydroGP that authorized an expanded pH limit where upstream ambient pH conditions in the river are

outside the permitted range. The comment includes an excerpt from the 2009 Massachusetts HydroGP. *See*, *e.g*., Part I.A.1 (footnote 2) of the 2009 MA HydroGP. EPA notes that the pH language in Part I.B.15 of the 2009 New Hampshire HydroGP is slightly different and states:

> The pH of the discharge shall be in the range of 6.5 to 8.0 standard units (S.U.) unless the upstream ambient pH in the receiving water is outside of this range and is not altered by the facility's discharge or activities. If the permittee's discharge pH is lower than 6.5 S.U., the permittee may demonstrate compliance by showing that the discharge pH is either higher than, or no more than 0.5 S.U. lower than, the ambient upstream river water pH. If the permittee's discharge is higher than 8.0 S.U., the permittee may demonstrate compliance by showing that the discharge pH is either lower than, or no more than 0.5 S.U. higher than, the ambient upstream river water pH. For this demonstration, the upstream river water sample must be collected on the same day as the discharge pH is measured. The location where the upstream ambient pH sample is collected must be representative of the upstream conditions unaffected by the facility's discharge(s) or activities.

In effect, the 2009 HydroGP allowed Permittees to make a demonstration that the hydroelectric facility did not alter pH by confirming that the pH of the effluent was similar to the pH of the upstream, ambient river water. EPA recognizes that where the ambient river pH is below the permitted range and the effluent pH is higher than or not measurably different than the ambient pH, the discharge of a relatively small volume of effluent from the hydroelectric facility is not likely to affect the baseline pH of the source water and, as such, is not likely to cause or contribute to an exceedance of water quality standards (WQS). In response to this comment, EPA reviewed discharge monitoring data between January 2011 and September 2022 for facilities on the Deerfield and Androscoggin Rivers. The data reviewed indicate that, when reporting non-compliance with the pH limit, facilities on these rivers most often report effluent pH values less than 6.5 S.U. but at or higher than the ambient pH value collected on the same day. These data confirm that continuing to allow additional flexibility for permit compliance in the event that the ambient pH is outside the range of criteria is warranted. In addition, because the WQS apply in the receiving water, a demonstration that the pH of the effluent will not cause or contribute to an exceedance of WQS in-stream by, for example, providing data to confirm that the activities of the facility do not measurably change the pH or that the pH of the effluent is higher than ambient (if less than the low range of the criteria) or lower than ambient (if higher than the high range of the criteria) can satisfy WQS.

The ability to request an alternate pH requirement in the Draft HydroGP offers the Permittee similar flexibility as the 2009 HydroGP and both conditions account for the possibility that the pH of the source water may be outside of the specified pH ranges absent any activity or use by the facility. However, this Draft HydroGP condition requires the Permittee to reach out to the States to review and approve an alternative pH value in a timely manner. Since the Draft HydroGP proposed that a Permittee contact its respective State, EPA consulted with NHDES and MassDEP about the comment's requested changes to the draft language. NHDES agreed to retain the language at Part I.B.15 of the 2009 New Hampshire HydroGP, which provides that facilities discharging outside the pH criteria range may demonstrate compliance using ambient data. The Final New Hampshire HydroGP incorporates this language at Part 2.7.l. To facilitate compliance review by both EPA and the State, the Final HydroGP added a requirement

to report the ambient pH in the quarterly DMR in the event that an effluent value outside of the pH range triggers the need for a demonstration.[1]

MassDEP indicated that it prefers a demonstration that may be individually tailored based on site-specific conditions. MassDEP maintained that the demonstration language in the Draft HydroGP is the appropriate means for requesting an alternative pH limit and demonstrating, on a case-by-case basis, that an effluent pH outside the permitted range is a result of the ambient conditions of the river, uninfluenced by any activity at the facility, and will not cause or contribute to a WQS exceedance. EPA agrees that both the NH and MA demonstration methods are permissible. Consequently, EPA has retained this permit condition as Part 1.7.l in the Final Massachusetts HydroGP. Permittees are instructed to contact MassDEP to complete a site-specific demonstration. MassDEP confirms that this site-specific demonstration will require a comparison of the ambient and effluent pH values similar to the demonstration required for New Hampshire facilities and MassDEP will, in consultation with the Permittee, specify the required monitoring frequency for the demonstration. Permittees will submit effluent pH and flow values and ambient pH and streamflow values to demonstrate that a discharge outside of the permitted range will not cause or contribute to an exceedance of WQS. Permittees are instructed to submit a Notice of Change (NOC), described in Appendix 8, with documentation of the pH demonstration and MassDEP's approval for an alternate pH range. As in the New Hampshire HydroGP, when ambient pH is used as justification for discharging outside of the permitted range in accordance with a demonstration to MassDEP, the Final HydroGP requires Permittees to report the ambient pH in the DMR.

A.2 Section 2.8(a) - State Permit Conditions: Submitted by Central Rivers Power (Curtis Mooney, Regulatory Affairs Manager)

The draft permit has changed the process for evaluating pH levels in New Hampshire hydro station outfalls. The revision requires facilities to demonstrate that the New Hampshire State Water Quality standards can be attained within an alternative range. The process to obtain the alternative range is not clearly defined in the draft permit compared to the current permit, which lists an immediate compliance option if the detected pH level is within the 0.5 standard units of the permit limits. In the current permit cycle in 2012 to 2015, four of our Hydroelectric Stations observed a total of six pH exceedances which they were able to address under the current permit conditions to demonstrate immediate compliance. Investigations into the observed exceedances indicated that the upstream influent of the station was the contributing factor and the exceedances were not reflective of the activities occurring at the Hydroelectric Station.

Under the new permit, will the Hydroelectric Station be required to obtain an alternative pH range in advance of monitoring in order to address a potential exceedance? The intent of this change is not clear, and we recommend that the requirement remain as it exists in the current permit (i.e., to demonstrate

[1] Under the 2009 HydroGP, Permittees were instructed to provide background pH results as an attachment to the DMR. *See*, *e.g.*, 2009 New Hampshire HydroGP at I.B.1 (footnote 3). Examining DMR data in response to this comment proved burdensome because attachments are not easily accessed with the databases that EPA typically uses to download data (ICIS, ECHO) and are only available in NetDMR. To facilitate future review, EPA is requiring facilities to enter the ambient pH value in the DMR. When the pH range of the effluent meets criteria, the demonstration condition is not triggered and Permittees should enter the appropriate No Data Indicator (NODI) code for the ambient pH.

compliance after an exceedance is observed). If a new methodology will be required, a more clear and detailed immediate compliance option should be provided in the new permit, similar to the level of detail provided in the current permit.

Response to Comment A.2:

Part 2.7.l of the Final New Hampshire HydroGP has been revised to include pH requirements consistent with the 2009 HydroGP in place of the proposed demonstration language in Part 2.8.a, as the comment requests. *See* Response to Comment III.A.1.

B. Total Suspended Solid (TSS)

B.1 Comments submitted by Brookfield Renewable (Kelly Maloney, Northeast Compliance Manager)

The Draft HYDROGP requires monitoring of equipment-related backwash water for Total Suspended Solids (TSS) without limits on this parameter. Backwash water contains naturally occurring solids that accumulate on intake screens prior to the water entering the facility. Any TSS present, in a discharge of facility backwash water, is naturally occurring and not a contaminant that results from the hydroelectric project operations. Additionally, the backwash flushing activity itself is so varied that it is impossible to gather consistent, repetitive results. Since no two flushing events are the same, trying to compare monitoring results from one event to the next is meaningless. For these reasons, Brookfield Renewable believes that TSS from backwash events for hydroelectric facilities are not an appropriate parameter that should be regulated under this permit.

Response to Comment B.1:

The Draft HydroGP proposed monitoring-only requirements for TSS for discharges from equipment-related backwash strainer water on the cooling water intake line. The comment asserts that TSS monitoring for backwash strainer is not appropriate because backwash water contains naturally occurring solids and that pollutants in this stream and any pollutants are not a result of hydroelectric project operations. EPA reviewed its response to similar comments from the Response to Comments on the 2009 HydroGP. At that time, EPA determined that the backwash strainer equipment at hydroelectric facilities does not compare to more typical filter backwash systems and, for this reason, TSS monitoring was not required. In typical systems, water is pumped in reverse through filter media designed to capture sediment and the backwash stream may contain high levels of TSS compared to the river because the filter media concentrates TSS. At hydroelectric facilities, a relatively coarse-mesh screen (e.g., 1/8-inch) prevents large debris from entering the system. A rotating arm sweeps the debris that collects on the screens into a strainer basket. Once the debris and materials in the basket are removed, the Permittee backwashes the screen to remove any remaining material. *See* Parts D.4 and 5 of HydroGP Appendix 7. As the comment suggests, the debris left after the strainer is cleaned is primarily naturally occurring material from the river. While the debris may be from the river, trapping silt and leaves against the strainer could potentially result in pulses of TSS at levels higher than ambient during backwashing events. Limited monitoring data identified in comments for the 2009 HydroGP suggest that backwash strainer TSS concentrations were less than 5 mg/L. As Comment B.2 and B.3 point out, however,

ambient TSS is generally at detectable levels and can be relatively high in some rivers and under certain conditions. Thus, it is not clear why limited backwash strainer sampling indicates such low TSS levels. The Fact Sheet explains that this category of discharge is not adequately characterized based on the limited available data. *See* Fact Sheet p. 16.

For the reasons described above, EPA believes that monitoring the equipment-related backwash strainer water is warranted to adequately characterize TSS in the wastestream and ensure water quality standards are met. At the same time, EPA agrees that this wastestream is the same as a typical backwash system designed to treat intake water and concentration TSS and, for this reason, EPA expects that more limited monitoring will provide adequate information for the next permit issuance. In addition, EPA's review of the pH comments in Part A and the response to comments on the 2009 HydroGP also suggest that the backwash strainer water, which consists of river water pumped in a reverse direction, is not exposed to industrial activity that would be likely to alter the pH. In response to this comment, the Final HydroGP retains monitoring requirements for TSS and pH for eight quarters of the permit term and eliminates the pH limit. EPA expects that eight samples will adequately characterize this wastestream for permit reissuance.

B.2 Section 2.7 (k) - Other Permit Conditions: Submitted by Central Rivers Power (Curtis Mooney, Regulatory Affairs Manager)

The draft permit requires outfall sampling of TSS with a possibility of reduction or elimination of this sampling parameter. Our experience is that high TSS levels may be present seasonally and intermittently in water flowing into our Hydroelectric Stations during high flow events and are not attributable to operations being performed by the Stations. The new permit requirement that four consecutive samples must be less than an average of 30 milligrams per liter (mg/L) does not appear to address this issue. In order to reduce or eliminate this sampling requirement, will the USEPA allow for demonstrating the source of TSS levels above the 30 mg/L from contributing upstream sources to justify reducing or eliminating TSS sampling?

Response to Comment B.2:

Comment III.B.2 is substantially similar to Comment III.B.3. EPA prepared a single response to both comments below.

B.3 Part 1- Addition of TSS Monitoring Requirement: Submitted by First Light Power Resources (Patty Goclowski, Environmental, Health, and Safety Manager)

TSS has been proposed as a sampling requirement for the following discharges:

- Equipment and floor drain water
- Maintenance-related water from sump dewatering
- Equipment-related backwash strainer water
- Facility Maintenance-Related Water during Flood/High Water Events
- Requirements for any combination of discharges

For hydroelectric facilities that draw water from the Connecticut River (CT River), the presence of silt in the water is highly likely. The CT River is known for naturally high silt levels when river flows are above normal base flows as evidenced by the following:

- In 2010, FLPR conducted extensive work removing silt accumulations from both the upper reservoir and CT River during an upper reservoir dewatering event.
- In August, 2011, Hurricane Irene provided evidence of the amount of TSS present in the CT River. Image No. 1 shows the waters of the CT River meeting the waters of the Millers River. Image No. 2 shows the amount of TSS being deposited from the CT River into the Long Island sound several days later.
- In 2015, FLPR performed a pilot dredging operation to remove silt from the intake. Yet Image No. 3, which was taken in September 2018 while FLPR conducted work in the upper reservoir, shows the continuing effect of silt accumulation due to pumping operations from the CT River.

Image No. 1: August 2011

Image No. 2 – September 2, 2011 (*NASA Earth Observatory Image by Robert Simmon*)

Due to the amount of silt accumulated at the reservoir, FLPR has developed and provided to EPA Region 1 protocols to prevent the uncontrolled release of discharges with high TSS during dewatering of the upper reservoir, copy attached.

Therefore, the addition of TSS as a monitoring requirement may not accurately reflect what is naturally being pumped from the CT River versus the TSS levels of discharges during hydroelectric operation of the facilities. FLPR expects the TSS levels for Cabot (MAG360008) and Turner Falls No. 1 Station (MAG360010) to be reflective of the TSS levels in the CT River, and could naturally be very high as shown in the attached photos. Meanwhile, the Northfield Mountain (MAG360009) TSS levels may also be influenced by settling at the upper reservoir.

Based on our experience, FLPR recommends that EPA Region 1 consider removing the monitoring requirement for TSS (as it did for the previous expired permit) due to the natural occurrence of silt in the CT River and instead require FLPR to utilize the methodologies and protocols developed when operations could result in an increase of TSS in its discharge. If this is not a feasible alternative, then FLPR would recommend the creation of a sampling scheme and dewatering protocols for reservoirs in which the permitted facilities are allowed to demonstrate they are not introducing elevated TSS as part of their processes.

Response to Comments B.2 and B.3:

The Draft HydroGP authorizes discharges from equipment-related cooling water, equipment and floor drain water, maintenance-related water, backwash strainer water, facility maintenance-related water during flood or high water events, and any combination of these discharges. The Draft GP proposed TSS monitoring for equipment and floor drain water, maintenance-related water, backwash strainer water, as well as any combination of these discharges.[2] Revisions to the Final HydroGP's TSS monitoring requirements for the backwash strainer discharge are explained in Response to Comment III.B.1. This response focuses on TSS monitoring for the equipment and floor drain water, the maintenance-related water, and any combination of discharges that includes one or both of these wastestreams.

Equipment and floor drain water effluent may include water from floor drains, trench drains, station sumps, oil/water separators, wheel pit drains and sumps, compressor blowdowns, equipment and seal leakage, lower guide bearing drains and other bearing-related discharges, various pit drains, and miscellaneous water collected in a sump or oil/water separator. *See* Fact Sheet pp. 5-6. Maintenance-related water is comprised of river water pumped through the facility during periods of maintenance and may include discharges from turbine, penstock, and sump dewatering. Only sump dewatering discharges are required to be monitored under the HydroGP. Water from dewatering of the penstock or turbines has passed through the turbines to generate electricity and is not expected to contain pollutants. Sumps, however, often act as oil/water separators (*See* Fact Sheet p. 6) and the various equipment and floor discharges and sump dewatering are likely sources of TSS that would be added as a result of the activity of the hydroelectric facility.

The Draft HydroGP includes several water quality and technology-based conditions designed to ensure that the discharge of TSS from hydroelectric facilities is properly controlled. Parts 1.7.d and 1.7.e and Parts 2.7.e and 2.7.f require that discharges meet narrative water quality standards related to solids. In addition, Part 5 requires the Permittee to have a Best Management Practices (BMP) Plan in place to protect the receiving water from pollutants in the discharge. The BMPs required in Appendix 7 of the HydroGP are designed to minimize the addition of TSS to the receiving water, for instance, by identifying sources of pollutants, maintaining a clean facility, regularly cleaning oil/water separators, pits, and sumps, and developing a response procedure in the event of a spill. These BMPs are in line with the "methodologies and protocols developed when operations could result in an increase of TSS in its discharge" that FLPR mentions in its comment. TSS monitoring will ensure compliance with these narrative permit limitations and will confirm that these technology-based BMPs are effectively controlling the discharge of TSS to the receiving water. *See* 40 CFR § 122.44(i). For this reason, the Final HydroGP has retained quarterly TSS monitoring for discharges from equipment and floor drains, maintenance-related sump dewatering, and combined discharges.

[2] Note that, contrary to the comment, the Draft Permit did not propose TSS monitoring for facility maintenance-related water during flood/high water events. *See* Draft Permit at Part I.5. Parts I.1.6 and I.2.6 of the HydroGP were revised to clarify that TSS monitoring for combined discharges is only required for combined discharges that include equipment and floor drain water, maintenance-related water, or equipment-related backwash strainer water. In other words, a facility that combines discharges of only cooling water and maintenance-related water during flood/high water events would not be required to monitor for TSS because TSS monitoring does not apply to these wastestreams individually.

Parts 1.7.k and 2.7.k enable Permittees to request a reduction or elimination of TSS monitoring after at least four consecutive, quarterly monitoring samples of less than 30 mg/L. The commenters point out that, in certain waterbodies at certain times of year, suspended solids may be naturally high in the river water that is the source of the discharges from hydroelectric facilities. The comments assert that, under these conditions, effluent TSS monitoring may not accurately reflect TSS resulting from activities at the facility. EPA acknowledges that naturally-occurring TSS levels could result in high sample values that are not representative of the facility's contribution of TSS. However, EPA is not persuaded that this possibility warrants eliminating TSS monitoring entirely because, as explained above, the various equipment and floor discharges and sump dewatering are potential sources of TSS. The HydroGP includes narrative requirements to control TSS at the facility and the required TSS monitoring will ensure that these BMPs sufficiently control TSS and are being maintained at each facility. Still, naturally high levels of TSS in the river may, at times, obscure monitoring results. The TSS monitoring under the HydroGP should accurately characterize the addition of TSS from the activity at the facility and not ambient TSS levels. EPA will accept a demonstration, based on a comparison of ambient and effluent monitoring results, that high TSS levels are naturally occuring when considering a request for reduction or elimination of TSS monitoring. EPA has revised Parts 1.7.k and 2.7.k of the Final HydroGP to clarify that Permittees may include a demonstration that sample values greater than 30 mg/L are due to naturally-occurring TSS levels in the river and not a result of the addition of TSS at the facility.

C. Other Conditions

C.1 Part 3.3. Limitations on Coverage: Patty Goclowski, Environmental, Health, and Safety Manager of First Light Power Resources

The draft permit states in Part 3.3 that, "Discharges from pump storage hydroelectric facilities, based on a case-by-case determination" are excluded from coverage under the general permit. FLPR requests that EPA clarify the requirements regarding the conditions under which a pump storage facility would be ineligible to be covered under the general permit for hydroelectric facilities.

Response to Comment C.1:

The Draft HydroGP proposed for the first time that coverage for discharges from pump storage hydroelectric facilities would be determined on a case-by-case basis. *See* Part 3.1.l of the Draft HydroGP. The commenter is concerned that the "case-by-case" language in the Draft HydroGP is unclear and requests that EPA clarify the factors it would consider to determine if a pump storage facility is eligible for coverage. EPA acknowledges that the eligibility requirement at issue is not well-explained in the Fact Sheet. Further, both known operating pump storage hydroelectric facilities in Massachusetts [Cockwell (Bear Swamp) Station (MAG360012) and Northfield Mountain Station MAG360009][3] submitted NOIs and were authorized to discharge under the 2009 HydroGP. EPA is not aware of evidence that circumstances at pump storage facilities have changed since issuance of the 2009 General Permit such that the discharges would necessarily be ineligible for coverage. For these reasons, EPA has removed the potential for ineligibility for pumped storage facilities that was originally specified in Part 3.3.l of the

[3] National Hydropower Association National Hydropower Map. https://www.hydro.org/map/

Draft Permit. As a result, pump storage facilities are generally expected to be authorized to discharge under the Final HydroGP like any other hydroelectric facility.

At the same time, any discharger authorized by a general permit or which applies for coverage under a general permit may be required to apply for and obtain an individual NPDES permit based on certain factors, including, but not limited to, that the discharge is a significant contributor of pollutants. 40 CFR § 122.28(b)(3)(i). EPA will apply the factors as indicated in Part 6.8 of the Draft Permit (and retained in the Final Permit) to determine whether any applicant for this permit, including pump storage facilities, should be required to apply for and obtain coverage under an individual permit. If a facility is required to obtain an individual NPDES permit, EPA will notify the Permittee in writing that a permit application is required and, among other conditions, include a statement of reasons for this decision. *Id.* § 122.28(b)(3)(ii).

D. Cooling Water Intake Structure Section 316(b) Best Technology Available Requirements

D.1 Comments Submitted by the Utility Water Act Group (Kerry L. McGrath, Counsel)

D.1.1 Executive Summary

With the U.S. Environmental Protection Agency ("EPA" or "Agency") Region 1's proposed National Pollutant Discharge Elimination System ("NPDES") general permit for hydroelectric facilities discharging to waters within the Commonwealth of Massachusetts (MAG360000) and the State of New Hampshire (NHG360000) ("Proposed Permit"), 83 Fed. Reg. 18,555 (Apr. 27, 2018), EPA takes the position that hydroelectric facilities are subject to the requirements of Clean Water Act ("CWA") § 316(b), 33 U.S.C. § 1326(b), and EPA's 2014 Final Rule to Establish Requirements for Cooling Water Intake Structures ("CWISs") at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48,300 (Aug. 15, 2014) ("2014 Rule" or "Existing Facilities Rule"). While this is a change from the previous Region 1 Hydro General Permit, which did not include CWA § 316(b) requirements, Region 1's proposal continues a disturbing recent trend that could have significant implications for the nation's approximately 2100 hydroelectric facilities.

EPA first indicated its intent to apply CWA § 316(b) requirements to hydroelectric facilities in Region 10's Proposed NPDES General Permit for Hydroelectric Facilities within the State of Idaho (IDG360000). 83 Fed. Reg. 18,555 (Apr. 27, 2018). We understand that EPA Headquarters has directed certain states to do the same in their NPDES permitting. As we detailed in UWAG and the National Hydropower Association's joint comments on the Region 10 proposal,[2] EPA is wrong to apply CWA § 316(b) and the 2014 Rule to hydroelectric facilities, which do not have CWISs in the conventional industrial context upon which the current § 316(b) regulations and requirements were developed.

Unlike the other facilities to which EPA has applied § 316(b), EPA has not established technology-based limitations and standards for hydroelectric facilities, nor would it be reasonable to do so given the *de minimis* nature of their withdrawals. EPA never collected any information on the design, location, construction, and capacity of pipes or other features used to divert water for use in cooling equipment in hydroelectric facilities, or on the environmental impacts of those features. As these comments will show,

that omission is crucial because hydroelectric facilities differ substantially from the largely land-based steam electric plants and industrial facilities for which EPA developed the 2014 Rule and every other § 316(b) rule the Agency has adopted. Of equal significance, EPA has never considered any of the legal, technical, or economic issues involved in applying § 316(b) to hydroelectric facilities.

The Proposed Permit nevertheless relies on the 2014 Rule's standards for steam electric power and manufacturing plants to establish the Region's best professional judgment ("BPJ") about what measures are the best technology available ("BTA") "to minimize [the] adverse environmental effects of [CWIS]" at hydroelectric facilities, and requires that the permittee implement those technologies within 90 days of receiving authorization to discharge under the permit. *See* Proposed Permit § 4.2.

There are several key problems with Region 1's proposal. First, interpreting CWA § 316(b) to apply to hydroelectric generation facilities would be a significant expansion of EPA's regulatory jurisdiction. Second, EPA has never provided notice of, support for, or an opportunity for comment on the applicability of § 316(b) to hydroelectric facilities. As UWAG and NHA noted in our joint comments on the recent Region 10 proposal, the agency's proposal did not provide analysis of or support for application of CWA § 316(b) or the 2014 Rule to hydroelectric facilities. In fact, during the existing facilities rulemaking, the Agency explicitly stated that withdrawals from hydroelectric facilities were not meant to be addressed in its Existing Facilities Rule. 76 Fed. Reg. 22,174, 22,190 (Apr. 20, 2011). It would be arbitrary and capricious, and contrary to the Administrative Procedure Act ("APA") requirements for fair notice and opportunity for comment, for EPA to now adopt such a novel, post-hoc interpretation.

Third, even if EPA, after full and procedurally appropriate consideration of the issue, concluded that CWA § 316(b) applies to hydroelectric facilities (which UWAG believes it should not), the requirements of the 2014 Rule are not appropriate for such facilities, which are fundamentally different from the steam electric power and manufacturing plants EPA considered in that rulemaking, both in terms of the feasibility and cost of technology and the assessment of environmental impacts. Indeed, the 2014 Rule's requirements would be unnecessary in most cases because the rates of impingement and entrainment would be so low that additional controls would not be warranted. Fourth, establishing § 316(b) requirements for CWISs at hydroelectric facilities would conflict with and duplicate other federal and state processes and requirements already in place, including requirements established through the FERC licensing process. In particular, technology requirements that go beyond the location, design, construction, and capacity of cooling water intake structures, such as Region 1's proposed requirement for fish passage over the dam, go well beyond EPA's limited CWA § 316(b) authority and would intrude on FERC's authority. Entrainment and impingement impacts of the dam itself, if any, are appropriately addressed through FERC licensing, not NPDES permits.

In the Proposed Permit, Region 1 proposes to establish new BTA requirements based on its "best professional judgment" without first evaluating the attributes of the facilities in question and determining whether they have already minimized adverse environmental effects. In fact, it would be very difficult and, in some cases, infeasible, for hydroelectric facilities to comply with some of the requirements outlined in the Proposed Permit. Even if some facilities in New Hampshire and Massachusetts could comply with some of the proposed measures, the costs of doing so would likely far exceed any plausible environmental benefits. Because the proposed Region 1 general permit is being issued by EPA, if finalized, the permit could be seen as a model for other Regions and States. Therefore the Region 1

proposal has important implications beyond Massachusetts and New Hampshire. For all of these reasons, discussed in more detail in these comments, Region 1 should remove any § 316(b)-related provisions from the Proposed Permit.

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[2] Comments of the National Hydropower Association and the Utility Water Act Group on EPA's Proposed Issuance of NPDES General Permit for Hydroelectric Facilities Within the State of Idaho (IDG360000) (July 11, 2018), 83 Fed. Reg. 18,555 (Apr. 27, 2018).

Response to Comment D.1.1:

Clean Water Act (CWA) Section 316(b) provides that:

> Any standard established pursuant to section 1311 of this title or section 1316 of this title and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b). EPA's interpretation reflects section 316(b)'s statutory language that requires section 316(b) requirements for any point source subject to standards under sections 301 or 306. Standards under section 301 of the Clean Water Act include not only effluent limitations under section 301(b) but also any more stringent limitations necessary for compliance with State water quality standards under section 301(b)(1)(C). EPA's 316(b) regulations have long reflected EPA's statutory interpretation that section 316(b) applies to any NPDES discharger with a cooling water intake structure. As a result, EPA's regulations for the last 20 years have included a requirement that permits for NPDES dischargers with cooling water intake structures, not just those subject to ELGs, must include 316(b) requirements. EPA addresses comments about the application of § 316(b) to hydroelectric facilities in Responses to Comments D.1.3 and D.1.4.

EPA's 2014 CWA Section 316(b) existing facilities rule ("2014 Final Rule"), which established requirements that apply to cooling water structures at existing facilities, states that the substantive provisions of the rule apply to any facility that is 1) a point source; 2) with a cooling water intake structure with a design intake flow greater than 2 MGD; 3) using 25 percent of the withdrawn water for cooling. 40 CFR § 125.91(a); *see also* 79 Fed. Reg. 48,300 (August 14, 2014). Further, it provides that a cooling water intake structure not subject to the substantive requirements under the 2014 Final Rule at 40 CFR §§ 125.94 through 125.99 or subparts I or N of Part 125 must meet requirements established on a case-by-case, best professional judgment basis. 40 CFR § 125.90(b); *see also id.* §§ 125.80(b), 125.130(c); 79 Fed. Reg. at 48,300 ("If a facility has or requires an NPDES permit but does not meet the 2 mgd intake flow threshold, it is subject to permit conditions implementing CWA section 316(b) developed by the NPDES Permit Director on a case-by-case basis using BPJ (best professional judgment) under 40 CFR 125.90(b)."). In other words, the 2014 Final Rule reflects EPA's view that the statute applies to all cooling water intake structures at facilities with NPDES permits.

In the case of hydroelectric facilities, the commenters read the Rule as not intending that the provisions would apply to this type of facility at all. The commenter states that "when EPA

proposed the underlying existing facility rule in 2011, it stated explicitly that withdrawals from hydroelectric facilities were not addressed in its Existing Facilities Rule," citing in part to the following from the preamble to the proposed rule:

> …. [T]here are many other industrial uses of water not intended to be addressed by today's proposed rule. Emergency water withdrawals, such as fire control systems and nuclear safety systems, are not considered as part of a facility's design intake flow. Warming water at liquefied natural gas terminals, and hydro-electric plant withdrawals for electricity generation are not cooling water uses and are not addressed by today's proposal.

76 Fed. Reg. 22,174, 22,190 (Apr. 20, 2011). The commenters instill this statement with a broader meaning than warranted; it indicates only that water withdrawn to turn electric turbines (i.e., "for electricity generation") at hydroelectric facilities is not a *cooling* water use and is, therefore, not subject to the substantive requirements of the 2014 Final Rule at 40 CFR § 125.94-99.[4] In any event, as explained in Responses to Comments D.1.5 and D.1.6, EPA agrees that hydroelectric facilities are not subject to those requirements.

Consistent with EPA's longstanding practice with respect to facilities not otherwise subject to promulgated section 316(b) substantive requirements, the rule continues the requirement for case-by-case, best professional judgment 316(b) conditions for cooling water intake structures at facilities for which BTA standards have not been promulgated. *See* 40 CFR § 125.90(b).[5] Region 1 did not apply the 2014 Final Rule in the Draft General Permit; rather, Region 1 proposed that facilities subject to the Rule based on design flow and percent cooling water use would be ineligible for coverage under the General Permit.[6] EPA has since concluded that the 2014 Final Rule does not apply to hydroelectric facilities. As such, Region 1 eliminated this proposed ineligibility provision, thereby making hydroelectric facilities eligible for coverage under the Final General Permit regardless of design flow and percent cooling water use. Cooling water intake structures at hydroelectric facilities are subject to case-by-case, BPJ permitting. 40 CFR § 125.90(b); *see also id.* §§ 125.80(b), 125.130(c). *See* Response to Comment D.1.5.

The comments also argue that, given the regulatory licensing regime required for hydroelectric facilities, establishing BPJ § 316(b) conditions to address impingement and entrainment such as

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[4] EPA notes that the Draft HydroGP did not propose to regulate the flow of water through the turbines to generate electricity.

[5] A similar regulatory provision was promulgated as part of the 2004 Phase II Rule. *See* 69 Fed. Reg. 41,576, 41,683 (July 9, 2004). The proposal for the current existing facility rule included language requiring BPJ permitting language that is similar to that adopted in the final rule. 76 Fed. Reg. 22,174, 22,280 (April 20, 2011).

[6] Region 1 does not agree with the comments that the Draft Permit "relies on" the 2014 Final Rule's "standards." The technology standard in the 2014 Final Rule for minimizing impingement mortality is traveling screens, and the HydroGP does not include a compliance option requiring a hydroelectric facility to implement that technology. And while the draft GP does consider scientific research also used in the rule indicating that most fish can escape impingement at flows of 0.5 fps or less, there is no explanation given in the comment why such research is applicable to steam electric and manufacturing facilities but inapplicable to hydroelectric facilities. Indeed, the TSV of 0.5 focusses on the ability of fish to swim against a current, not on the type of facility or the particular technology employed by the facility. As to entrainment, the standard in the rule for minimizing entrainment is a framework for analysis that was not applied in the Fact Sheet or Draft Permit.

those proposed in the Draft General Permit are unnecessary, duplicative, and potentially conflicting. However, under the statute and implementing regulations, the permitting authority is required to establish 316(b) requirements for NPDES dischargers with cooling water intake structures. EPA does not have the option of declining to apply § 316(b) at hydroelectric facilities. The nature of § 316(b) requirements is, however, what BPJ, case-by-case permitting proceedings address, and EPA recognizes that the existing work done in these other contexts may well already satisfy section 316(b). As EPA explains in Responses to Comments D.1.5.3 and D.1.7.1, the requirements of the HydroGP are not intended to duplicate requirements resulting from the licensing process, but rather to leverage technologies or operating conditions already mandated by FERC (or other federal agencies, such as U.S. Fish and Wildlife Service) so as to satisfy § 316(b) requirements. As the commenter points out, FERC and other state and federal agencies may already have considered adverse impacts of the dam on aquatic life, possibly even impingement and entrainment. EPA is not regulating adverse impacts from the dam itself, only those associated with the withdrawal of cooling water; however, technologies or operational considerations imposed to minimize adverse impacts from the operation of the dam may also serve to minimize impingement and entrainment associated with cooling water withdrawals and, as such, would also satisfy § 316(b) requirements. Furthermore, while the commenters posit that the requirements of the HydroGP "potentially conflict" with "other federal and state authorities," they provide no specific examples of how any of the possible BTA alternatives in the Draft HydroGP present an actual conflict.

Finally, the commenters assert that it may be "infeasible" for some facilities to comply with the BTA options in the HydroGP or that the costs "would likely far exceed" the anticipated environmental benefits. As explained in Responses to Comments D.1.7, the HydroGP is a general permit; while eligible facilities generally involve the same or substantially similar types of operations, individual differences still exist. A facility that believes it cannot comply with any of the BTA options in the HydroGP or that the cost of complying is disproportionate to the benefits could apply for an individual permit for a site-specific BPJ determination from the Region. The Region encourages facilities who have such concerns to talk with the Region to determine whether a general or individual permit is the better option. Similarly, if a facility determines that all of the BTA compliance alternatives create actual conflicts with requirements under other federal or state authorities, the facility should discuss specific concerns with the Region.

For these reasons, explained further in response to UWAG's more detailed comments below, Region 1 maintains that § 316(b) applies to hydroelectric facilities. After considering these and other comments on the Draft HydroGP, EPA has revised the BTA requirements in the Final HydroGP to provide additional flexibilities and reduce uncertainty for applicants. *See* Responses to Comments D.1.7. However, a facility which does not believe it can meet one of the BTA options under the Final HydroGP may apply for an individual permit, at which time EPA will assess BTA requirements on an individualized basis.

D.1.2 Introduction

EPA Region 1 proposes to issue a NPDES general permit for hydroelectric facilities discharging to waters within the Commonwealth of Massachusetts and the State of New Hampshire. 83 Fed. Reg.

42,118 (Aug. 20, 2018) ("Proposed Permit"). With Region 1's proposal, upon the heels of a similar Region 10 proposal, which has not yet been finalized, EPA again takes the position that hydroelectric facilities are subject to the requirements of CWA § 316(b), 33 U.S.C. § 1326(b), and EPA's 2014 Rule. As detailed in these comments and in joint comments submitted by UWAG and the National Hydropower Association (NHA) in response to the Region 10 proposal,[8] EPA's position is unsupported and contrary to law.

The Proposed Permit would apply only to hydroelectric facilities that require a NPDES permit to discharge pollutants associated with the operation of hydroelectric facilities to waters of the United States in Massachusetts and New Hampshire, and that use water to cool some of that equipment, where the amount of cooling water falls below the 2014 Rule's qualifying thresholds.[9] Region 1 asserts that those hydroelectric facilities must meet CWA § 316(b) requirements established by the Director on a case-by-case, BPJ basis under 40 C.F.R. § 125.90(b). Proposed Permit Fact Sheet at 25. The Proposed Permit purports to reflect the Region's BPJ about what CWIS technology is the best available "to minimize [the] adverse environmental effects of [CWIS]" at hydroelectric facilities and requires that the permit conditions reflecting those technologies be met within 90 days of receiving authorization to discharge under the permit. Proposed Permit § 4.2.

The Region's proposal to apply CWA § 316(b), even on a BPJ case-by-case basis, to hydroelectric facilities is neither compelled by nor consistent with the CWA. And, as demonstrated in these comments, even if CWA § 316(b) were applicable, the Region's proposed BPJ requirements are arbitrary and capricious for several reasons. First, Region 1 seeks to impose requirements that go well beyond EPA's limited authority under CWA § 316(b) to require that the location, design, construction, and capacity of CWISs reflect the best technology for minimizing adverse effects. Second, establishing § 316(b) requirements for CWISs at hydroelectric facilities would conflict with and duplicate other federal and state processes and requirements already in place, including requirements specifically designed to address environmental impacts established through FERC's licensing process and the state CWA § 401 water quality certification process. Third, the Fact Sheet demonstrates that the Region borrowed from and relies on a rule that EPA expressly stated did not apply to hydroelectric facilities and that the Agency adopted without any consideration of the technical feasibility or cost of application of such requirements to hydroelectric facilities. Proposed Permit Fact Sheet at 23-25. Finally, the Region has provided no independent analysis of or support for any of the proposed requirements. Indeed, for the three conditions imposed, neither the Fact Sheet nor the Proposed Permit provides any meaningful discussion of the technical feasibility, costs, benefits, or other relevant factors associated with those conditions.

The Utility Water Act Group ("UWAG") is a voluntary, non-profit, unincorporated group of 147 individual energy companies and three national trade associations of energy companies: the Edison Electric Institute, the National Rural Electric Cooperative Association, and the American Public Power Association. UWAG members operate hydroelectric facilities, power plants, and other facilities that generate, transmit, and distribute electricity to residential, commercial, industrial, and institutional customers. One of UWAG's purposes is to participate on behalf of its members in EPA regulatory actions under the CWA and in litigation arising from those regulatory actions. UWAG's membership includes owners and operators of hydroelectric facilities that would be affected by the adoption and issuance of the Proposed Permit.

Within the United States, there are approximately 2,200 hydroelectric facilities, of which private entities own and operate around 1,300 facilities, and public entities own and operate approximately 900 facilities.[10] Hydroelectric facilities vary significantly in terms of design and configuration, especially when it comes to the pipes and structures that divert water for purposes of cooling. Generally, water diverted for cooling is primarily sourced from three locations within the hydroelectric facility: (1) the penstock – a closed conduit or pipe that conveys water from the reservoir to the turbine, (2) the turbine scroll case – a spiral-shaped steel structure that distributes water flow through the wicket gates located just prior to the turbine, or (3) a water inlet port located on the face of the dam. There likely are exceptions to these locations because each facility has a unique, location-specific design to take maximum advantage of the hydraulics of that location. An individual facility may use one design exclusively or may use a combination of designs. After use for cooling, diverted water is transferred downstream primarily via these methods: (1) directed back to the penstock and re-used to generate electricity, (2) directed back to the scroll case (low head dams mainly) and re-used to generate electricity, (3) directed to the tailrace via the draft tube, or (4) direct transfer to the tailrace. The features of a typical hydroelectric facility are depicted in Figure 1, and an example of a facility diverting cooling water from the penstock is depicted in Figure 2.

Figure 1[11]

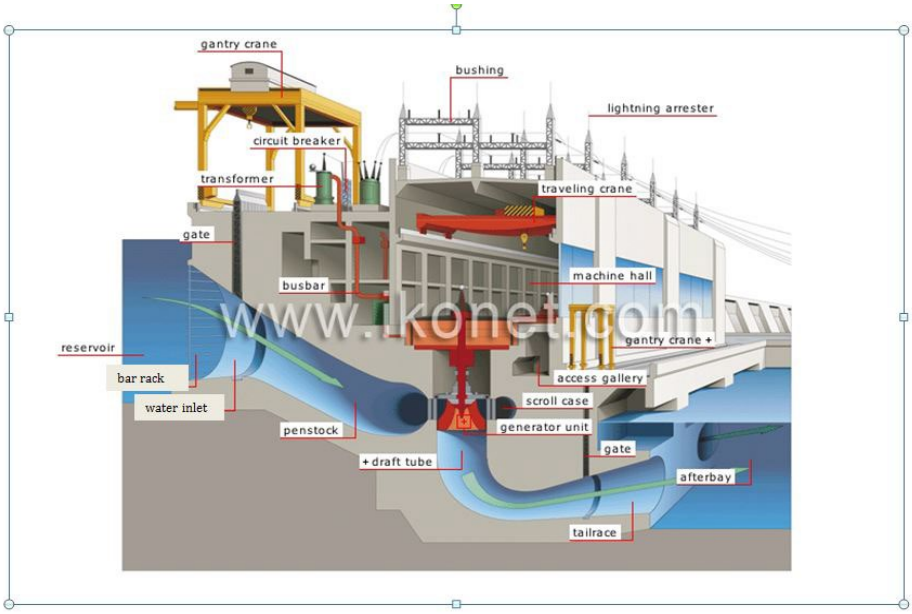
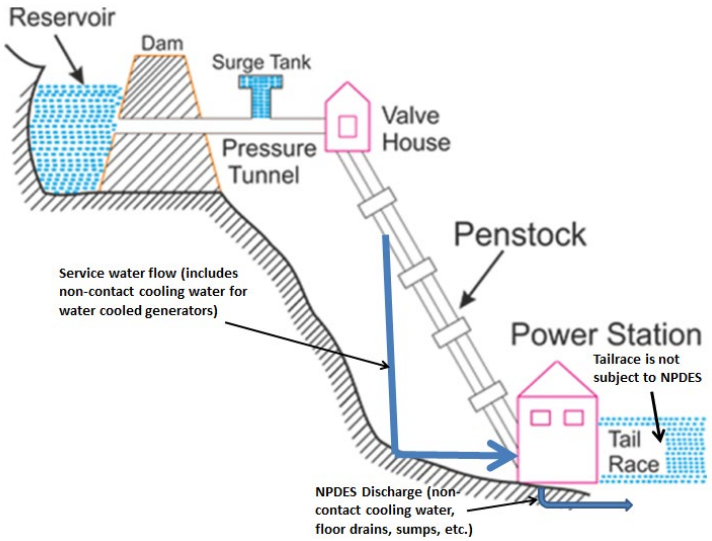


Figure 2



Accordingly, hydroelectric generating facilities do not have CWISs in the conventional industrial context upon which the current § 316(b) regulations were developed. Hydroelectric facilities bring a wide variety of technical challenges associated with characterizing impingement and entrainment and applying technologies that EPA considered in its 2014 rulemaking as available for on-shore facilities. This is evident in the 2014 Rule's definition of a CWIS. EPA's regulations define CWIS as "the total physical structure and any associated construction waterways used to withdraw cooling water from waters of the United States. The [CWIS] extends from the point at which water is first withdrawn from waters of the United States up to and including the intake pumps." 40 C.F.R. § 125.92(f). The 2014 Rule envisions the use of pumps to actively *withdraw* cooling water from surface waters that are waters of the U.S., but this broad definition is inappropriate for hydroelectric facilities, which are diversion structures by design – impounding water and transporting/passing water along a contiguous waterway to turn turbines used to generate electricity.[12] Relative to the total water transported through the facility, a very small amount of water is diverted for cooling. In general, cooling water accounts for less than 1 percent of the total water transported through the facility, and in some cases less than 0.1 percent. For example, at the Keowee Hydro Station, the cooling water is generally less than 0.01 percent of the total discharge flow.[13] As explained in further detail herein, given the wide range of configurations for hydroelectric facilities and different processes for diverting water for cooling, the best available technologies and sampling requirements imposed by EPA for steam electric power plants and manufacturing plants are not necessarily appropriate or practical for hydroelectric facilities. The Region 1 Proposed Permit fails to consider or account for these challenges.

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[8] *Supra* note 1.

[9] *See* Proposed Permit § 3.3(a). The 2014 Rule's stringent requirements apply only to facilities that are point sources requiring a NPDES permit, withdraw from a water of the United States, use CWIS with a design intake flow of greater than 2 million gallons per day ("MGD"), and use 25 percent or more of the water withdrawn exclusively for cooling purposes. 40 C.F.R. § 125.91(a).

[10] *See* U.S. Department of Energy, 2014 Hydropower Market Report, Figure 5, at 13 (Apr. 2015).

[11] The Visual Dictionary, Cross Section of a Hydroelectric Plant, www.ikonet.com.
[12] Hydroelectric facilities do not have conventional CWIS, and their configurations vary. These comments refer to the mechanisms that divert cooling water as intakes, pipes, or diversion structures.
[13] South Carolina NPDES Permit No. SC0000515, Fact Sheet and Permit Rationale at 18 (Mar. 16, 2011).

Response to Comment D.1.2:

Hydroelectric facilities may withdraw and discharge river water used as cooling water for a variety of operations and equipment, including, for example, turbine bearings, guide bearings, air compressors, generators, HVAC chillers, and power transformers. *See* Fact Sheet p. 5. The water is withdrawn from the river at a cooling water intake structure, which EPA has consistently defined as the total physical structure used to direct or withdraw cooling water. *See* 40 CFR §§ 125.83, 125.92(f); "{Draft} Guidance for Evaluating the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment: Section 316(b) P.L. 92-500," EPA (May 1, 1977), at 17. As EPA explains in Response to Comments D.1.1, D.1.3, and D.1.4, although EPA agrees that hydroelectric facilities are not subject to the requirements of the 2014 Final Rule, facilities that withdraw cooling water are required to meet § 316(b) on a case-by-case BPJ basis. *See also* 40 CFR § 125.90(b). Only those hydroelectric facilities subject to the HydroGP (*i.e.*, hydroelectric facilities that require a NPDES permit to discharge pollutants associated with the operation to waters of the United States in Massachusetts and New Hampshire) and which withdraw cooling water used for cooling equipment at the facility are subject to the BPJ-based CWIS requirements in Part 4. Further, these responses explain that, rather than being inconsistent or duplicative of conditions mandated by other federal and state agencies, the proposed requirements to comply with § 316(b) leverage technologies and operational measures that hydroelectric facilities already take to protect fish established through FERC's licensing process and/or the state CWA § 401 water quality certification process. The comments that the permit's § 316(b) requirements would conflict with a condition mandated by FERC or another state or federal agency are vague and fail to identify any specific requirements of the General Permit or conditions mandated by another state or federal agency. *See* Response to Comment D.1.5.3.

According to the commenter, hydroelectric facilities' CWISs are different from the more conventional facilities that EPA considered in developing its 2014 Rule, presumably because the intake structures at dams do not withdraw cooling water via pumps.[7] The commenter does not explain, however, why pump- or gravity-induced withdrawal creates a meaningful distinction. In the 2014 Final Rule, EPA established that the use of modified traveling screens is the BTA standard for impingement mortality, but offered additional methods of compliance with the BTA for impingement mortality using other technologies and operational conditions. While traveling screens are not likely to be suitable for the penstock/intake structure complex typical of dams, EPA did not base any of the BTA options in the Draft Permit on this technology. However, EPA considered a number of alternative techniques that are as effective as (or in some cases, more effective than) modified traveling screens, including a design or actual intake velocity less than or equal to 0.5 fps. Either of these options could be a suitable method for a hydroelectric facility to minimize impingement on a case-by-case, BPJ basis. Thus, EPA did not rely on the 2014 Final Rule's BTA standard for the BTA determination in the Draft Permit, as it never applied the requirements of the Final Rule in this Permit. And while the Draft Permit does rely on scientific research also used in the Rule showing that most fish can escape impingement at flows of 0.5 fps or less, there is no explanation

[7] Although UWAG concedes that this difference does not hold for every hydroelectric facility that uses cooling water. *See* Comment D.1.6.

given in the comment why such research should be applicable only to EGUs and manufacturing facilities but inapplicable to hydroelectric facilities. Indeed, low intake velocity focusses on the ability of the ***fish*** to swim against a current, not on the type of facility or the particular technology employed by the facility. As to entrainment, the standard in the rule for minimizing entrainment is a framework for analysis that was not applied in the Draft Permit. Thus, the Draft Permit was appropriately informed by scientific research underpinning BTA standards in the Final Rule on a BPJ basis, but the Draft Permit did not rely on the BTA standards in the Final Rule.

EPA also explains in Responses to Comments D.1.1, D.1.3, and D.1.4 why not applying § 316(b) to hydroelectric facilities would be inconsistent with the CWA and longstanding EPA regulations and policy. The requirements of Part 4 of the HydroGP are not only within EPA's authority under the CWA but EPA is *required* to establish such requirements for any facility that requires an NPDES permit and operates a cooling water intake structure. *See* Response to Comment D.1.4 (explaining that EPA's view that § 316(b) applies to any facility that requires a NPDES permit and uses a CWIS is not new); *see also* 40 CFR § 122.44(b)(3). Region 1 recognizes that EPA did not previously establish § 316(b) requirements in national rulemakings or in the 2009 HydroGP. First, EPA has consistently said that facilities not covered by specific categorical regulations are still subject to BPJ-based requirements. 40 CFR §§ 125.80(c), 125.90(b); *see also Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 213 (2009) (noting that, for nearly 30 years prior to the promulgation of the Phase II rules, EPA made BTA determinations on a BPJ basis). In addition, it is possible that EPA did not realize that some hydroelectric facilities withdraw water specifically for cooling (i.e., separate from the water used to turn the turbines and generate electricity). AR-2 at 4-22. Regardless, it is clear now that some hydroelectric facilities do indeed withdraw cooling water. Moreover, there are no statements in the Fact Sheet for the 2009 HydroGP that EPA had affirmatively concluded that § 316(b) did not apply to hydroelectric facilities that withdraw cooling water. Even if EPA overlooked cooling water use and § 316(b)'s applicability to these facilities in the past, it would not provide a basis for overlooking it now.[8] Section 316(b) applies to hydroelectric facilities with CWISs based on the statute and implementing regulations. EPA expects that most hydroelectric facilities' existing controls and operational conditions satisfy CWA § 316(b). EPA has revised the Final HydroGP in response to comments received on the Draft to include several additional compliance alternatives for minimizing impingement mortality and expanded flexibility for applicants to show how operational provisions and/or other existing technologies employed at the dam protect fish from impingement on CWIS screens. *See* Response to Comment D.1.7, D.1.8. EPA has considered the cost and technical feasibility information reasonably available at the time of permit issuance.[9] Moreover,

[8] EPA Region 10 has also established § 316(b) requirements in NPDES Permits for hydroelectric facilities. *See, e.g.*, https://www.epa.gov/npdes-permits/discharge-permits-federal-hydroelectric-projects-lower-snake-river (last accessed Oct. 11, 2022); https://www.epa.gov/npdes-permits/draft-discharge-permits-federal-hydroelectric-projects-lower-columbia-river (last accessed Oct. 11, 2022).

[9] Where such information is available, EPA generally considers it, but detailed cost and feasibility information was not available to EPA in the development of the HydroGP. EPA did, however, consider information indicating that many of the hydroelectric facilities seeking authorization to discharge under the HYDROGP are subject to operating requirements by the Federal Energy Regulatory Commission (and/or have been certified by the Low Impact Hydropower Institute) that may include requirements for operational flows and fish passage that may also serve to minimize the potential for impingement and entrainment of aquatic life in the CWIS. FS at 25-26. The availability of detailed cost and feasibility information does not prohibit EPA from acting, and EPA has considered additional cost and feasibility information in responding to comments. Moreover, the CWIS-related provisions of the HydroGP will allow EPA to collect site-specific information from facilities for use in future permit cycles. In addition, section 316(b) permits, but does not require, the consideration of relative costs and benefits. *Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 219 (2009).

the Hydro GP does not require any one technology to meet BTA. Instead the HydroGP offers several options and a facility that cannot meet the intake velocity requirement has other compliance alternatives, including any existing physical or behavioral barrier to direct fish towards downstream passage. Consistent with rulemakings applicable to other types of facilities, EPA also considers water reuse to be a potential method for facilities to demonstrate that they minimize entrainment and impingement. *See, e.g.*, 40 CFR § 125.86(b)(1)(ii); 66 Fed. Reg. 65,256 at 65,278 (noting that EPA "considers the withdrawal of water for use and reuse as both process and cooling water analogous to the reduction of cooling water intake flows achieved through the use of a recirculating cooling water system"), 65,308, 65,310 (Dec. 18, 2001); 79 Fed. Reg. 48,300 at 48,331, 48,332-33 (Aug. 15, 2014). For instance, under option iv in the HydroGP, a facility may show that it makes multiple use of its cooling water and thereby reduces its potential total volume of water use.

As explained in the Fact Sheet (at 25) and in Response to Comments D.1.7 and D.1.8, EPA reasonably expects that most hydroelectric facilities' existing controls and operational conditions will likely satisfy the § 316(b) requirements in the HydroGP, that these requirements are feasible (in that they are already implemented), and that few facilities (if any) will be required to install new technology. In addition, the HydroGP is not the only vehicle by which a facility may comply with CWA § 316(b). If any particular facility concludes that none of the options are technically feasible or that the costs of the several options in the HydroGP are wholly disproportionate to the benefits, then that facility could apply for an individual permit and provide EPA with site-specific cost or feasibility information to be considered on that basis. The general permit is one way that EPA is exercising its BPJ, but it is not the only way—a facility may choose to apply for an individual permit, in which case, EPA could exercise its BPJ in an individualized assessment.

D.1.3 EPA's Interpretation and Implementation of § 316(b) to Date

D.1.3.1 EPA's Prior Regulations Implementing § 316(b) Have Not Addressed Hydroelectric Facilities.

Section 316(b) provides:

Any standard established pursuant to section 1311 of this title or section 1316 of this title and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b).

EPA has implemented this provision by issuing regulations that establish BTA standards for intake structures that become binding for a particular facility only after the standards are incorporated into a NPDES permit for discharges from a regulated facility. At no point during EPA's long history of implementing § 316(b) have EPA's regulatory actions addressed or evaluated the applicability of CWA § 316(b) to hydroelectric facilities.[8]

In 1976, EPA issued its first § 316(b) rule, 41 Fed. Reg. 17,387 (Apr. 26, 1976), but the Fourth Circuit remanded it to EPA on procedural grounds. *Appalachian Power Co. v. Train*, 566 F.2d 451 (4th Cir. 1977). EPA's remaining rule and guidance instructed NPDES permit writers to make case-by-case determinations regarding BTA for CWIS at point sources subject to EPA standards established pursuant to §§ 301 or 306. *See* 40 C.F.R. § 401.14 ("The location, design, construction and capacity of cooling water intake structures of any point source for which a standard is established pursuant to section 301 or 306 of the Act shall reflect the best technology available for minimizing adverse environmental impact, in accordance with the provisions of part 402 of this chapter."); 33 U.S.C. § 1342(a)(1)(B).[9] By its terms, § 401.14 applies only to those point sources for which technology-based standards are established under §§ 301 and 306. By contrast, even where hydroelectric facilities require NPDES permits for discharges, the limits imposed are largely water quality-based.[10] Although § 401.14 has been in effect since 1976, generally, neither federal nor state NPDES permitting authorities read § 401.14 as applicable to hydroelectric facilities that are issued NPDES permits for minor equipment-related discharges.[11]

Since 1976, EPA has issued a series of regulations implementing § 316(b) for new facilities, as well as existing steam electric plants and manufacturing facilities. The Phase I rule established national technology-based performance requirements for new facilities that withdraw greater than 2 MGD of surface water and use at least 25 percent of the water they withdraw for cooling purposes. 66 Fed. Reg. at 65,255 (Dec. 18, 2001). The Phase II rule set requirements for existing steam electric plants with flows greater than 50 MGD, 69 Fed. Reg. 41,576 (July 9, 2004), but certain aspects of the rule were invalidated by the U.S. Court of Appeals for the Second Circuit and later withdrawn.[12] The rules for lower flow steam electric plants and all manufacturing facilities (known as the Phase III rules) were also withdrawn. 71 Fed. Reg. 35,006 (June 16, 2006). In place of the Phase II and III rules, in 2014, EPA issued a single rule for existing facilities – the 2014 Existing Facilities Rule.[13]

During the development of the Phase I, II, and III rules, EPA never suggested that any of those rules would apply to hydroelectric facilities, whether or not the facilities use cooling water or need a NPDES permit. None of EPA's Information Collection Requests ("ICRs") were directed at hydroelectric facilities, nor did EPA use any other method to collect or consider information on cooling water diversion or use by hydroelectric facilities. Variations in the locations, design, and configurations of cooling water "intakes" unique to hydroelectric facilities were never contemplated in EPA's previous facility surveys or technology evaluations for promulgating § 316(b) regulations for new or existing power generating facilities. EPA did not consider whether hydroelectric facilities could feasibly monitor or otherwise assess entrainment or impingement mortality associated with cooling water diversion or whether those facilities could distinguish such mortality from mortality occurring by virtue of the passage of water through the turbines. Nor did EPA consider the availability, performance, or cost of technologies for reducing entrainment or impingement mortality that might be caused by hydroelectric facilities' cooling water "intakes," which often consist of one or more relatively small pipes diverting water from within or coming off of the penstock or draft tube of a hydroelectric facility or in some other location depending upon the broader facility design and operation.

The development of EPA's 2014 § 316(b) Rule was no different; EPA's ICR solicited no information from any hydroelectric facility.[14] As discussed below, EPA stated in the preamble to

the proposed rule that water withdrawals for generation of electricity by hydroelectric facilities were not subject to the rule. *See* 76 Fed. Reg. 22,174, 22,190 (Apr. 20, 2011). As a result of this express and unambiguous statement, EPA received no comments regarding the potential applicability of CWA § 316(b) to hydroelectric facilities or addressing the potential impacts of applying the proposed technology requirements to hydroelectric facilities. Indeed, in the final 2014 Existing Facilities Rule, EPA estimated that a total of 1,065 facilities (544 electric generators and 521 manufacturers) would be subject to the Rule. 79 Fed. Reg. at 48,305. None of those facilities were hydroelectric power generators.[15] Thus, EPA never collected the necessary information to evaluate impacts of the Rule on hydroelectric facilities, even though some hydropower generators divert more than 2 MGD and use 25 percent or more of the diverted water for cooling purposes.

The 2014 Rule establishes requirements for existing facilities that: (1) have NPDES permits, (2) use one or more CWISs with a cumulative design intake flow ("DIF") of greater than 2 MGD to withdraw water from waters of the U.S., and (3) use 25 percent or more of the water withdrawn (on an actual intake flow basis) exclusively for cooling water purposes. 40 C.F.R. § 125.91(a). Facilities with CWISs that are subject to CWA § 316(b) that do not meet these criteria must meet § 316(b) requirements established by the permit writer on a case-by-case, BPJ basis. 40 C.F.R. § 125.90(b). EPA's final 2014 Existing Facilities Rule made no mention of hydroelectric facilities in the preamble or regulatory text.

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[8] Courts agree that NPDES permitting applies only to minor operations-related discharges of pollutants from hydroelectric facilities and not the overall use of water by hydroelectric projects to generate electricity. *See National Wildlife Federation v. Gorsuch*, 693 F.2d 156 (D.C. Cir. 1982); *National Wildlife Federation v. Consumers Power Co.*, 862 F.2d 580 (6th Cir. 1988).

[9] *See also* EPA, *Draft Guidance for Evaluating the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment: Section 316(b) Public Law 92–500*, at 4 (1977) ("The environment-intake interactions in question are highly site-specific and the decision as to best technology available for intake design, location, construction, and capacity must be made on a case-by-case basis.").

[10] *See*, *e.g.*, Arkansas NPDES Permit No. AR0048755, Statement of Basis at 6-7 (Apr. 13, 2017); Arkansas NPDES Permit No. AR0048763, Statement of Basis at 7 (Sept. 4, 2013); West Virginia NPDES Permit No. WV0078859, App. A § I.12 (Aug. 9, 2016); South Carolina Department of Health and Environmental Control, NPDES General Permit for Hydroelectric Generating Facilities, Permit No. SCG360000 (May 15, 2015).

[11] *See*, *e.g.*, NPDES General Permit for Hydroelectric Facilities in the States of Massachusetts and New Hampshire, Permit Nos. MAG360000, NHG360000 (Nov. 10, 2009); ADEM General Permit Rationale, Hydroelectric Facilities ALG360000 (Aug. 18, 2015); South Carolina Department of Health and Environmental Control, NPDES General Permit for Hydroelectric Generating Facilities, Permit No. SCG360000 (May 15, 2015); North Carolina Department of Environment and Natural Resources, NPDES General Permit No. NCG50000 (Oct. 1, 2015). We are aware of one exception, discussed in note 38, infra.

[12] *Riverkeeper, Inc. v. EPA*, 475 F.3d 83 (2d Cir. 2007); 72 Fed. Reg. 37,107 (July 9, 2007).

[13] Final Regulations To Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48,300 (Aug. 15, 2014).

[14] *See* Information Collection Request (ICR) for CWIS at Existing Facilities (Final Rule), OMB Control No. 2040-0257, EPA ICR No. 2060.07 (Aug. 2014).

[15] 2014 TDD at 4-24 ("From the universe of facilities with a steam electric prime mover and based on data collected from EPA's industry technical questionnaires and the compliance requirements for the final rule, EPA has identified 544 facilities to which the proposed rule is expected to apply.").

Response to Comment D.1.3.1

Facilities regulated by EPA's past CWA § 316(b) rulemakings are defined by industry, intake capacity, the percentage of intake water used for cooling, and whether it is a new or existing facility. These regulatory actions were not intended to capture every intake structure. For facilities not subject to the rules, but which operate a cooling water intake and have or require a NPDES permit issued under Section 402, EPA explained throughout its rulemakings that case-by-case 316(b) requirements would be made based on best professional judgement. *See* 40 CFR §§ 125.80(c), 125.90(b), 125.130(c). EPA's determination of the BTA for hydroelectric facilities that withdraw cooling water in the HydroGP was based on best professional judgement. *See* Fact Sheet at 24.

First, the commenter recognizes that the CWA is applicable to certain aspects of hydroelectric operations but asserts that CWA § 316(b) is not. In support of this view, the commenter offers that "[c]ourts agree that NPDES permitting applies only to minor operations-related discharges of pollutants from hydroelectric facilities and not the overall use of water by hydroelectric projects to generate electricity." Footnote 8. Region 1 agrees that the discharge of water used to generate electricity is not regulated by the CWA (provided pollutants are not added to such water). But EPA did not propose in the HydroGP to regulate the discharge of water used to generate electricity. The HydroGP authorizes discharges of equipment-related cooling water, equipment and floor drain water, maintenance-related water from sump dewatering, discharges from flood/high water events, and equipment-related backwash strainer waters, all of which are consistent with the commenter's description of "minor operations-related discharges." *See* HydroGP Part 3.1. In addition, the HydroGP specifies that only hydroelectric facilities that operate an intake structure withdrawing water from a river for cooling purposes are subject to the CWA § 316(b) requirements of the permit. *See* Fact Sheet at 24. Because all hydroelectric facilities use water to generate electricity but only those facilities that withdraw water for cooling are subject to the § 316(b) requirements, the HydroGP plainly does not attempt to regulate the discharge of water used for generating electricity. Finally, the HydroGP explains that in calculating the percentage of the water used for cooling, the volume is the total withdrawn for use in the facility and not the volume of water that passes over the turbines because the volume of water through the turbines is not subject to regulation by EPA. *See* Fact Sheet at 24. The water used to generate electricity at hydroelectric facilities is not subject to or considered in the provisions of the HydroGP. At the same time, while the comment concedes the point that hydroelectric facilities *are* subject to the CWA, it fails to explain how this fact supports the commenter's claim that hydroelectric facilities are not subject to section 316(b) of the CWA. To the contrary, EPA views this fact as supporting the applicability of section 316(b) to hydroelectric facilities. As EPA explains in Responses to Comments D.1.1 and D.1.2, the language of 316(b) is quite broad and courts have rejected previous arguments to limit its application to only certain categories of NPDES dischargers.

Next, the commenter asserts that CWA § 316(b) applies only to the cooling water intake structure of any point source for which technology-based standards are established under §§ 301 and 306, which, according to the commenter, does not include hydroelectric facilities. For support, the commenter relies on 40 CFR § 401.14 and CWA § 402(a)(1)(B), asserting that the former, "[b]y its terms . . .applies only to those point sources for which technology-based

standards are established under §§ 301 and 306." [10] The commenter is incorrect. Section 401.14 of the regulations does not specify that it applies only to point sources for which "technology-based" standards are established.[11] Standards established pursuant to section 301 of the Act include not only technology-based effluent limitations under section 301(b) but also any more stringent limitations necessary for compliance with State water quality standards under section 301(b)(1)(C). Indeed, permits issued to hydroelectric facilities contain water quality-based effluent limitations not because technology-based effluent limitations do not apply, as the commenter suggests, but because water quality-based limits were necessary to meet State water quality standards. [12] In addition, (1) there is nothing in the language of 40 CFR § 401.14 or CWA § 316(b) indicating that the term "standards" under section 301 is limited to nationally applicable effluent limitation guidelines (ELGs). All dischargers, not just those categories for which EPA has promulgated ELGs, are subject to the technology-based effluent limitations required by section 301.[13] Indeed, as the commenter's citation to CWA section 402(a) inherently recognizes, in the absence of ELGs, EPA must establish BPJ, case-by-case effluent limitations under section 301. EPA's NPDES permitting regulation are explicit on this score:

> In addition to the conditions established under § 122.43(a), each NPDES permit shall include conditions meeting the following requirements when applicable.
>
> (a)(1) Technology-based effluent limitations and standards based on: effluent limitations and standards promulgated under section 301 of the CWA, or new source performance standards promulgated under section 306 of CWA, on case-by-case effluent limitations determined under section 402(a)(1) of CWA, or a combination of the three, in accordance with § 125.3 of this chapter.

40 CFR § 122.44.[14]

Finally, the commenter asserts that, at no time during development of the national § 316(b) rulemakings, did EPA suggest that any of the rules would apply to hydroelectric facilities. The commenter correctly points out that the Information Collection Requests for the rulemakings did not target hydroelectric facilities. The 2006 "Phase III Rule" applies only to certain, new offshore oil and gas facilities and is not applicable to hydroelectric facilities. *See* 40 CFR

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[10] It is not clear why the commenter asserts that such standards must be established under § 301 *and* § 306 before § 316(b) may apply to a point source. The regulatory language cited by the commenter provides that "The location, design, construction and capacity of cooling water intake structures of any point source for which a standard is established pursuant to section 301 *or* 306 of the Act shall reflect the best technology available for minimizing adverse environmental impact, in accordance with the provisions of part 402 of this chapter." 40 CFR § 401.14 (emphasis added). The statute likewise uses "or." 33 USC § 1326(b).

[11] *See supra*, n.7. Similarly, CWA § 316(b) does not specify that it applies only to point sources for which technology-based standards are established.

[12] Nor does the citation to the 1977 Draft Guidance support the commenter's position.

[13] Note that 40 CFR § 401.14 applies to "*any* point source for which a standard is established pursuant to section 301 or 306." It does not specify that it only applies to *categories* of point sources for which EPA has established ELGs. Similarly, CWA § 316(b) does not specify that it is only to be applied where there is a standard applicable to a *category* of point sources.

[14] Section 122.43 provides that: "(a) In addition to conditions required in all permits (§§ 122.41 and 122.42), the Director shall establish conditions, as required on a case-by-case basis, to provide for and ensure compliance with all applicable requirements of CWA and regulations."

§ 125.131. The 2004 "Phase II Rule" was withdrawn in 2007. *See* 72 Fed. Reg. 37,107. EPA agrees that hydroelectric facilities are not subject to the "Phase I Rule" for new facilities or the 2014 Final Rule for existing facilities. EPA addresses detailed comments on the applicability of these regulations and the consideration of the technologies in the rules for hydroelectric facilities in Response to Comment D.1.5. But, as the commenter acknowledges, CWISs not subject to 40 CFR part 125, subparts I, J, or N "must meet § 316(b) requirements established by the permit writer on a case-by-case, BPJ basis." Comment D.1.3.1 (citing 40 CFR § 125.90(b)). Both the Draft and Final HydroGP establish requirements to satisfy § 316(b) on a case-by-case, BPJ basis in accordance with the regulations at 40 CFR § 125.80(c) and 125.90(b). The Final HydroGP has been revised to eliminate eligibility requirements at Part 3.3.a, which were based on the design flow and percent capacity of cooling water (i.e., facilities that could be subject to the Phase I and 2014 Final Rules based on the capacity of the intake). In this way, the Final HydroGP reflects EPA's conclusion that hydroelectric facilities are not subject to the national § 316(b) rulemakings.

D.1.3.2 The Proposed NPDES General Permit Inappropriately Seeks to Apply § 316(b) Requirements to Hydroelectric Facilities.

The Fact Sheet for the Region 1 Proposed Permit asserts EPA's position that CWA § 316(b) and the 2014 § 316(b) Rule apply to hydroelectric facilities. The Fact Sheet states that the proposed general permit would impose § 316(b) requirements "based on a case-by-case, best professional judgment" for facilities which use any portion of the water withdrawn for cooling. Proposed Permit Fact Sheet at 25.

Like the Region 10 proposal, the Region 1 Fact Sheet asserts EPA's position that hydroelectric facilities are subject to § 316(b) requirements. The Fact Sheet expressly states, "CWA § 316(b) applies to hydroelectric facilities that operate an intake structure withdrawing water from a river for cooling purposes, including for cooling bearings or other equipment." Fact Sheet at 24. The Region 1 general permit would not cover facilities that withdraw more than 2 MGD and which use at least 25 percent of the water withdrawn for cooling purposes. "For the purposes of this general permit, the percentage of water used for cooling is calculated as a percentage of the total volume withdrawn for use in the facility, not as a percentage of the volume of water that passes through the penstock or turbines." *Id*.

The Region 1 proposal's BTA determination differs from the Region 10 proposal's. Under the Region 1 Proposed Permit's BTA requirement, the applicant must implement at least one of the following three measures within 90 days of receiving authorization to discharge under the permit:

- A physical or behavioral barrier must be located at the first intake encountered by fish on the upstream side of dam that directs fish toward a downstream passage that safely conveys fish over the dam (without being exposed to the CWIS);
- If cooling water is withdrawn directly from the penstock, the velocity at the cooling water intake should not exceed 0.5 feet per second ("fps"); or
- If cooling water is withdrawn directly from the source waterbody, the intake must be equipped with a physical screen "of sufficient mesh size to minimize the potential for

adult and juvenile fish to become entrained," and the through-screen velocity must not exceed 0.5 fps.

See Proposed Permit § 4.2(a)-(c). Also, as part of the Notice of Intent ("NOI"), the permittee must submit a number of site-specific reports describing intake volume and water withdrawal information:

- The maximum daily intake volume during the previous five years, in gallons per day ("GPD");
- The date on which maximum daily intake occurred;
- The maximum monthly average intake volume during the previous five years;
- The month and year in which the maximum monthly average intake flow occurred;
- The maximum daily and average monthly volume of water withdrawn and used exclusively for cooling;
- The volume in GPD, if any, of withdrawn water that is used for cooling that is then reused at the facility prior to discharge, and if so how it was reused;
- The calculated intake velocity at the cooling water intake structure in fps;
- The volume of water withdrawn for use in the facility as a percentage of: (i) installed capacity of the turbines; (ii) average daily flow through the penstock; and (iii) minimum flow through the penstock;
- The source water's annual mean flow and 7-day mean stream low flow with 10-year recurrence interval ("7Q10") flow if the intake is located on a freshwater river or stream, in cubic feet per second ("cfs") as available from USGS or other source (*e.g.*, MassDEP or NHDES) with indication of whether river flow is managed and the parameters associated with such an arrangement; and
- A characterization of the habitat upstream of the dam, including descriptions of resident and migratory fish species, life history attributes, and stocking information. As an example, the applicant may include any biological characterization of the habitat upstream of the dam completed during FERC licensing or otherwise with the assistance of state or federal agencies.

See Proposed Permit § 4.3. Based on this site-specific information, EPA may impose additional requirements using best professional judgment. *See* Fact Sheet § 4.3.

The Region provides no analysis or support for applying § 316(b) requirements to hydroelectric facilities. The Fact Sheet demonstrates that the Region relied on and drew heavily from EPA's 2014 Rule in establishing CWIS-related requirements in the Proposed Permit. *See* Fact Sheet at 23-25. But nowhere in the Proposed Permit or Fact Sheet does the Region provide any support or independent analysis for the measures it proposes to require for hydroelectric facilities.

Response to Comment D.1.3.2

As the comment indicates, the Draft HydroGP established requirements to satisfy CWA § 316(b) on a case-by-case, best professional judgment basis. *See* Fact Sheet at 25. As EPA explains in Response to Comment D.1.5, EPA agrees that hydroelectric facilities are not subject to the 2014 Final Rule. As a result, EPA revised the Final HydroGP to eliminate the proposed eligibility

requirements that would have excluded facilities with a design intake flow greater than 2 MGD and which use at least 25% of water withdrawn exclusively for cooling. See Draft HydroGP Part 3.3.a. All hydroelectric facilities may be covered by the HydroGP regardless of the capacity of the cooling water intake (subject to the remaining eligibility requirements at Part 3.3).

The commenter reproduces the cooling water intake structure requirements in Part 4.2 and 4.3 of the Draft HydroGP. EPA addresses specific comments about the § 316(b) requirements in Response to Comments D.1.7 and 1.8. Contrary to the comment, the Fact Sheet explains EPA's justification for these requirements. The Draft HydroGP established three options to satisfy § 316(b): a physical or behavioral barrier at the dam, an intake velocity of 0.5 fps, and a physical screen and intake velocity of 0.5 fps for intakes located within the source waterbody (as opposed to within the penstock). The first option was established with the understanding that many hydroelectric facilities operate fish passage devices as a result of environmental review by FERC and other state and federal agencies. *See* Fact Sheet at 25-26. These devices are designed to minimize passage of aquatic life through the turbines. Facilities where the intake is located downstream of a device that minimizes the potential for fish to be drawn through the turbines would also minimize the exposure of fish to the intake and, thereby, minimize its adverse impact. The commenter itself concedes that devices installed to meet fish passage requirements under the FPA may also minimize impingement and entrainment associated with cooling water withdrawals. *See* Comment D.1.5.3. Many facilities subject to the BPJ-based cooling water requirements may already meet this option without any additional controls (and thus, without additional cost to the facility). *See* Response to Comment D.1.7.1.

The second option allows facilities to satisfy the cooling water intake requirements by demonstrating that the velocity at the intake is no greater than 0.5 fps. The Fact Sheet (at 26) explains, an intake velocity that is low enough to enable most fish to avoid becoming impinged on a screen or entrained is a common technology for minimizing adverse environmental impacts. An intake velocity of 0.5 fps or less is one of the alternatives to meet the BTA standards for impingement mortality in the 2014 Final Rule (40 CFR § 125.94(c)(2) and (3)); EPA considered the scientific basis for this velocity standard when establishing BPJ-based limits in the HydroGP. *See* Response to Comment D.1.7.2. As with the first option, EPA expected that, given the relatively low volume of water withdrawn, some facilities could meet this option without additional controls or altering the existing technology. EPA has reconsidered this option in response to comments received on the Draft HydroGP and addresses comments related to this issue Response to Comment D.1.7.2.

A third option requires facilities that withdraw water directly from the river (rather than from within the penstock) to employ a physical screen to exclude juvenile and adult fish from becoming entrained with a sufficiently low velocity to enable fish from becoming impinged. This requirement was intended to draw on two commonly used technologies (a screen and low intake velocity) to minimize the potential for fish to become impinged. Generally, a static screen or other barrier is among the lowest cost technologies a facility could employ to minimize adverse impacts. *See* Response to Comment D.1.7.3.

For the reasons stated above, EPA disagrees that the Fact Sheet provided no support for the three options to minimize impacts from the cooling water structure. EPA drew on the available record

describing intakes at hydroelectric facilities and the scientific basis for BTA standards in the Phase I and 2014 Final Rules. However, in response to this and other comments, EPA has re-evaluated the cooling water intake structure requirements to provide additional flexibility to satisfy § 316(b) and to provide more certainty regarding the BTA for entrainment based on the relatively small volume of water withdrawn for cooling at hydroelectric facilities. *See* Responses to Comments D.1.7 and D.1.8.

D.1.4 CWA § 316(b) Does Not Apply to Hydroelectric Facilities.

By its terms, § 316(b) applies only where EPA establishes standards under §§ 301 and 306 for point sources. Unlike the other facilities to which EPA has applied § 316(b), EPA has not established such technology-based limitations and standards for hydroelectric facilities, nor would it be reasonable to do so given the *de minimis* nature of their cooling water withdrawals and discharges. As the United States Supreme Court has recognized, absent clear direction from Congress, courts will view (and agencies should view) with skepticism statutory interpretations that extraordinarily expand regulatory jurisdiction. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2444 (2014). Interpreting CWA § 316(b) to apply to hydroelectric generation facilities would be a significant expansion of EPA's regulatory jurisdiction and would duplicate other federal and state requirements specifically designed to address these environmental impacts.

The limited legislative history for § 316(b) indicates that Congress did not intend for § 316(b) to apply to hydroelectric facilities. From November 1971 to October 1972, Congress considered various bills that eventually would become the CWA. On September 28, 1972, the conference committee substantially amended § 316, modifying that provision to insert for the first time a provision addressing cooling water intakes structures, and submitted its report for approval by both the House and Senate.[16] During the House of Representatives consideration of the conference report, Rep. Donald Clausen (R-CA1) made the following statement in support:

> Section 316 was originally included in the House-passed water pollution control bill because of the belief that the arguments which justified a basic technological approach to water quality control did not apply in the same manner to the discharges of heat…. [S]team-electric generating plants are the major source of the discharges of heat…. Section 316(b) requires the location, design, construction, and capacity of cooling water intake structures of steam-electric generating plants to reflect the best technology available for minimizing any adverse environmental impact.[17]

Rep. Clausen's statement indicates that Congress intended § 316(b) to apply to steam electric generating plants, not hydroelectric generating facilities that harness the power of falling or fast-moving water to drive turbines to produce electricity.[18] In contrast, steam electric power plants heat water into steam that drives the electric-generating turbines, typically requiring considerably more cooling water to safely operate the facility. It is these facilities that were Congress' focus when it promulgated CWA § 316(b).

In promulgating CWA § 316(b), Congress would have understood, as discussed in more detail below, that other statutes and regulations governed consideration of environmental impacts from

water diversion structures. For example, Congress would have been well aware that the Federal Power Act ("FPA") licensing process for hydroelectric facilities requires evaluation of environmental impacts and conditions to protect and mitigate impacts to fish and wildlife-related habitat. Congress gave no indication that it intended such facilities to be subject to additional requirements under CWA § 316(b), nor would such requirements have made sense in light of the other mechanisms in place under the FPA. There is no evidence that Congress intended CWA § 316(b) to apply to hydroelectric facilities, and, indeed, the limited legislative history for that provision indicates that Congress intended § 316(b) to address adverse environmental impacts associated with industrial facilities, such as steam electric generating facilities, for which the statute requires EPA to establish nationally applicable effluent limitations guidelines and new source performance standards. There is no basis in the statute for EPA's new interpretation that § 316(b) can apply to hydroelectric facilities.

[16] *See* H.R. Rep. No. 92-1465, at 68, 137 (Sept. 28, 1972).

[17] House Consideration of the Report of the Conference Committee (Oct. 4, 1972), *reprinted in* 1 A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, at 262–64 (1973) (statement of Rep. Clausen) (emphasis added).

[18] We recognize that some U.S. Courts of Appeals have held that § 316(b) applies to other industrial facilities that use cooling water beyond steam electric plants (*e.g.*, iron and steel). *See*, *e.g.*, *Appalachian Power Co. v. Train*, 566 F.2d 451, 457-58 (4th Cir. 1977). But those decisions did not consider whether all facilities that must obtain a NPDES permit are subject to § 316(b).

Response to Comment D.1.4

EPA has already addressed the comments that CWA § 316(b) only applies where EPA has established technology-based standards under §§ 301 and 306. See Response to Comment D.1.3. EPA maintains that § 316(b) requirements apply to any point source subject to standards under sections 301 or 306, including case-by-case effluent limitations under section 301. EPA addresses comments that the CWIS requirements are duplicative of other federal and state requirements specifically designed to address these environmental impacts in Response to Comment D.1.5.3.

Applying § 316(b) to hydroelectric generation facilities is not a significant expansion of EPA's regulatory jurisdiction, nor is it a "new" interpretation of the statute. In 1977, the US Court of Appeals for the 4th Circuit noted "the apparently all-inclusive" language of section 316(b), which it observed would have been "a simple matter" for Congress to limit if it had intended the provision to apply only to certain facilities. *Appalachian Power Co. v. Train*, 566 F.2d 451, 457-58 (4th Cir. 1977); *see also Cronin v. Browner*, 90 F.Supp.2d 364, 367 (S.D.N.Y. 2000) ("[S]ection 316(b) encompasses all industries with facilities employing cooling water intake structures."). EPA's 316(b) regulations have long reflected EPA's statutory interpretation that section 316(b) applies to any NPDES discharger with a cooling water intake structure. As a result, EPA's regulations have included a requirement that permits for NPDES dischargers with cooling water intake structures, not just those subject to ELGs, must include 316(b) requirements when not otherwise subject to requirements under 316(b) rules. *See e.g.*, 40 CFR § 401.14 ("The location, design, construction and capacity of cooling water intake structures of *any* point source for which a standard is established pursuant to section 301 or 306 of the Act shall reflect the best technology available for minimizing adverse environmental impact . . . .") (emphasis added); 65

Fed. Reg. 49,060 (Aug. 10, 2000) ("New Facilities Rule") ("This proposed rule would apply to new facilities that use cooling water intake structures to withdraw water from waters of the U.S. and that have or require a National Pollutant Discharge Elimination System (NPDES) permit issued under section 402 of the CWA."); 66 Fed. Reg. 65,258 (The final rule "applies to a new facility that has or is required to have a National Pollutant Discharge Elimination System (NPDES) permit.") (Dec. 18, 2001). The 2014 Final Rule also clearly reflects the view that the statute applies to any NPDES facility with a cooling water intake structure; 40 CFR § 125.90(b) states that "[c]ooling water intake structures not subject to requirements under §§ 125.94 through 125.99 or subparts I or N of this part must meet requirements under section 316(b) of the CWA established by the Director on a case-by-case, best professional judgment (BPJ) basis." Moreover, applying section 316(b) in the HydroGP does not subject to NPDES permitting any facility that the Act does not already subject to NPDES permitting. Nor does it create a conflict with other portions of the CWA. EPA now recognizes as a factual matter that some hydroelectric generating facilities use cooling water.

There is nothing on the face of the CWA to support the comment that § 316(b) simply does not apply to hydroelectric facilities. Indeed, UWAG's own comment (at footnote 18) recognizes that courts have held that § 316(b) applies to industrial facilities that use cooling water beyond steam electric plants, thereby undermining its own argument that Congress intended § 316(b) only to apply to steam electric facilities. UWAG offers no reasonable explanation as to why § 316(b) should not apply to hydroelectric facilities where it plainly applies to facilities other than steam electric plants and where UWAG concedes that the Act otherwise applies to hydroelectric facilities. As to the comment that applying § 316(b) to hydroelectric facilities would not be reasonable due to the "*de minimis* nature of their cooling water withdrawals and discharges," EPA does not agree that the amount of cooling water withdrawn by every hydroelectric facility is insignificant. Some facilities withdraw more than 2 MGD per day, and EPA regulations provide that even facilities that withdraw less are still subject to § 316(b). [15] *See, e.g.*, 40 CFR § 125.90(b); *see also* 79 Fed. Reg. at 48,355 (observing that "any facility at any flow may have an adverse environmental impact").

EPA promulgated 316(b) rules following a mandatory duty lawsuit, *Cronin v. Browner*, 90 F. Supp. 2d 364, 383 (S.D.N.Y. 2000), that EPA and plaintiffs resolved through a consent decree. The decree did not limit the scope of the rules to certain sectors (e.g., only those subject to ELGs or NSPS, as suggested in the comment) nor did it specifically exclude the hydroelectric sector from regulations. Early in the litigation concerning entry of the consent decree resolving the mandatory duty claim, the court stated:

> Proposed Intervenors also incorrectly imply that section 316(b) could *only* be implemented through section 301 and 306 standards, and not through a free-standing regulation. [citation omitted]. *Although inclusion of section 316(b) requirements in each section 301 and 306 standard is one permissible manner of implementing section 316(b), other permissible methods exist. EPA was also free to choose, as it did, to implement section 316(b) by issuing one overarching regulation that would apply to*

[15] As EPA has noted elsewhere, "[f]or perspective, it would take four typical Olympic size swimming pools to provide two million gallons." AR-21at 64.

> *all categories of point sources subject to section 301 and 306 that utilize cooling water intake structures*.

Cronin v. Browner, 898 F. Supp. 1052 (S.D.N.Y. 1995) (second emphasis added). This is the approach EPA has adopted for its 316(b) regulations.

In 1977, in rejecting the notion that the scope of 316(b) was limited to steam electric plants, the Fourth Circuit discussed the statement of Congressman Clausen referenced by the commenter.

> We next turn to the contention of petitioner United States Steel Corporation that § 316(b) of the [CWA], and hence the regulations implementing that section, apply only to steam-electric generating plants, not to steel mills. We see no merit in this position. *There is nothing on the face of the statute that supports such a restrictive interpretation*, nor is any reason offered why Congress would have intended to exclude the steel industry from the apparently *all-inclusive statutory language*…. We do not attach persuasive significance to the remark of a single Congressman, heavily relied upon by United States Steel, that singles out steam-electric generating plants in discussing § 316(b). The statement does not imply that only steam-electric plants were intended to come within the ambit of § 316(b), and can easily be explained by the fact that such steam-electric plants account for 80% of the water withdrawn for cooling purposes by industrial point sources. While this fact may indicate that Congress had steam-electric plants in mind when § 316(b) was enacted, there is nothing to indicate the statute was to apply exclusively to them. The statutory language is not so limited, although it would have been a simple matter to do so.

Appalachian Power Co. v. Train, 566 F.2d 451, 457-58 (4th Cir. 1977) (emphases added); *see also United States Steel v. Train*, 556 F.2d 822 (4th Cir. 1977). Two other court decisions support EPA's interpretation of section 316(b) as applying more broadly than just to steam electric facilities or only facilities subject to ELGs. In a decision in litigation concerning EPA's mandatory duty to promulgate section 316(b) regulations and the resulting consent decrees, the district court discussed the scope of section 316(b):

> Section 316(b) rulemaking has proven to be extraordinarily complicated. . . . [S]ection 316(b) rulemaking is more difficult than the creation of effluent guidelines for wastewater because wastewater guidelines normally cover one industry and *section 316(b) encompasses all industries with facilities employing cooling water intake structures*.

Cronin v. Browner, 90 F.Supp.2d at 367 (emphasis added). Additionally, in a challenge to the 316(b) new facilities rule, some petitioners argued that: "The plain language of this statutory authorization neither requires nor allows EPA to impose such BTA requirements on new sources *outside of some new source performance standards established under 33 U.S.C. §1316*." (Emphasis added) (Brief of Petitioner Manufacturers Intake Structure Coalition, 5-6). While the court did not directly address this argument, the court did reject petitioners challenge to regulation of new facilities that were below the threshold of the rule and thus may not have been

subject to NSPS. *Riverkeeper, Inc. v. EPA*, 358 F.3d 174, 202 (2nd Cir. 2004). In other words, there is evidence to suggest that Congress did not intend for section 316(b) to be narrowly applied and no evidence that hydroelectric facilities were ever considered to be outside of the scope of regulation on a case-by-case basis.

D.1.5 EPA's 2014 Rule for Existing Facilities Did Not Consider Hydroelectric Facilities.

Even if CWA § 316(b) were applicable to hydroelectric facilities, which it is not, the Region's proposed BPJ requirements are arbitrary and capricious because the Region borrowed from and relied on a rule that EPA expressly stated did not apply to hydroelectric facilities and that the Agency adopted without any consideration of the technical feasibility or cost of application to hydroelectric facilities.

Response to Comment D.1.5

This introductory sentence summarizes points made below in Comments D.1.5.1 through D.1.5.3. EPA responds in detail in the responses below.

D.1.5.1 EPA Has Never Provided Notice or an Opportunity to Comment on the Applicability of § 316(b) Requirements to Hydroelectric Facilities.

Under the APA, 5 U.S.C. § 553(b)(3), an agency must publish in the *Federal Register* a notice of proposed rulemaking, which "shall include … either the terms or substance of the proposed rule or a description of the subjects and issues involved." After the notice is published, the agency must "give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments." 5 U.S.C. § 553(c). The APA's notice-and-comment mandate is "designed (1) to ensure that agency regulations are tested via exposure to diverse public comment, (2) to ensure fairness to affected parties, and (3) to give affected parties an opportunity to develop evidence in the record to support their objections to the rule and thereby enhance the quality of judicial review." *Int'l Union, United Mine Workers of America v. Mine Safety and Health Admin.*, 407 F.3d 1250, 1259 (D.C. Cir. 2005). These procedures "ensure that the broadest base of information would be provided to the agency by those most interested and perhaps best informed on the subject." *Phillips Petroleum Co. v. Johnson*, 22 F.3d 616, 620 (5th Cir. 1994).

To ensure regulated entities have fair notice, "the final rule the agency adopts must be a 'logical outgrowth' of the rule proposed." *Long Island Care at Home, Ltd. v. Coke*, 551 U.S. 158, 174 (2007). Under this principle, the law asks "whether the affected party 'should have anticipated' the agency's final course in light of the initial notice." *Covad Commc'ns. Co. v. FCC,* 450 F.3d 528, 548 (D.C. Cir. 2006) (citation omitted). While a final rule need not be an exact replica of the proposed rule, "if the final rule deviates too sharply from the proposal, affected parties will be deprived of notice and an opportunity to respond to the proposal." *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 547 (D.C. Cir. 1983).

As explained above, prior to the implementation of the 2014 Rule, there had never been any indication from EPA or Congress that CWA § 316(b) could apply to hydroelectric facilities. Moreover, there was no way to anticipate from the proposed Existing Facilities Rule that EPA would apply the technology-based standards to hydroelectric facilities. Hydroelectric facilities had no notice that those facilities could be subject to new NPDES requirements as a result of the 2014 rulemaking, nor were they provided an opportunity to comment on the many ways in which technologies that EPA evaluated for steam electric power and manufacturing plants cannot be considered BTA for hydroelectric facilities. In the preamble to the proposed rule for existing facilities, EPA explicitly stated that withdrawals from hydroelectric facilities were not meant to be addressed by the Existing Facilities Rule:

> Given the diversity of industrial processes across the U.S., there are many other industrial uses of water not intended to be addressed by today's proposed rule …. Warming water at liquefied natural gas terminals, and hydro-electric plant withdrawals for electricity generation are not cooling water uses and are not addressed by today's proposal ….

76 Fed. Reg. at 22,190 (emphasis added).

In light of EPA's history of *not* applying CWA § 316(b) to hydroelectric facilities and because EPA's explicit statements confirmed that hydroelectric facilities would not be covered by the Existing Facilities Rule, private and public entities that own or operate hydroelectric facilities did not provide comments to address the potential impacts of the Existing Facilities Rule's proposed requirements.[38] Applying the Existing Facilities Rule to hydroelectric facilities, therefore, cannot be a logical outgrowth of the proposed rule. Thus, any attempt now by EPA to apply the Rule's requirements to hydroelectric facilities, which has been done only on rare occasions through post hoc determinations for particular facilities[39] and now in the Proposed Permit, is contrary to the APA's requirements for fair notice and opportunity for comment.

[38] There is no reference to hydroelectric facilities in EPA's 467-page response to comments document. Response to Comments Document for the Final 316(b) Existing Facilities Rule (May 19, 2014) (EPA-HQ-OW-2008-0667-3679).

[39] In one of the few instances where EPA has asserted that § 316(b) and the 2014 Rule apply to hydroelectric facilities, it is clear that EPA's determination was made behind the scenes, well after the 2014 Rule was promulgated, and without a notice-and-comment rulemaking that evaluated the potential implications of such a determination. The 2016 NPDES Permit Fact Sheet for the Smith Mountain Hydroelectric Plant in Virginia stated, "Significant discussion was held during this reissuance regarding the applicability of CWA section 316(b). [The applicant's] position is that hydropower stations are not subject to section 316(b). However, after consultation with EPA, a determination was made that the facility is subject to CWA 316(b) and the [Existing Facilities] Rule. The determination was that § 316(b) 'applies' to hydropower facilities if waters of the U.S. are withdrawn and used for cooling purposes." VPDES Permit Program Fact Sheet, Permit No. VA0088765, at ¶ 30 (June 13, 2016). Other states that have considered the issue have determined that § 316(b) does not apply to hydroelectric facilities, *see, e.g.,* ADEM General Permit Rationale, Hydroelectric Facilities ALG360000 (Aug. 18, 2015) (ADEM agrees that the § 316(b) rule is "not applicable" to hydroelectric facilities), or have continued to issue NPDES permits for hydroelectric facilities without § 316(b) requirements, *see, e.g.,* South Carolina Department of Health and Environmental Control, NPDES General Permit for Hydroelectric Generating Facilities, Permit No. SCG360000 (May 15, 2015); North Carolina Department of Environment and Natural Resources, NPDES General Permit No. NCG50000 (Oct. 1, 2015).

Response to Comment D.1.5.1

The comment asserts that "any attempt now by EPA to apply the [2014 Final] Rule's requirements to hydroelectric facilities, which has been done only on rare occasions through post hoc determinations for particular facilities[footnote omitted] and now in the Proposed Permit, is contrary to the APA's requirements for fair notice and opportunity for comment."

First, to be clear, EPA developed the requirements of the Draft HydroGP on a BPJ basis; EPA did not apply the 2014 Final Rule's requirements to hydroelectric facilities. Thus, whether EPA provided adequate notice in the rulemaking for the 2014 Final Rule regarding the applicability of those requirements to hydroelectric facilities is not relevant to the substantive CWIS requirements in the Draft (or Final) HydroGP. That said, in the Draft HydroGP, EPA did propose to exclude from permit coverage any facility whose design intake flow and percentage of water withdrawn exclusively for cooling exceeded minimums established for the applicability of the 2014 Final Rule, based on a conclusion in the Fact Sheet for the Draft HydroGP that the 2014 Final Rule would otherwise apply to such hydroelectric facilities.[16] Fact Sheet at 24; Draft HydroGP Part 3.3.a. That conclusion was not completely unfounded, given ambiguity in the rulemaking proceeding. For instance, the preamble to the 2014 Final Rule states "Exhibit 1 lists industry sectors of facilities subject to this final rule. This table is not meant to be exhaustive; facilities in other industries not listed in Exhibit 1 could also be regulated." 79 Fed. Reg. 48,300. Exhibit 1 lists the electric power industry NICS sector 2211, which includes hydroelectric facilities. The preamble also confirms that facilities should "carefully examine the applicability criteria in § 125.91 of the final rule" to determine whether a facility could be regulated by the action. 79 Fed. Reg. 48,301. The applicability criteria, in turn, do not expressly exclude hydroelectric facilities from being subject to the Final Rule. Thus, hydroelectric facilities were provided with the same opportunity for comment on the Final Rule as any other facility, including electric power facilities, potentially subject to the Rule.

Further, the preamble quote reproduced in the comment does not support the commenter's argument. According to the commenter, "EPA explicitly stated that withdrawals from hydroelectric facilities were not meant to be addressed." As the comment notes, EPA stated in the preamble to the proposed rule:

> …. [T]here are many other industrial uses of water not intended to be addressed by today's proposed rule. Emergency water withdrawals, such as fire control systems and nuclear safety systems, are not considered as part of a facility's design intake flow. Warming water at liquefied natural gas terminals, and hydro-electric plant withdrawals for electricity generation are not cooling water uses and are not addressed by today's proposal.

76 Fed. Reg. 22,174, 22,190 (Apr. 20, 2011). Notably, the statement reads that water withdrawn "for electricity generation" (i.e., to turn electric turbines) at hydroelectric facilities is not a

[16]As explained in this and other responses, the Final HydroGP eliminates this eligibility requirement because EPA has since concluded (agreeing with the commenter) that the 2014 Final Rule does not apply to hydroelectric facilities.

"cooling water use[]" and is, therefore, not addressed by the 2014 Final Rule.[17] The statement (and the Final Rule) is silent as to whether water withdrawn *for cooling purposes* at hydroelectric facilities is a "cooling water use[]" addressed by the Rule. Thus, Region 1 does not find this statement from the preamble determinative on the question of whether EPA intended that hydroelectric facilities be subject to the Rule.

EPA agrees, however, that there are other indications that the 2014 Final Rule is not applicable to hydroelectric facilities. For instance, EPA did not include hydroelectric facilities in its consideration of the economic impacts of the 2014 Final Rule or in the Technical Development Document for the Final Rule. *See* Comment D.1.5.2. EPA did not collect information on cooling water intakes at hydroelectric facilities for the 2014 Final Rule, and the Economic Analysis does not include any evaluation of cooling water use at hydroelectric facilities even though certain dams do use more than 2 MGD of cooling water (e.g., pump storage projects). The Economic Analysis considered "[o]nly prime movers with a steam-electric generating cycle use large enough amounts of cooling water to be subject to the final rule." AR-16 at 2A-4. Similarly, the Technical Development Document states "[o]nly prime movers with a steam-electric generating cycle use large enough amounts of cooling water to fall under the scope of the proposed rule." AR-2 at 4-23. In addition, EPA states in the Technical Development Document that hydroelectric units "do not use cooling water," *id.* at 4-22, suggesting that the agency was not aware that some hydroelectric facilities have CWISs. While neither the regulations nor the preamble to the 2014 Final Rule explicitly state that hydroelectric facilities are excluded, the supporting documents do not appear to have considered that the 2014 Final Rule would apply to this point source category. For these reasons, EPA agrees that hydroelectric facilities are not subject to requirements under §§ 125.94 through 125.99 of the Final Rule. *See also* Responses to Comments D.1.1, D.1.2, D.1.5.2, D.1.5.3, D.1.6; Memo. from A. Sawyers, Director, EPA Office of Wastewater Mgt., to Water Div. Directors, EPA Regions 1-10, at 2 (July 6, 2022) (AR-33, AR-34). Instead, and consistent with EPA's longstanding practice with respect to facilities not otherwise subject to promulgated § 316(b) substantive requirements, cooling water intake structures at hydroelectric facilities must meet § 316(b) requirements established on a case-by-case, best professional judgment basis. 40 CFR § 125.90(b).[18] EPA notes, however, that this

[17] Notably, the Draft HydroGP did not propose to regulate the flow of water through the turbines to generate electricity, only the volume of water specifically withdrawn and used for cooling purposes. *See* Fact Sheet at 24.
[18] EPA has consistently said that facilities not covered by specific categorical regulations are still subject to BPJ-based requirements. *See, e.g.*, 40 CFR §§ 125.80(c), 125.90(b), 125.130; *see also Entergy Corp. v. Riverkeeper, Inc.*, 556 U.S. 208, 213 (2009) (noting that, for nearly 30 years prior to promulgation of the Phase II rules, EPA made BTA determinations on a BPJ basis); 79 Fed. Reg. at 48,369 ("Facilities with a design intake flow at or below 2 mgd will *continue* to have permit conditions set on a case-by-case, best professional judgment basis under 40 CFR 125.90(b) and 401.14.") (emphasis added). A similar regulatory provision was promulgated as part of the 2004 Phase II Rule. *See* 69 Fed. Reg. 41,576, 41,683 (July 9, 2004). The proposal for the current existing facility rule included language requiring BPJ permitting that is similar to that adopted in the final rule. 76 Fed. Reg. 22,174, 22,280 (April 20, 2011). To the extent UWAG comments that the HydroGP should not address § 316(b) (even on a case-by-case basis) because the Alabama Department of Environmental Management (ADEM) has "determined that § 316(b) does not apply to hydroelectric facilities," AR-26 at 22 n.39 (citing ADEM General Permit Rationale, Hydroelectric Facilities ALG360000 (Aug. 18, 2015), the Region notes two things. First, the citation provided in the footnote does not support UWAG's assertion, because it indicates that ADEM concluded that the 2014 Final Rule does not apply to such facilities; it does not say ADEM determined that § 316(b) does not apply. Moreover, even if ADEM or another state's environmental agency has drawn such a conclusion, it would not be binding on EPA, the

conclusion regarding the applicability of §§ 125.94 through 125.99 results in just one change to the Final Permit—the removal of the permit eligibility requirements that were based on the design flow of the cooling water intake structure and/or the percentage of cooling water used exclusively for cooling—since EPA did not apply the substantive provisions of the Rule in the Draft Permit.

D.1.5.2 EPA Did Not Consider Technologies for Hydroelectric Facilities or Evaluate the Potential Impacts of Applying the Rule's BTA Standards to Hydroelectric Facilities.

EPA's final 2014 Rule and preamble provide no discussion of the applicability of § 316(b) or the Rule to hydroelectric facilities. In fact, the administrative record for the 2014 Rule is replete with indications that EPA did not consider impacts to hydroelectric facilities when evaluating potential technologies or the associated costs and benefits. For example, in the Economic Analysis for the final 2014 Rule, EPA stated that "[t]he final rule is only relevant for power generators that use substantial amounts of cooling water, and … [o]nly prime movers with a *steam-electric generating cycle* use large enough amounts of cooling water to be subject to the final rule."[40] The analysis goes on to describe steam electric facilities as those generating units that are fueled by "coal, gas, oil, waste, nuclear, geothermal, and solar steam."[41] EPA does not include hydroelectric facilities in its analysis of the economic impact of the Rule on electric generation units, nor does EPA analyze the economic impact of the rule on hydroelectric facilities, in particular.[42] Likewise, in the Technical Development Document for the 2014 Rule, EPA includes the following exhibit that provides the estimated number of facilities that would be subject to the 2014 Rule by fuel type and prime mover category, but the table does not include hydroelectric facilities:

agency authorized by Congress to administer and interpret the CWA. *See* 33 U.S.C. § 1251(d); *Delaware Riverkeeper Network v. Fed. Energy Regulatory Comm'n*, 857 F.3d 388, 396 (D.C. Cir. 2017); *Friends of Earth, Inc. v. EPA*, 446 F.3d 140, 144 (D.C. Cir. 2006). EPA concludes that the better interpretation of § 316(b) is that "the apparently all-inclusive statutory language," *Appalachian Power*, 566 F.2d at 457-58, applies to all cooling water intake structures at facilities with NPDES permits, as explained above.

Exhibit 4-26. 316(b) electric power facilities by plant type and prime mover

Plant type[a]	Prime mover	Number of 316(b) electric generators[b,c]
Coal steam	Steam turbine	342
Gas	Steam turbine	73
Nuclear	Steam turbine	56
Oil	Steam turbine	29
Other steam	Steam turbine	25
Total steam	Steam turbine	525
Combined cycle	Combined cycle	33
Total		559

[a] Facilities are listed as steam electric if they have at least one steam electric generating unit.
[b] Facility counts are weighted estimates generated using the original 316(b) survey weights.
[c] Individual values do not sum to reported total due to rounding as the result the application of statistical weights.
Sources: U.S. EPA, 2000; U.S. DOE, 2007 (GenY07); U.S. EPA Analysis, 2010

2014 TDD Exhibit 4-26.

Similarly, EPA's benefit analyses did not consider hydroelectric facilities. To evaluate the benefits of the 2014 Rule's requirements, EPA extrapolated data from 98 model facilities based on information EPA received in the 2000 ICR.[43] In its 2000 ICR, however, EPA did not request information from any hydroelectric facilities. EPA ultimately narrowed its research activities to focus on traditional utilities, nonutility power producers, and four other industrial categories that utilize large quantities of cooling water. "Traditional utilities and nonutility power producers that use cooling water were further limited to those plants that generate electricity by means of steam as the thermodynamic medium (steam electric) because they are associated with large cooling water needs."[44] Therefore, hydroelectric facilities, which do not generate electricity through the use of steam, were excluded from EPA's original data request, which was later used to support EPA's analysis of the Existing Facility Rule's benefits.

EPA estimated that the 2014 Rule would cover 1,065 facilities (including 544 electric generators, 509 manufacturers in six primary manufacturing industries, and 12 manufacturers in other industries). 79 Fed. Reg. at 48,405. EPA made no attempt to determine whether any of the nation's 2100 hydroelectric facilities would meet the Rule's thresholds (have NPDES permits, use one or more CWISs with a cumulative DIF of greater than 2 MGD to withdraw water from waters of the U.S., and use 25 percent or more of the water withdrawn exclusively for cooling water purposes). 40 C.F.R. § 125.91(a). Instead, EPA concluded that "[u]nits with water turbines, or 'hydroelectric units,'… do not use a steam loop and do not use cooling water …."[45] As Region 1 now appears to understand, hydroelectric facilities occasionally do use cooling water, although they do so in small amounts, and their use of cooling water certainly was not the focus of the 2014 Rule.

If EPA had actually considered the technical feasibility and cost for application requirements and any technology and associated monitoring requirements for hydroelectric facilities, it would have understood that what is BTA for steam electric power and manufacturing plants is not necessarily BTA for hydroelectric facilities. EPA previously has recognized that a different

BTA may be appropriate for other types of facilities with CWISs. For example, EPA determined that, for existing offshore oil and gas platforms, no retrofit technology was BTA. EPA studied the facilities and "could not identify any technologies (beyond the protective screens already in use) that are technically feasible for reducing impingement or entrainment in such existing facilities." 79 Fed. Reg. at 48,310. As discussed in more detail in Section V below, there are similar challenges for hydroelectric facilities.

EPA cannot impose § 316(b) requirements on hydroelectric facilities without engaging in proper notice-and-comment rulemaking that evaluates the availability and feasibility of potential technologies *for hydroelectric facilities*. As discussed in more detail in Section VI below, Region 1's Proposed Permit and Fact Sheet, which simply point to the 2014 Rule record's discussion of various technologies in the context of CWIS at steam electric power and manufacturing plants, do not fulfill this requirement. Accordingly, it is unlawful for Region 1 to impose on hydroelectric facilities CWA § 316(b) requirements – whether they are based on BPJ determinations or the 2014 Rule – without following the necessary procedures or conducting this type of evaluation.

[40] Economic Analysis for the Final 316(b) Existing Facilities Rule at 2A-4 (May 2014) (emphasis added) ("2014 Economic Analysis").
[41] *Id.*; *see also* Technical Development Document for Final Section 316(b) Existing Facilities Rule at 4-23 (May 19, 2014) ("2014 TDD") ("Only prime movers with a steam-electric generating cycle use large enough amounts of cooling water to fall under the scope of the proposed rule.").
[42] In fact, the only discussion of hydroelectric facilities in EPA's Economic Analysis is a general description of hydroelectric facilities' contribution to electricity generation. *See* 2014 Economic Analysis at 2A-3.
[43] *See* Benefits Analysis for the Final Section 316(b) Existing Facilities Rule at 3-5 (May 2014).
[44] Information Collection Request, Detailed Industry Questionnaires: Phase II Cooling Water Intake Structures & Watershed Case Study Short Questionnaire at 4 (Aug. 18, 1999).
[45] 2014 TDD at 4-22.

Response to Comment D.1.5.2

In its comment, UWAG asserts that EPA did not intend for hydroelectric facilities to be subject to the 2014 Final Rule. The 2014 Final Rule does not explicitly exclude hydroelectric facilities from being subject to the BTA requirements, *see* Responses to Comments D.1.1; D.1.5.1, (as it did for offshore seafood processing facilities, offshore liquified natural gas terminals, and offshore oil and gas extraction facilities, *see* 40 CFR § 125.91(d)), nor does it make clear that hydroelectric facilities are subject to the 2014 Final Rule.[19] However, the supporting documentation for the Proposed and Final Rules does suggest that EPA did not intend for

[19] The comment also asserts that, if hydroelectric facilities had been considered in the 2014 Final Rule, EPA would have understood that the BTA requirements for steam electric and manufacturing facilities are not necessarily the BTA for hydroelectric facilities. EPA notes that the comment offers no evidence or explanation for its statement that the BTA standards in the 2014 Final Rule are not feasible for hydroelectric facilities. On one hand, the BTA standard for impingement mortality in the 2014 Final Rule was based on modified traveling screens with a fish handling and return system, *see* 79 Fed. Reg. at 48,328, which may not be feasible or appropriate for intakes located at or within hydroelectric dams. On the other hand, BTA alternatives for impingement mortality such as a low intake velocity may be appropriate, and the comment offers no reason why the scientific justification for these alternatives cannot apply to intakes more broadly. EPA addresses detailed comments on the feasibility of the BPJ-based BTA requirements in the Final HydroGP in Responses to Comments D.1.7 and D.1.8.

hydroelectric facilities to be subject to its requirements. EPA did not include hydroelectric facilities in its consideration of the economic impacts of the 2014 Final Rule or in the Technical Development Document for the Final Rule. EPA did not collect information on cooling water intakes at hydroelectric facilities for the 2014 Final Rule, and the Economic Analysis does not include any evaluation of the cooling water use at hydroelectric facilities even though certain dams do use more than 2 MGD of cooling water (e.g., pump storage projects). The Economic Analysis considered "[o]nly prime movers with a steam-electric generating cycle use large enough amounts of cooling water to be subject to the final rule." AR-16 at 2A-4. Similarly, the Technical Development Document states "[o]nly prime movers with a steam-electric generating cycle use large enough amounts of cooling water to fall under the scope of the proposed rule." AR-2 at 3-10. *See also* Response to Comment D.1.5.1. As the comment recognizes, the 2014 Final Rule is clear, however, that § 316(b) requirements for cooling water intake structures not subject to the requirements of subparts I, J, or N are established on a case-by-case, BPJ basis, *see* 40 CFR § 125.90(b), which is consistent with EPA's long-standing practice. *See* Response to Comment 1.5.1.

Accordingly, the requirements of the HydroGP are based on BPJ. However, the Draft HydroGP proposed that hydroelectric facilities with a design intake flow greater than 2 MGD and which use at least 25 percent of the water withdrawn exclusively for cooling (i.e., facilities that could be subject to the 2014 Final Rule based on intake capacity and use of cooling water) would not be eligible for coverage. *See* Part 3.3.a. EPA proposed that the provisions of the Phase I and Final Rules, if they applied to hydroelectric facilities, are best addressed through individual permits. *See* Fact Sheet at 24-25. EPA noted, however, that no new hydroelectric facilities were anticipated and that nearly all of the hydroelectric facilities in Massachusetts and New Hampshire are expected to have design flows well under 2 MGD. *See Id*. Indeed, only two of the 60 hydroelectric facilities covered by the 2009 HydroGP (the only 2 pump storage projects in either state) withdraw more than 2 MGD and would have been ineligible for the Draft HydroGP based on design intake flow (DIF). In response to this and other comments, EPA agrees that hydroelectric facilities are not subject to the 2014 Final Rule. As such, the Final HydroGP has been revised to remove eligibility requirements based on the design flow of the cooling water intake structure and/or the percentage of cooling water used exclusively for cooling. In other words, no hydroelectric facility would be ineligible for coverage under the HydroGP on the basis of cooling water intake capacity or percentage use.

Finally, the comment asserts that EPA "cannot impose § 316(b) requirements on hydroelectric facilities without engaging in proper notice-and-comment rulemaking that evaluates the availability and feasibility of potential technologies *for hydroelectric facilities*." Region 1 evaluates in the Fact Sheet and in this Response to Comments the available information on potential means to minimize entrainment and impingement, *see* FS at 25-26; Responses to Comment D.1.7, and proposed BTA requirements for hydroelectric facilities in Massachusetts and New Hampshire on a BPJ-basis through a general permit. The action at hand is not a rulemaking but a NPDES permit proceeding for a defined universe of facilities within a specified geographic area that seek coverage. In accordance with 40 CFR § 124.10, Region 1 provided public notice that the Draft HydroGP had been prepared and accepted comments on the Draft Permit, including the proposed BTA requirements, over a 60-day period. UWAG and other commenters, including several facilities covered under the 2009 HydroGP, submitted comments

on these requirements as well as other aspects of the general permit. Furthermore, the Draft and Final HydroGP are consistent with EPA's long-standing view that section 316(b) applies to any NPDES discharger with a cooling water intake structure and with court interpretations of "the apparently all-inclusive statutory language." *Appalachian Power Co. v. Train*, 566 F.2d 451, 457-58 (4th Cir. 1977); Response to Comment D.1.4. Moreover, the HydroGP is also consistent with EPA's previously-noticed practice of applying BPJ to CWISs at facilities not otherwise covered by detailed 316(b) rules. *See* 40 CFR §§ 125.80(c), 125.90(b), 125.130(c); *see also, e.g.*, former 40 CFR § 125.90(b) (2004) ("Existing facilities that are not subject to requirements under this or another subpart of this part must meet requirements under section 316(b) of the CWA determined by the Director on a case-by-case, best professional judgment (BPJ) basis."); 69 Fed. Reg. 41,576, 41,578 (July 9, 2004) ("If an existing facility is a point source and has or is required to have a NPDES permit, but does not meet the applicability thresholds in today's rule, it is subject to permit conditions implementing section 316(b) of the CWA set by the permit director on a case-by-case basis, using best professional judgment."). As such, EPA maintains that it has fulfilled its obligations for public notice and comment of the Draft HydroGP § 316(b) requirements. Lastly, to the extent the commenter means to suggest that the Draft Permit relied on the BTA standards in the 2014 Final Rule, EPA disagrees. *See* Response to Comment D.1.2.

D.1.5.3 Establishing § 316(b) Requirements for CWISs at Hydroelectric Facilities Would Conflict with and Duplicate Other Federal and State Requirements Already in Place.

The statutory scheme Congress established under the FPA, and other federal statutes, demonstrates Congress' intent that the Federal Energy Regulatory Commission ("FERC") address, through the FERC hydropower licensing process, all issues relating to the use of water by non-federal hydroelectric facilities, including any water quality issues raised by a State CWA § 401 certification.[19]

The comprehensive development standard of FPA § 10(a)(1) requires that licensed hydroelectric projects be best adapted to a comprehensive plan for improving or developing a waterway, including, among other uses, for the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat). 16 U.S.C. § 803(a)(1). Section 10(a)(1) grants FERC the authority to require the modification of any project and of the plans and specifications of the project works before approval. Thus, to the extent that participating resource agencies, which are actively involved in the licensing process, identify during licensing significant issues relating to impacts from diversion and use of cooling water at hydroelectric facilities, those impacts would be considered by FERC in ensuring that the project will be best adapted to a comprehensive plan.

Section 10(j) of the FPA provides for the full participation of federal and state fish and wildlife agencies in recommending conditions for the protection, mitigation, and enhancement of fish and wildlife resources affected by the development, operation, and management of the hydroelectric project.[20] Such conditions are based on recommendations received pursuant to the Fish and Wildlife Coordination Act from the National Marine Fisheries Service ("NMFS"), the U.S. Fish and Wildlife Service ("FWS"), and state fish and wildlife agencies. As part of the application for a hydroelectric license (or relicense), applicants must submit an environmental report to FERC

describing the fish and wildlife that occur within the vicinity of the project and downstream areas affected by the project, and must identify any federally-listed threatened or endangered species.[21] The same report also must describe any measures recommended by consulting fish and wildlife agencies for mitigating such impacts and protecting fish and wildlife.[22]

Additional requirements to evaluate potential impacts to aquatic species exist under the Endangered Species Act ("ESA") and the National Environmental Policy Act ("NEPA"). Pursuant to ESA § 7 and FERC's corresponding regulations, FERC has an obligation to ensure that any project it authorizes is not likely to jeopardize the continued existence of any federally listed endangered or threatened species.[23] To satisfy this requirement, FERC directs project sponsors to engage in informal consultation with NMFS and/or FWS to determine whether the project will impact a federally listed species.[24] Unless NMFS or FWS concludes that the proposed hydroelectric facility is not likely to adversely affect federally listed species, the project sponsor must prepare a Biological Assessment containing the results of detailed surveys, potential impacts, and proposed mitigation to eliminate or minimize such impacts.[25] Where the consulting agency concludes that the project will result in the "incidental take" [26] of listed species, NMFS or FWS will prepare a Biological Opinion that may include reasonable and prudent measures to avoid jeopardy and must include a statement specifying the impact (*i.e.*, the amount or extent of incidental take), and reasonable and prudent measures considered necessary or appropriate to minimize the take of listed species.[27] Through this process, FERC will determine, in consultation with federal fish and wildlife agencies, which conservation and mitigation measures should be implemented to minimize impacts. In other words, the ESA process frequently results in the imposition of measures to protect listed species that might be impacted by operations of hydroelectric facilities, including the diversion of cooling water.

NEPA review requires the development by FERC of a Finding of No Significant Impact ("FONSI"), an Environmental Assessment ("EA"), or an Environmental Impact Statement ("EIS") for a project. Entrainment, impingement, and other impacts on fish and wildlife are analyzed in these environmental documents. For example, within the EA for a hydroelectric project in Arkansas, FERC concluded that "[b]ased upon [Arkansas Game and Fish Commission] observations, current levels of turbine entrainment and mortality of fish is [sic] not considered to be a significant issue at these projects."[28] Likewise, comprehensive entrainment studies were developed as part of the application process for the Catawba-Wateree and Yadkin-Pee Dee hydroelectric projects spanning the Carolinas. The EIS for the Catawba-Wateree project found that "entrainment does not appear to adversely affect survival and growth of young of target sport and forage species populations,"[29] and the EIS for the Yadkin-Pee Dee project found that there is "no indication that entrainment is having significant adverse effects on resident fish populations, because project reservoirs and riverine reaches support robust fish populations and an excellent sport fishery."[30] Similarly, for the Smith Mountain Hydroelectric Plant, a pumped storage facility in Virginia, an entrainment study qualitatively evaluated entrainment for selected species based on reservoir and turbine intake characteristics, water velocity and swim speed data, and life history characteristics.[31] FERC concluded in the EIS for the project that the "loss of individual fish from entrainment and mortality is not expected to result in any substantial effects to the fishery at the Project."[32] The analyses above address entrainment associated with all water passing through the projects, including the enormous amounts of water that go through the turbines for electricity generation. While these studies

generally do not focus on entrainment specific to the small pipes and other structures – often within or off of the penstocks – that various hydroelectric facilities use to divert water for service water and cooling purposes, withdrawals and entrainment impacts from these cooling water diversions would be exceptionally smaller. In addition, FERC frequently addresses the issue of fish impingement and entrainment by requiring licensees to screen their intakes to prevent or minimize fish from entering the penstock, which can eliminate or reduce the possibility of impingement or entrainment during the diversion of water from the penstock for cooling purposes.

Furthermore, CWA § 401 provides states broad authority to impose conditions as part of state-issued water quality certificates in the context of the licensing and relicensing of projects. FERC may not issue a license unless the state has either issued or waived the water quality certificate. States have used this authority to impose conditions related to fisheries, aesthetics, recreation, and more.[33] Such conditions are considered "mandatory," meaning that FERC has no discretion but to include them in a license.

In addition, approximately 29 facilities in Massachusetts and 15 facilities in New Hampshire have been certified by the Low Impact Hydropower Institute ("LIHI").[34] LIHI is a non-profit organization that certifies hydroelectric facilities as "low impact" if the facility satisfies all eight of the established environmental criteria. For example, to obtain certification, a facility must demonstrate that it maintains safe, timely, and effective downstream and upstream fish passage for migratory species, protects the water quality of all water bodies directly affected by the facility, and does not negatively impact threatened or endangered species.[35] Facilities apply for LIHI's voluntary certification only after they have completed the rigorous FERC process and obtained their license.[36]

In accordance with the authorities described above, fish and wildlife agencies often recommend protection, mitigation, and enhancement measures to offset any known impacts of hydroelectric facilities for aquatic species. In some cases, FERC license conditions may go further than the 2014 Rule would to minimize adverse environmental impacts associated with hydroelectric operations because they can include habitat restoration which, although not allowed as BTA for steam electric and manufacturing facilities covered by the Existing Facilities Rule, serves to provide habitat for individual species, life stages (such as spawning and rearing of young), or entire communities of aquatic organisms affected by hydroelectric operations. Thus, the FERC licensing process already provides for measures to minimize adverse environmental impacts of hydroelectric operations and may, at times, be more stringent than § 316(b) requirements. Any imposition of § 316(b) requirements, either through application of the 2014 Rule or a case-by-case BPJ determination, would be duplicative of existing federal and state requirements already in place. As the Alabama Department of Environmental Management ("ADEM") has recognized, "[t]he purpose of 316(b) of the [CWA] is to reduce mortality to fish and other aquatic organisms impacted by cooling water intake structures," but, for hydroelectric facilities, "the impacts to aquatic organisms are already addressed" and "have been extensively studied under the [NEPA] and [FEhRC] regulatory frameworks and subsequently granted 401 certifications."[37]

[19] This section focuses on hydroelectric projects that require FERC authorization because those are the most common facilities for our members. Certain non-federal hydroelectric facilities, such as small projects (5 MW or less) or projects conducted on an existing conduit (*e.g*., irrigation canal), do not require FERC licensing because those projects would result in minor environmental effects (*e.g.*, projects that involve little change to water flow and use and are unlikely to affect threatened and endangered species), but they are still subject to a similar process and subject to mandatory terms and conditions set by federal and state fish and wildlife agencies and by the Commission. 18 C.F.R. § 4.30. Other federal, non-FERC regulated hydroelectric facilities are generally authorized by Congress and owned by the U.S. Bureau of Reclamation or the U.S. Army Corps of Engineers and in some circumstances must comply with National Environmental Policy Act provisions regarding impacts to aquatic resources associated with operational changes, as well as formally consult with the U.S. Fish and Wildlife Service where federally threatened and endangered species are potentially impacted.
[20] 16 U.S.C. § 803(j)(1).
[21] 18 C.F.R. §§ 4.51(f), 4.41(f).
[22] *Id.*
[23] 16 U.S.C. § 1536.
[24] 18 C.F.R. § 380.13.
[25] *See* 18 C.F.R. § 380.13(b).
[26] "Incidental take" refers to "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity." 50 C.F.R. § 402.02.
[27] *See* 16 U.S.C. § 1536(b)(4); *see also* 50 C.F.R. § 402.15(i).
[28] FERC, Environmental Assessment for Hydropower License, Project No. 271-062, at 66 (Dec. 2001).
[29] FERC, Final Environmental Impact Statement for Hydropower License, Project No. 2232, at 178 (July 2009).
[30] FERC, Final Environmental Impact Statement for Hydropower License, Project No. 2206, at 138 (Apr. 2008).
[31] *See* FERC, Final Environmental Impact Statement for Hydropower License, Project No. 2210, at 119-126 (Aug. 2009).
[32] *Id.* at 126.
[33] *See*, *e.g.*, *S.D. Warren Co. v. Maine Bd. of Envtl. Prot.*, 547 U.S. 370 (2006) (holding FERC-licensed dams must comply with state certification that required operator to maintain stream flow and allow passage for certain fish and eels).
[34] *See* LIHI, Certified Facilities, *available at* https://lowimpacthydro.org/certified-facilities/.
[35] *See* LIHI, Certification Handbook, *available at* https://lowimpacthydro.org/wp-content/uploads/2016/03/2nd-edition-handbook-20160315-rev2.02-7-20-16.pdf.
[36] *See* LIHI, Certification Handbook § 4.5.1.
[37] *See* ADEM General Permit Rationale, Hydroelectric Facilities ALG360000, at 3 (Aug. 18, 2015).

Response to Comment D.1.5.3

The commenter generally asserts that any NPDES requirements to satisfy § 316(b) "would conflict with and duplicate other Federal and State requirements already in place" and that Congress intended that the FERC hydropower licensing process addresses "all issues relating to the use of water," including water quality issues raised by the State in the CWA § 401 certification.

EPA's authority to regulate a cooling water intake structure at a hydroelectric facility arises under the Clean Water Act and is based on a facility's use of such a structure and its status as a point source. UWAG's comment does not explain how the FPA and the FERC licensing process diminish this authority. While the comment provides examples of the types of environmental review a hydropower project might undergo, it does not explain, or provide any examples of, how the § 316(b) requirements in the HydroGP would conflict with any other federal or state requirements developed during the FERC licensing process. Nor does the commenter point to any specific provision of the FPA (or other federal statute) or to case law to demonstrate that Congress intended that only FERC may address cooling water use through the hydropower

licensing process. EPA notes that "it is a cardinal principle of construction that . . . . when there are two acts upon the same subject, the rule is to give effect to both." *United States v. Borden Co.*, 308 U.S. 188 (1939)); *see also Morton v. Mancari*, 417 U.S. 535, 551 (1974) ("[W]hen two statutes are capable of co-existence, it is the duty of the courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective."); *United States v. Palumbo Bros.*, 145 F.3d 850, 862 (7th Cir. 1998). Yet the comment fails to point to any clear expressions of congressional intent for its broad assertion that all water-related uses may only be addressed by FERC. Under the CWA, cooling water intake structures must reflect the best technology available for minimizing adverse environmental impact. Absent a clear expression of congressional intent to the contrary, EPA does not have the option of declining to consider their use at hydroelectric facilities.[20] Further, under EPA's regulations, the NPDES permitting authority is required to establish § 316(b) requirements for these facilities on a BPJ basis, 40 CFR §§ 125.80(c), 125.90(b), and the existing work done in the context of the FPA may well satisfy these requirements. Thus, the comment fails to show that EPA's HydroGP—which provides an option that would allow facilities to leverage such existing work in satisfaction of § 316(b)—conflicts with or impermissibly duplicates or intrudes upon another federal agency's authority.[21] Furthermore, in other comments, UWAG concedes that CWA § 402 applies to hydroelectric facilities, which in New Hampshire and Massachusetts is administered by EPA. It is unclear why UWAG concludes that EPA may not administer one provision of the CWA—applicable to facilities that withdraw cooling water as some hydroelectric facilities clearly do—where it admits that EPA application of another provision of the CWA is plainly appropriate.

The comment's ESA example further supports EPA's interpretation that actions performed under FERC's authority do not automatically supplant the CWA. The comment explains that FERC has an obligation to evaluate potential impacts to aquatic species under the Endangered Species Act (ESA) and engages in consultation with NOAA Fisheries and/or USFWS to satisfy this requirement. NPDES permits must also comply with the requirements of the ESA by ensuring that any action EPA authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. *See* Fact Sheet at 33-36. EPA must comply with this requirement independent of any consultation that may have occurred during the FERC licensing. The commenter does not dispute EPA's obligation to satisfy Section 7 of the ESA for the General Permit, nor does it argue that this requirement is superseded by any consultation that may have occurred during FERC licensing. EPA's consultation may be informed by a consultation that occurs with FERC, however, the FERC consultation does not automatically satisfy EPA's obligation to consult with the Services under the ESA. In this same way, although the review and any requirement

[20] Nor is there any indication in § 316 that FERC or any other federal agency is authorized to administer that section. *See* 33 USC § 1326; *see also id.* § 1251(d) ("Except as otherwise expressly provided in this chapter, the Administrator of the Environmental Protection Agency (hereinafter in this chapter called 'Administrator') shall administer this chapter.").

[21] The comment is not clear, but to the extent the commenter is also asserting that EPA review under § 316(b) is improper because it duplicates or conflicts with CWA § 401 state certification of hydroelectric facilities in the context of FERC licensing, the comment attempts to prove too much. Taken to its logical extension, such an argument would mean that hydroelectric facilities should not be subject to NPDES permitting at all, since requirements EPA establishes in a NPDES permit could have been established by a state pursuant to CWA § 401 and therefore could duplicate those imposed by the state. UWAG concedes, however, that hydroelectric facilities may be subject to NPDES permitting. Comment D.1.3.1.

mandated by state and federal agencies may consider the protection of aquatic animals, it does not independently satisfy § 316(b) of the CWA.

In addition, EPA does not agree that its review pursuant to § 316(b) duplicates review occurring pursuant to the FERC licensing process. EPA's evaluation under § 316(b) may consider different concerns and environmental endpoints than the environmental review for FERC licensing. FERC guidelines for preparing environmental documents (AR-32) list the aquatic resources that must be discussed, including non-power uses of project waters, information about fishery resources including habitat types, commercial and recreational value, sport fish, and management objectives. The guidance document suggests that the issues addressed *may* include fish entrainment and mortality. However, as the comment acknowledges, even if entrainment is considered, these reviews likely consider entrainment and mortality resulting from the turbines.[22]Impingement and entrainment resulting from the withdrawal of cooling water is not necessarily considered as part of this review and impacts may be different from the impacts of the turbines. The comment also attempts to show that EPA's review duplicates FERC's by referencing environmental reviews for projects in Arkansas, the Carolinas, and Virginia, none of which would be regulated by the HydroGP, since they are not located in New Hampshire or Massachusetts. EPA further notes that the conclusions for some of these projects were based on impacts to fish populations (e.g., "target and forage species populations" or "effects to the fishery"), but EPA has long interpreted adverse environmental impact under § 316(b) to implicate impact at the organism level even without demonstrable effects at the population level. *See Riverkeeper, Inc. v. EPA*, 475 F.3d 83, 123–25 & n.36 (2d Cir. 2007), *rev'd on other grounds, Entergy Corp. v. Riverkeeper, Inc*., 556 U.S. 208 (2009); *Riverkeeper, Inc. v. EPA*, 358 F.3d 174, 196-97 (2d Cir. 2004); *see also* 79 Fed. Reg. at 48,303. In addition, EPA's review of the referenced reviews, as well as recent Environmental Assessments for projects in Massachusetts (AR-12, AR-17) indicates that, as explained above, these reviews consider the impacts of impingement and entrainment through the turbines and do not discuss cooling water. While the protective measures recommended to reduce the impacts of impingement and entrainment at the turbines may also reduce impingement and entrainment for some cooling water withdrawals, EPA still has an independent obligation to ensure that the requirements of § 316(b) are met even where impacts of the overall operation of the project on fishery resources may have been considered in a different review, or where no previous additional environmental review was required. *See* 33 USC § 1342(a)(1), (2) (requiring that NPDES permits issued by EPA assure compliance with all applicable requirements of the CWA, which include § 316(b)).[23]

[22] Additional FERC documentation of entrainment impacts at hydropower projects identifies entrainment as aquatic organisms drawn into the turbine intakes where they may be injured or killed. *See* AR-13 at 1-1. Most of the studies referenced in this document observed entrainment of fish. Adverse environmental impacts from the withdrawal of cooling water considers not only mortality of fish but also early life stages, including larvae and eggs.

[23] Moreover, the comment acknowledges that not all hydropower projects require FERC licensing, including small projects (5 MW or less), projects conducted on an existing conduit, and federal projects. Of the 174 active hydropower projects in Massachusetts and New Hampshire, only 23 are greater than 5 MW. *See* Hydropower Reform Coalition, *available at* https://hydroreform.org/on-your-river/ (last visited May 25, 2021). Of the active projects, 86 have a FERC license, 79 have a FERC exemption, and 2 are qualifying conduits. EPA does not agree that no hydropower project should be subject to § 316(b) requirements simply because some projects may already undergo an environmental review that may or may not include specific conditions to prevent loss or damage to fish and wildlife and may not include express consideration of impingement and entrainment resulting from cooling

EPA also recognizes (as it did in the Fact Sheet) that many hydropower projects have an environmental review completed during licensing and, in some cases, the hydropower license may include certain requirements to protect fish and wildlife. The comment identifies that FERC frequently requires "licensees to screen their intakes to prevent or minimize fish from entering the penstock, which can eliminate or reduce the possibility of impingement or entrainment during the diversion of water from the penstock for cooling purposes." In fact, these are exactly the types of requirements that the HydroGP proposes may also satisfy § 316(b), not to "duplicate" requirements, but to recognize that one approach for fish protection can meet multiple regulatory requirements without any additional action on the part of the Permittees. *See* Fact Sheet at 24. The comment does not explain why it is improper to consider measures required by a FERC license or § 401 certification as satisfying § 316(b), nor does UWAG demonstrate how applying these requirements in the context of § 316(b) would "conflict" with the FERC license or CWA certification.[24]

D.1.6 Even if § 316(b) Did Apply to Hydroelectric Facilities, Which it Does Not, the Requirements of the 2014 Rule Are Not Appropriate for Such Facilities, Which Are Fundamentally Different from Facilities Covered by the Rule.

The requirements that EPA established in the 2014 Rule are not appropriate for hydroelectric facilities, which are fundamentally different from the steam electric power and manufacturing plants EPA considered in that rulemaking.

As discussed above, EPA did not consider hydroelectric facilities in establishing BTA in its 2014 Rule. EPA explained in the preamble to the 2014 Rule that, to establish BTA for the facilities covered by the Rule, EPA considered: "the availability and feasibility of various technologies," "costs associated with these technologies," the technologies' economic impacts, "effectiveness of these technologies in reducing impingement mortality and entrainment," and additional factors, such as "location, age, size, and type of facility." 79 Fed. Reg. at 48,328. For this analysis, EPA made a number of assumptions based on data and information from steam electric power plants

water withdrawals. EPA's view of the intersection of the FPA and CWA § 316(b)—in which the provisions and conditions required to protect fish and wildlife under the former may in certain circumstances inform or satisfy the latter—is consistent with case law and the objective of the CWA, which is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a).

[24] EPA Region 1 has not proposed to directly impose any existing requirements of FERC licenses in the NPDES authorization issued to individual Permittees. Rather, Permittees will establish in the NOI that existing devices and/or requirements in compliance with a FERC license also meet the BTA standards for impingement mortality at Part 4.2 of the HydroGP. Any minor revisions to the FERC license requirements that may occur during the 5-year term of the HydroGP would not require a change to the authorization, provided the changes still meet the BTA standards in the HydroGP. In addition, EPA revised Part 8.1 of the Final HydroGP to allow Permittees to submit a Notice of Change (NOC) in the event that certain changes in the license requirements during the permit term (e.g., changes to fish passage requirements based on review by NOAA Fisheries or USFWS) alter the method of compliance with the BTA standards at Part 4. Alternatively, a facility could also choose to apply for individual permit coverage.

and manufacturing plants that do not take into account technology costs or feasibility for hydroelectric facilities.[46]

The assumptions that EPA made for the facilities it considered in its 2014 Rule do not necessarily apply for hydroelectric facilities. There are numerous different configurations for hydroelectric facilities and, in particular, their pipes and structures that divert cooling water. Nearly every facility has unique, location-specific design attributes to take maximum advantage of the hydraulics of that unique physical location. For example, some hydroelectric facilities have a hole bored through the penstock in which a perforated flange is used to attach a small pipe used to gravity feed service and cooling water equipment. Some hydroelectric facilities have pipes that come off the scroll case. Others have separate pipes that come off the face of the dam. For these three configurations, water that is gravity- or pressure-induced feeds through the pipe to cool and service the equipment. Other facilities have separate intake pump houses upstream of the powerhouse. For those facilities, there is a distinct and separate intake used for service water and cooling purposes. Pumped storage facilities pump water from lower reservoirs to higher elevation reservoirs during times of low electric demand and then release water from the upper reservoir to drive turbines during periods of high electric demand. In one pumped storage facility, cooling water is drawn from the cavity between the inner and outer walls of the power house, while service water is drawn from a single intake at the tailrace of the plant.

Given the wide range of configurations for hydroelectric facilities and different processes for diverting water for cooling, the technologies that EPA found to be the best available technologies and sampling requirements for steam electric power plants and manufacturing plants are not necessarily appropriate or practical for hydroelectric facilities.

For example, at many hydroelectric facilities, conducting impingement or entrainment sampling at the pipe or structure taking in cooling water would be very difficult, or even unsafe, due to turbulence. Sampling equipment may not be able to withstand water flows and forces and could break away, potentially damaging the facility.

In addition, many of the impingement technology options that are established as BTA in the 2014 Rule would not be feasible at most hydroelectric facilities. For example, one of the impingement options is to use a maximum 0.5 feet per second through-screen design velocity, 40 C.F.R. § 125.94(c)(2). This is also one of the compliance options in the Region 1 Proposed Permit. *See* Proposed Permit at 26. For many hydroelectric facilities, however, the only way to retrofit an intake pipe within the penstock to meet that through-screen design velocity would be to increase the size of the intake opening, which in some cases would require dam reconstruction and could actually increase entrainment because of the increase in the volume of water passing through the intake. Similarly, another impingement option in both the 2014 Rule and the Region 1 Proposed Permit is to operate an intake structure with a maximum through-screen velocity of 0.5 feet per second, § 125.94(c)(3); Proposed Permit at 26, but it would be impossible to measure the actual velocity at the intake for most hydroelectric facilities because the magnitude and force of the water is so great as it is going through the penstock that no monitoring equipment could be located near the intake. Nor would it be feasible to install modified traveling screens, § 125.94(c)(5), on the small pipes that are used by many hydroelectric facilities to take in cooling water, even where such pipes withdraw water directly from the source waterbody. At least three

of the impingement options, §§ 125.94(c)(5)-(7), require an impingement technology performance optimization study, which would be very difficult, if not impossible, for many hydroelectric facilities that would not be able to conduct impingement sampling at the intake.

Indeed, the 2014 Rule's requirements would not be necessary in most cases because the rates of impingement and entrainment would be so low that additional controls would not be warranted. Some hydroelectric facilities have in place screens to prevent debris of a certain size from entering the penstock (and therefore the cooling water pipe), and at many facilities, the water passes through a strainer before being used for cooling purposes. Some of these strainers are backwashed to a plant sump. In our members' experience, fish are rarely (if ever) observed in strainer baskets or in backwash to the plant sump. Moreover, for many hydroelectric facilities, due to the high velocity and volume of water passing through the penstock and by the entrance to the intake, the rates of impingement would be so low that additional impingement controls would be useless. The same is true for entrainment at many of these facilities. For hydroelectric facilities, the *de minimis* exception for impingement established in the 2014 Rule, 40 C.F.R. § 125.94(c)(11), would be applicable more often than not. And the fact that there is not a *de minimis* exception for entrainment in the 2014 Rule would create issues for many hydroelectric facilities that would have no way of further minimizing the already very minor rates of entrainment.

EPA clearly did not consider hydroelectric facilities when it was establishing the requirements under the 2014 Rule. As explained above, such requirements are not appropriate or feasible for hydroelectric facilities, which are fundamentally different from facilities covered by the 2014 Rule.

[46] For example, in evaluating impingement data and performance standards, EPA relied on 26 impingement mortality data sets at 17 facilities, none of which included hydroelectric facilities. 79 Fed. Reg. at 48,323; 2014 TDD Exhibit 11-3. As another example, in the final rule, EPA adjusted its assumptions for costs of modified traveling screens with fish returns in response to feedback that its proposal had underestimated those costs. 79 Fed. Reg. at 48,324. The adjustments EPA made in its evaluation of technology costs included: to correct its misplaced assumption that modified traveling screens were available at most facilities, EPA assigned higher cost technologies (*e.g.*, larger intakes, wedgewire screens with through-screen design velocities of 0.5 fps) for intakes that use passive screens; EPA increased capital costs for the fish return component and included additional costs for those with particularly difficult circumstances, such as very long intake canals and submerged offshore intakes. *Id.*; 2014 TDD at 8-2 to 8-6 (explaining EPA's model facility approach and modifications to the cost tool). EPA did not consider application of the technology to hydropower facilities.

Response to Comment D.1.6

EPA explains in response to comments elsewhere in this document that it agrees that hydroelectric facilities are not subject to the 2014 Final Rule. As such, hydroelectric facilities are not required to satisfy the BTA standards in the 2014 Final Rule. However, EPA does not agree that all of the technologies considered in the 2014 Final Rule are necessarily inappropriate for hydroelectric facilities.

As the comment points out, it is common, but not universal, for hydroelectric facilities to withdraw cooling water from within the penstock or scroll case. Modified traveling screens, on which the BTA standards for impingement mortality in the 2014 Final Rule were based, would

not be appropriate for this location for many of the reasons stated in the comment. *See* 79 Fed. Reg. 48,328. In addition, impingement monitoring at this location would be exceedingly difficult for the reasons described in the comment (e.g., turbulence could make monitoring at the intake dangerous) and, as such, many hydroelectric facilities could not perform the optimization studies that forms the basis for several impingement mortality BTA options in the 2014 Final Rule. 40 CFR § 125.94(c)(5), (6), and (7). EPA also does not expect that hydroelectric facilities would reconfigure an intake that is integrated into the design of the turbines (e.g., located inside the penstock) to meet a through-screen velocity standard. In sum, hydroelectric facilities are not subject to the 2014 Final Rule and not required to submit the application materials or comply with the Rule's BTA standards for impingement mortality or entrainment.

At the same time, the record that forms the basis of the 2014 Final Rule provides the scientific justification underlying how each of these technologies minimizes impingement mortality. If a facility already operates its intake structure in a way that meets proven technologies (e.g., if the actual intake velocity is already at or below 0.5 fps), then the facility could be given credit for minimizing impingement mortality. Moreover, there are many different kinds of technologies in use for fish protection at hydroelectric facilities, including physical structures (e.g., louvers or booms), behavioral barriers (e.g., light), and spillways that were also considered as possible technologies for minimizing impingement and entrainment for § 316(b) rulemakings. *See* AR-5, AR-10, AR-18, AR-19. Certain of these technologies, while not nationally available, could satisfy the BTA standards for impingement under the 2014 Final Rule, which suggests that the comment's conclusion that the technologies considered in the 2014 Final Rule are wholly inapplicable to hydroelectric facilities is overstated. *See* 40 CFR § 125.94(c)(6). *See also* AR-2 at Chapter 6. In fact, UWAG recognizes that, in many cases, hydroelectric facilities already implement measures to reduce impingement and entrainment (e.g., screens to prevent organisms from entering the penstock) so that additional controls beyond what facilities are already doing would not be incurred. EPA addresses the specific requirements for hydroelectric facilities in Response to Comment D.1.7, below.

D.1.7 The § 316(b) Measures Required in Region 1's Proposed General Permit Are Inappropriate for Hydroelectric Facilities.

Even if § 316(b) applied to hydroelectric facilities, which it does not, the measures that Region 1 proposes as BTA in the Proposed Permit are inappropriate for the hydroelectric facilities to which the Proposed Permit, if finalized, would apply. Under Region 1's proposed BTA requirement, the applicant must implement at least one of three options within 90 days of receiving authorization to discharge under the permit. *See* Proposed Permit § 4.2. We address each of these options in turn.

Response to Comment D.1.7

EPA explains in Responses to Comments D.1.3. D.1.4, D.1.5, and D.1.6, above, that § 316(b) does apply to hydroelectric facilities that withdraw cooling water. The cooling water intake structure requirements of the HydroGP have been revised slightly in response to comments on the Draft General Permit. EPA also considered whether it is appropriate to require facilities to comply with one of the impingement BTA options within 90 days of receiving authorization

under the HydroGP. As explained in following detailed responses to the comments in this section, EPA expects that few facilities will have to make any changes to their current CWIS in order to meet the requirements of the HydroGP and, as such, should be able to comply with the permit within 90 days. However, additional time may be necessary to review existing technologies and environmental review documents to determine which of the BTA options will be met. Part 4.2 of the HydroGP has been revised to allow for 180 days to meet one of the available BTA options. In the event that a facility cannot comply with one of the BTA requirements within 180 days, EPA has discretion to provide additional time for compliance. Alternatively, the applicant may submit an application for an individual permit, which would include a site-specific BTA determination.

D.1.7.1 Section 4.2(a) – Physical or Behavioral Barrier

As discussed above, we do not agree that CWA § 316(b) applies to hydroelectric facilities. But, even if it did, the first measure proposed by Region 1 goes well beyond EPA's limited authority under § 316(b) to set technology requirements for cooling water intake structures. This measure requires permittees to install a physical or behavioral fish barrier at the first intake on the upstream side of the dam that will safely direct fish towards a downstream passage without being exposed to the CWIS. Proposed Permit at 28. Instead of requiring a particular technology for the intake withdrawing cooling water, this requirement applies to hydroelectric facilities as a whole, including parts of the facility that are not part of the process for diverting cooling water. As noted above, cooling water is often diverted from the penstock or the turbine scroll case and not necessarily from the source waterbody. Thus, this permit imposes a requirement on the dam itself instead of the "location, design, construction, and capacity" of the CWIS as provided for in CWA § 316(b). Indeed, the purpose of this proposed measure is to convey the fish over the dam so that they are not exposed to the CWIS. *See* Proposed Permits § 4.2(a). The CWA does not authorize EPA to require such technologies.

Section 316(b) mandates that any standard established pursuant to §§ 301 or 306[47] "shall" require that the "location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." CWA § 316(b) defines the outer boundaries of EPA's authority to regulate CWISs. Nothing else in the CWA authorizes EPA to regulate beyond discharges in NPDES permitting. And only EPA (or NPDES permit writers acting under CWA § 402(a)(1)(B), where EPA has not acted) may establish requirements necessary to implement §§ 301 and 306. Thus, § 316(b) instructs EPA to decide what intake technologies constitute the BTA for "minimizing adverse environmental impact."

No one would argue that the effects of intake structures on threatened or endangered species or their designated critical habitat are not among the "adverse environmental effects" that Congress contemplated BTA requirements would "minimize." But § 316(b) does not authorize EPA, or a permit writer making a site-specific determination at EPA's behest, to require technologies or other control measures, such as Region 1's proposed physical or behavioral barrier compliance option, that go beyond the standards reflecting the technologies for CWIS location, design, construction, and capacity.

In addition, Region 1 lacks adequate justification for this condition. The Fact Sheet suggests that the fish passage requirement is appropriate because it has already been adopted by many facilities in Massachusetts and New Hampshire. The Fact Sheet indicates that, as noted above, hydroelectric facilities are subject to FERC license requirements, which often include downstream fish passage technology. Also, a number of facilities in the Region have received voluntary certification from the LIHI, which requires upstream and downstream fish passage protection measures. Fact Sheet at 25-26. Simply because certain facilities operate fish passage technology in accordance with a voluntary program, or a FERC license, does not expand EPA's authority under the CWA and does not allow a NPDES permit writer to incorporate the same conditions under the guise of § 316(b).

As discussed above, it is solely within FERC's authority under the FPA to impose requirements relating to the use of water by non-federal hydroelectric facilities. In fact, FPA section 18 authorizes FWS or NMFS to prescribe "fishways" at FERC-licensed projects. 16 U.S.C. § 811. As the Region's rationale for this condition suggests, *see* Fact Sheet at 25-26, with this proposed measure, EPA attempts to incorporate a FERC requirement into a NPDES permit. In addition to going beyond EPA's authority, the proposed requirement would duplicate, and at times could interfere with, FERC's efforts to establish appropriate measures to minimize or mitigate impacts to aquatic species in consultation with FWS or NMFS, and would not create an environmental benefit beyond what is already imposed in a FERC license.

Importantly, the Proposed Permit, if finalized, could be interpreted to suggest that a requirement to implement and maintain physical or behavioral fish barriers is a lawful and appropriate § 316(b) condition of a NPDES permit. Even if it were a lawful condition (which it is not), many of UWAG members' hydroelectric facilities located across the country do not maintain physical or behavioral fish barriers. A physical barrier is infeasible in many situations. A barrier placed across the front of a dam would need to span hundreds to thousands of feet perpendicular to flow and extend to great depths exposing it to huge forces (varying flows) and debris (leaves, logs, trash, etc.), and would require frequent maintenance. While there may be some behavioral barrier technologies available, they are not effective on all or most species. As such, even if one assumes that most operators of hydroelectric facilities in Massachusetts and New Hampshire already maintain fish passage technologies at their facilities, if other Regions or States, which may view the Region 1 permit as a model, were to adopt a requirement similar to the first option in Region 1's Proposed Permit, it would impose a significant, costly, and inappropriate regulatory burden on many operators.

[47] Section 301, 33 U.S.C. § 1311, addresses effluent limitations that may apply in § 402 permits, and § 306, 33 U.S.C. § 1316, governs standards of performance related to discharges under § 402 permits.

Response to Comment D.1.7.1

EPA explains in Responses to Comments D.1.3 and D.1.4, above, that § 316(b) does apply to hydroelectric facilities that withdraw cooling water. EPA understood that, as a general permit, the universe of Permittees represents different CWIS configurations and capabilities. For this

reason, EPA provided three options as the BTA for impingement mortality under § 316(b) in Part 4.2 of the Draft HydroGP, the first of which is:

> a) A physical or behavioral barrier located at the first intake encountered by fish on the upstream side of the dam. The barrier shall direct fish towards a downstream passage which safely conveys fish over the dam without being exposed to the CWIS. The permittee must provide a description of the barrier in the NOI and sufficient information to demonstrate that the downstream fish passage effectively transports live fish in a manner that minimizes the likelihood of becoming impinged or entrained at the cooling water intake.

UWAG asserts that the proposed requirement "goes well beyond" EPA's authority to set technology requirements under § 316(b) because it imposes a requirement on the dam itself, rather than at the cooling water intake structure. UWAG further comments that, "Simply because certain facilities operate fish passage technology in accordance with a voluntary program, or a FERC license, does not expand EPA's authority under the CWA and does not allow a NPDES permit writer to incorporate the same conditions under the guise of § 316(b)." First, as the comment recognizes, Part 4.2.a is not a requirement but one option in the Permit to provide greater flexibility for facilities to satisfy § 316(b). Facilities are not required to install a physical or behavioral barrier at the dam. As to the comment that a barrier is infeasible or incompatible with the existing CWIS or dam configuration "in many situations," such a facility would not be expected to install a barrier to satisfy option A. Rather, the facility could seek coverage under the HydroGP via one of the other available options or seek individual permit coverage with a site-specific BTA determination. *See* 40 CFR § 122.28(b)(3). However, a facility that *already* operates a barrier designed to divert fish downstream without being exposed to the CWIS would be given credit for minimizing impingement mortality.[25] Furthermore, this option recognizes (as does the commenter[26]) that the design and location of a CWIS downstream of such technologies minimizes exposure of organisms to the CWIS, similar to the way a barrier net, aquatic filter barrier, or behavioral deterrent would, all of which are methods that EPA has previously considered as options a facility may choose to implement into the design and location of its CWIS and implement in satisfaction of § 316(b). *See, e.g.*, 78 Fed. Reg. at 48,335, AR-2 (at 6-53, 6-55, 6-68), AR-7, AR-8. This option is also consistent with EPA's recognition in the 2014 Final Rule that systems of technologies may be employed to minimize adverse environmental impact pursuant to § 316(b). *See* 78 Fed. Reg. at 48,326, 48,347. Further, this option is consistent with EPA recommendations to permitting authorities to consider existing technologies at a facility that may reduce impingement or entrainment at a CWIS even if not originally intended for that purpose. See AR-33, AR-34. For these reasons, Region 1 concludes that it is an appropriate provision within its authority to include in the HydroGP. Moreover, Region 1 anticipates that Permittees will benefit from a condition that permits compliance with § 316(b) using an existing measure or device, even if it is one initially implemented to meet requirements

[25] The comment that including this option in the HydroGP for Massachusetts and New Hampshire is improper because other Regions or States may use it in other permit proceedings is speculative and unripe.
[26] "FERC frequently addresses the issue of fish impingement and entrainment by requiring licensees to screen their intakes to prevent or minimize fish from entering the penstock, which can eliminate or reduce the possibility of impingement or entrainment during the diversion of water from the penstock for cooling purposes." Comment D.1.5.3.

under another statute. A facility whose FERC license changes or who drops its LIHI certification and alters or eliminates an existing physical or behavioral barrier would not be out of compliance with the NPDES permit based on that fact alone; the facility would choose another means of complying with § 316(b), which could include other options under the HydroGP or coverage pursuant to an individual permit. *See also* Response to Comment D.1.5.3.

As to the comments that, under the FPA, only FERC may "impose requirements relating to the use of water by non-federal hydroelectric facilities," and that the HydroGP "would duplicate, and at times could interfere with, FERC's efforts to establish appropriate measures to minimize or mitigate impacts to aquatic species in consultation with FWS or NMFS, and would not create an environmental benefit beyond what is already imposed in a FERC license," the comment does not substantiate these claims in any meaningful way or provide an explanation of how this option burdens a facility through duplication or conflicts with a FERC requirement. *See* Responses to Comments D.1.3 and D.1.5.3. In fact, the option provides greater flexibility to hydroelectric facilities and is a reasonable method for recognizing, and giving a facility credit for, measures it may already employ that minimize the numbers of organisms exposed to the CWIS and thereby minimize adverse impacts of the CWIS.

As noted above, EPA maintains that Part 4.2.a of the Draft HydroGP is reasonable because it enables facilities that already employ measures to encourage downstream fish passage to comply with the requirements under CWA § 316(b) using the existing technology. However, in addressing the comment, EPA evaluated whether the description of this option as "a physical or behavioral barrier" is broad enough to capture the breadth of technologies that might be in use at hydroelectric facilities that would serve to minimize impingement mortality. There are many different kinds of technologies in use to encourage downstream movement of fish at hydroelectric facilities, including physical structures (e.g., louvers or booms), behavioral barriers (e.g., light), and spillways. *See* AR-5, AR-10. The Draft HydroGP language limits Permittees to "a physical or behavioral barrier" and does not recognize the broad range of technologies that have been employed under recommendation of NOAA Fisheries and/or USFWS for fish passage. As the intent of this option is to allow Permittees to leverage technologies already in use at the facility to meet the requirements under § 316(b), it is reasonable for the General Permit to allow for a wider range under option A. Therefore, EPA has revised Part 4.2.b.i of the Final HydroGP to allow Permittees to limit exposure of organisms to the CWIS through the use of an "existing technology (e.g., a physical or behavioral barrier, spillway, or guidance device) that directs fish towards a downstream passage which minimizes exposure to the CWIS." EPA believes that this option reasonably allows for a broader range of diversion technologies that minimize impingement mortality by limiting exposure of organisms to the CWIS.

D.1.7.2 Section 4.2(b) – Intake Velocity

As a second option for compliance, Proposed Permit § 4.2(b) indicates that if the cooling water is withdrawn directly from the penstock, that facility can comply with the Permit's BTA requirements by ensuring that the "velocity at the cooling water intake shall not exceed 0.5 fps." As its only support for this requirement, the Fact Sheet cites pages in the preambles for the Phase I Rule and 2014 Existing Facilities Rule wherein EPA provided technical analysis for a 0.5 fps

velocity requirement for CWIS at steam electric power and manufacturing plants which involve use of pumps to actively *withdraw* cooling water from surface waters of the U.S. *See* Fact Sheet at 26 (citing 66 Fed. Reg. at 65,274 (preamble for the Phase I Rule) and 79 Fed. Reg. at 48,325-26, 48,336-7 (preamble for 2014 Existing Facilities Rule)). These snippets of analysis on CWIS through-screen velocity are inapposite for hydroelectric facilities, which are diversion structures by design – impounding water and transporting/passing water along a contiguous waterway to turn turbines used to generate electricity. As noted above, EPA never considered hydroelectric facilities in its evaluation of appropriate technologies during the Phase I and Existing Facilities rulemakings. Nor do the scientific reports cited in the preambles address CWIS at hydroelectric facilities.[48]

The Fact Sheet reflects no analysis of whether such a requirement would be appropriate for hydroelectric facilities and no attempt to characterize or consider the wide range of variation among existing cooling water intakes at hydroelectric facilities. That variation is important because site-specific factors may make it difficult or impossible for many facilities to comply with some or all of the proposed requirements. As noted above in Section V, for many hydroelectric facilities, it would be impossible to measure the velocity at the intake because the magnitude and force of the water going through the penstock is so great that no monitoring equipment could be located near the intake. Further, in some cases, the only way to retrofit an intake pipe within the penstock to satisfy velocity requirements would be to increase the size of the intake opening, which could require dam reconstruction. Indeed, in evaluating technologies for CWIS at steam electric power and manufacturing plants that withdraw from the source waterbody, EPA has recognized that "[s]pace constraints … may preclude expanding an existing intake structure … to reduce intake velocity" and that "[a]t existing facilities, … many of these modifications are more problematic due to space constraints and interference with existing systems, and may not be practical options given their cost and complexity." 2014 TDD at 6-65. 2014 TDD at 12-6. These space constraints are even more pronounced for many hydroelectric facility configurations.

Moreover, for many hydroelectric facilities that withdraw cooling water from the penstock, it would be nearly impossible to reduce the intake velocity because the cooling systems are designed for specific flow-through and are typically not controlled by pumps. For example, in a 2007 relicensing study for the Leesville facility (a hydroelectric facility downstream from the Smith Mountain pumped storage project) various flows at different points were measured, modeled, and calculated.[49] The average reservoir flow velocity was 1.8 fps, the average velocity at the powerhouse intake face was 2.2-2.9 fps, the average through-screen velocity was 2.8-3.9 fps and the average velocity within the penstock was 4.8 fps. Because the cooling water intake at this facility is located within the penstock, the velocity at the opening was 4.8 fps. Thus, reducing the velocity from 4.8 fps to 0.5 fps would be impractical if not impossible. Therefore, to comply with this provision, operators would likely have to install closed-loop cooling or find an alternate cooling water source, such as groundwater. EPA has not provided any analysis of such constraints and potential costs and benefits for hydroelectric facilities. If it had, it would have learned that the burden of retrofitting the pipe to reduce intake velocity would in many cases result in costs and burdens that likely far exceed any environmental benefits, and, in many cases, it simply would not be feasible.

It is difficult to understand how Region 1 could have exercised its BPJ that the intake of cooling water at hydroelectric facilities requires further control without first collecting at least some information from which to evaluate whether the changes to the pipe used by a hydroelectric facility to divert relatively small amounts of water (that otherwise would flow through the facility) for cooling purpose would have any meaningful environmental benefit. As explained above, for many hydroelectric facilities, due to the high velocity and volume of water passing through the penstock and by the entrance to the intake, rates of impingement and entrainment would be so low that additional controls would be useless. Indeed, in many cases, reducing intake velocity at the pipe would not result in environmental benefit because, even if fish could avoid being impinged or entrained by the pipe, those same fish would still pass through the turbine. Even if it were appropriate to apply § 316(b) to these facilities (which UWAG believes it is not), the exercise of BPJ for existing facilities requires at least some understanding of the location, design, construction, and capacity of the "intake structures" involved and the environmental impacts occurring. Region 1 has put the cart before the horse, imposing new BTA requirements without first evaluating the attributes of the facilities in question and whether additional controls are appropriate. Thus, Region 1 has not only failed to evaluate how the intake velocity requirement would impact most hydroelectric facilities, but also failed to adequately justify such a condition.

[48] In the preamble for the Phase I Rule, EPA cites three studies that it used to help determine appropriate velocity thresholds based on fish swimming speeds and endurance. *See* 66 Fed. Reg. at 65,274 (citing Electric Power Research Institute, *Technical Evaluation of the Utility of Intake Approach Velocity as an Indicator of Potential Adverse Environmental Impact under Clean Water Act Section 316(b)* (Dec. 2000); Smith, L.S. and L.T. Carpenter, Fisheries Institute, University of Washington, *Salmonid Fry Swimming Stamina Data for Diversion Screen Criteria* (Dec. 1987); Turnpenny, A.W.H., Central Electricity Generating Board, *The Behavioral Basis of Fish Exclusion from Coastal Power Station Cooling Water Intakes* (Aug. 1988).. While these reports contain some discussion of hydroelectric facilities, it is limited to discussion of the intake approach velocity at the penstock. It does not address velocities for cooling water intake structures at hydroelectric facilities.

[49] *See* Devin Tarbell & Associates, Inc., Smith Mountain Pumped Storage Project (FERC No. 2210), Intake Velocity Study Report, at 2, Tbl. 1 (June 2007).

Response to Comment D.1.7.2

At the outset, the commenter clearly recognizes that the intake velocity technology proposed in the Draft HydroGP is one of several compliance options and not a requirement for any facility. And while the comment asserts that Region 1 did not consider the wide variation in hydroelectric facility configurations, that the HydroGP provides these several compliance options demonstrates just the opposite. Although not every facility will be able to comply with this option, as the comment points out, certain facilities may, and EPA intends to capture as many of the possible CWIS configurations and technologies as possible to provide maximum flexibility for facilities to demonstrate that they minimize impingent.

The comment (in footnote 48) recognizes that studies of intake velocity at hydroelectric facilities informed EPA's consideration of intake velocity as a BTA standard in national rulemakings. [27] FERC's *Preliminary Assessment of Entrainment at Hydropower Projects* indicates that low-velocity fish screens (such as drum screens, vertical traveling screens, and stationary screens equipped with debris removal) are a "commonly prescribed" and "relatively well-proven" protective measure for hydroelectric facilities to minimize potential impingement and injury and many state and federal agencies have developed design criteria for screening and bypass facilities that are consistent with or more stringent than the 0.5 fps velocity in the Final HydroGP. See AR-2 at 4-3.

The comment distinguishes "approach" from "through-screen" velocity as it applies to dams. As the commenter points out here and in other comments, hydroelectric facilities have a range of CWIS configurations which may or may not include screens at the cooling water intake. For these facilities, the effective velocity relative to minimizing impingement[28] could be measured at the point where cooling water is withdrawn or at the point where aquatic life would be drawn into a pipe where they will be exposed to a cooling water intake. The General Permit should provide facilities the opportunity to take advantage of measures employed that already minimize impingement through reducing organisms' exposure to the CWIS. For example, a facility that has a CWIS located within the penstock and which achieves a low approach velocity at the entrance to the penstock would be considered to have minimized impingement because fish avoid exposure to the CWIS as a result of the intake velocity. Such an option provides greater flexibility for hydroelectric facilities to seek coverage under the General Permit, and EPA has revised the HydroGP accordingly. *See* Final Permit at Part 4.2.b.ii. Facilities may demonstrate compliance either through monitoring the velocity, if this is available, or through calculation of the intake velocity.[29] This option is a reasonable method for recognizing, and giving a facility credit for, measures it may already employ that minimize the number of organisms exposed to the CWIS and thereby minimize adverse impacts of the CWIS. *See also* Response to Comment D.1.7.1; AR-33 at 5.

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[27] The comment asserts that the EPA's recommendation of 0.5 fps through-screen velocity is supported by "snippets of analysis" that do not apply to hydroelectric facilities which divert water rather than using intake pumps. Contrary to the commenter's characterization, the preambles to the Phase I and Final Rules are supported by extensive analysis of swim speeds of many fish species, including studies which observed fish swim speeds at dams (*see* AR-6) as the comment correctly concedes, Comment D.1.7.2 n.48. The scientific basis of the threshold is that nearly all of the species studied exhibited swim speeds greater than 0.5 fps and, as a result, would be able to avoid becoming impinged at a screen with a through-screen velocity at or below this value. The comment attempts, without support, to draw a distinction between pump- and gravity-induced withdrawals but never explains why such a distinction is significant to fish. The Region concludes that the more reasonable view is that the relationship between swim speed and intake velocity holds regardless of whether the water is actively pumped or diverted, a conclusion that is supported by EPA's partial reliance on swim studies conducted at hydroelectric facilities for developing the intake velocity figure used in the 2014 Final Rule.

[28] For the purposes of the HydroGP, EPA uses the term "impingement" broadly to encompass both the entrapment of any life stage against the outer part of an intake structure or screening device and entrapment where fish lack the means to escape a cooling water intake. *See* 40 CFR § 125.92(j), (n).

[29] The comment indicates that intake velocity will be "impossible to measure" yet the Draft HydroGP expressly allows Permittees to calculate intake velocity. The comment offers no reason why facilities would not be able to calculate an estimated intake velocity if it were to select this option to comply with the impingement BTA.

Based on the comment, EPA also recognizes that, at some hydroelectric facilities, the location of the CWIS within the penstock may be a factor that minimizes the potential for impingement. The high velocity and volume of water passing through the penstock and by the entrance to the intake could serve to limit the risk of impingement. Impingement occurs when a fish is unable to escape being drawn against a screen (or into the intake) due to the velocity of the cooling water being withdrawn. At hydroelectric facilities, the water in the penstock is flowing by the CWIS at such a high rate that fish in the penstock are unlikely to respond to the small volume being diverted for cooling at all. For facilities that reported cooling water withdrawals under the 2009 HydroGP, the volume of cooling water was less than 0.1% of the rated turbine capacity. In other words, the penstock flow is so much greater than the cooling water flow that fish are likely to be transported past the intake without becoming impinged. In an effort to recognize the myriad ways that hydroelectric facilities may already be minimizing impingement without additional controls, EPA has revised the HydroGP to include an option for facilities without fish passage or intake velocity measures to demonstrate that the penstock flow relative to the cooling water flow minimizes the risk of impingement.[30] *See also* AR-33 at 5.

EPA agrees that it is not feasible for every facility to reduce its intake velocity to 0.5 fps, which is why the HydroGP offers multiple compliance options and does not require every facility to achieve a low intake velocity or reconstruct its intake to achieve compliance. In addition, if none of the other compliance options in the HydroGP are feasible, a site-specific BTA determination would be required, in which case, a Permittee would seek individual permit coverage. *See* 40 CFR § 122.28(b)(3).

[30] The comment asserts without support that there can be no environmental benefit of minimizing exposure to the cooling system if the fish instead pass through the turbine. In some ways, the comment presents a false choice, since the HydroGP recognizes and gives credit to facilities that may already have fish passage requirements or employ devices that reduce a fish's chance of being drawn into the penstock in the first place. For instance, facilities located on rivers with migratory species that must traverse the dam (and thus, may be exposed to a CWIS located in or after the penstock) would likely comply with the option to demonstrate that existing fish passage requirements minimize impingement. Facilities that are not located on rivers with migratory species may not be subject to such requirements. In this case, resident fish would not be attracted to the intake flow and, as a result, may be less likely to enter the penstock. However, some resident fish may become drawn into the penstock. In this case, the high volume of water flowing through the penstock relative to the volume withdrawn for cooling would minimize the potential for fish to become impinged, though organisms will still pass through the turbines. *See* Response to Comment D.2. While EPA does not have data with which to make direct comparisons of impacts to fish passing through a turbine versus being drawn into the cooling system, the information available to EPA suggests that the impacts of the former may in some cases be lower. For instance, fish drawn into a cooling system would be subject to physical stress from passing through small diameter pipes and junctions, may suffer mortality by becoming trapped against filtering devices, or may suffer thermal stress. Passage through hydroelectric turbines is known to cause fish mortality; however, the degree of mortality depends on the species and life stage, as well as the turbine. For instance, some facilities may employ, now or in the future, turbine designs that improve fish survival, some of which can achieve fish survival rates up to 85%. *See* AR-14. Moreover, federal, state, and tribal agencies would have had an opportunity to review the potential impacts of entrainment mortality from the turbines and recommend appropriate downstream passage requirements to reduce mortality during FERC licensing or review of license exemption applications. For these reasons, EPA expects there will be an environmental benefit to minimizing impingement at a cooling water intake located within or after the penstock. Furthermore, EPA expects that hydroelectric facilities qualifying under this option in the HydroGP (very high penstock flowrate relative to cooling water) will have no additional costs, thereby rendering less significant any uncertainty in the magnitude of the benefit.

D.1.7.3 Section 4.2(c) – Physical Screen

Under the third BTA option, when cooling water is withdrawn directly from the source waterbody, the CWIS "must be equipped with a physical screen of sufficient mesh size to minimize the potential for adult and juvenile fish to become entrained. The through-screen velocity at the cooling water intake shall not exceed 0.5 fps." Proposed Permit § 4.2(c). This compliance option is inappropriate for hydroelectric facilities for many of the same reasons that the second compliance option is inappropriate. EPA has not evaluated whether this technology is feasible for hydroelectric facilities, or whether facilities could measure the actual velocity at the intake. It has not considered whether additional controls are needed given that impingement and entrainment is likely very low. Nor has it considered the costs and potential benefits of installing a "physical screen of sufficient mesh size" on the small pipes that are used by many hydroelectric facilities to take in cooling water. Indeed, if a facility was not required to install control measures or to implement mitigation measures during the licensing process, then the costs of complying with this option likely far exceed any environmental benefits.

In addition, this ambiguous standard provides EPA with too much discretion. The 2014 Rule defines the appropriate mesh size for physical screens that will meet BTA, but Region 1 does not define the size of the screens that it anticipates that facilities would install to comply with this option. Instead, the proposed measure calls for "sufficient" mesh size to "minimize" the "potential" for entrainment. These vague and subjective terms are unhelpful and do not provide a clear standard. Similarly, invoking the term "entrained," which normally refers to eggs, larvae, and very small fish, where impingement is more appropriate, further confuses the issue.

Response to Comment D.1.7.3

To minimize adverse impacts of a CWIS that withdraws water directly from the source water (rather than from within the penstock or dam structure), Part 4.2.c of the Draft HydroGP proposed to require a physical screen of sufficient mesh size to prevent entrainment of juvenile and adult fish. EPA further proposed that, to minimize impingement mortality, the through screen velocity not exceed 0.5 fps. The commenter asserts that EPA did not evaluate the feasibility of this technology or determine if facilities could measure the actual intake velocity, but offers no explanation as to why a CWIS located in a river, which does not have the same limitations as a location within the dam itself, could not be fitted with an intake screen or why intake velocity could not be measured or calculated. As explained above, the FERC Assessment indicates that not only are physical screens common and effective, such screens are often designed with a low approach velocity to minimize impingement. *See* AR-13. As an example, NOAA Fisheries recommends an approach velocity of 0.4 fps to protect newly emergent fry. *See* AR-14. The commenter further asserts that "if a facility was not required to install control measures or to implement mitigation measures during the licensing process, then the costs of complying with this option likely far exceed any environmental benefits." First, this option is specific to CWISs that are located in the river. While environmental reviews completed for hydroelectric projects typically consider the impacts resulting from construction, operation, and management of a project, UWAG has not provided any evidence that the FERC licensing process specifically considers the environmental impacts of impingement and entrainment at a cooling water intake in the river. In fact, in earlier comments, UWAG states that the licensing

process generally does not specifically consider cooling water use. Comment D.1.5.3. FERC's 1995 Assessment suggests that capital costs for a low-velocity screen at a dam range from $2,300 to $18,000 per cfs (in 2021 dollars). *See* AR-13. Nearly all facilities reporting cooling water discharges under the 2009 HydroGP report withdrawals of less than 1 cfs. EPA has evaluated many CWISs located in rivers and has determined that, at a minimum, a physical screen is a feasible technology to block adult and juvenile fish from entering an intake and becoming entrained in the cooling system. *See* AR-2.

The Draft HydroGP proposed that the screen be "of sufficient mesh size to minimize the potential for adult and juvenile fish to become entrained." By not specifying a single mesh size, EPA intended to provide Permittees with more flexibility under the General Permit to implement site-specific designs based on the resident fish and configuration of the CWIS. EPA acknowledges that this language could be interpreted as not providing a sufficiently clear standard. EPA reviewed a study of barrier nets deployed around the U.S., including many at hydroelectric facilities, to select an appropriate mesh size. Generally, most facilities designed barrier nets with a mesh size of 1/2-inch (12.7 mm) or less.[31] *See* AR-7. EPA determined that this size is generally sufficient to exclude juvenile and adult fish from entering the CWIS. In response to this comment, Region 1 has revised this BTA option in the Final HydroGP to specify a maximum mesh size of ½-inch square for barrier technology at intakes located in the source waterbody. However, intake velocity is dependent on the mesh size, screen dimensions, and flow of the intake. A facility that reduces the mesh size of an existing screen to meet this BTA could experience higher impingement mortality resulting from the increased intake velocity with a smaller mesh. Effective screens at hydroelectric facilities must strike a balance between a mesh size that excludes fish from the intake but does not result in such a high velocity that fish suffer impingement mortality. A lower intake velocity will ensure that fish prevented from becoming entrained in the system do not become impinged on the screen. Therefore, the Final HydroGP allows facilities that employ screens with a larger mesh size to demonstrate that the existing technology effectively minimizes impingement and entrapment through a combination of exclusion and low intake velocity.

D.1.7.4 Summary

Finally, section 4.2 requires that the permittee implement at least one of the measures discussed above within 90 days of receiving authorization under the proposed permit. But EPA has not evaluated or explained whether it is practical or feasible for a hydroelectric facility to implement

[31] The physical barrier at issue is meant to exclude larger organisms (i.e., not eggs and larvae) from entering the CWIS. EPA disagrees with the commenter's assertion that the use of the term "entrained" in reference to the mesh size "confuses the issue." The term entrainment means "any stage of fish and shellfish in the intake water flow entering and passing through a cooling water intake structure and into a cooling water system." 40 CFR § 125.92(h); *see also id.* § 125.83. The term entrapment means the condition where impingeable fish and shellfish lack the means to escape the cooling water intake. 40 CFR § 125.92(j). In § 316(b) rulemakings, EPA generally refers to entrainment of eggs and larvae because most intakes have, at a minimum, a physical barrier that prevents larger organisms from entering the intake. Depending on the configuration, an open intake in the river with no barrier could result in adult and juvenile fish entering the intake and either becoming entrained in the cooling system or entrapped in the intake. A physical screen with a mesh size small enough to prevent fish from entering the intake would eliminate both entrainment and entrapment of juvenile and adult fish, but could result in impingement if the velocity is high enough that fish are unable to swim away.

these measures within a 90-day time frame. The proposed timeline is likely too short for many facilities to safely implement the compliance measures. For example, to install a new physical or behavioral barrier or to reconstruct portions of the dam to satisfy velocity requirements would likely require more than 90 days to complete. This time frame also further demonstrates the arbitrary and capricious nature of EPA's proposed action. Region 10's proposed NPDES permit for hydroelectric facilities granted applicants double the amount of time – 180 days – to implement BTA requirements. EPA does not explain why Region 1 has cut the compliance deadline in half.

In sum, the availability and cost of these specific technologies and measures, the impact of those costs on affected facilities, and the environmental benefits of requirements based on those technologies are all important factors that EPA acknowledged it needed to consider before establishing its nationally applicable § 316(b) regulations for steam electric power and manufacturing plants. EPA also considered feasibility, cost, and benefits in establishing permit application requirements, including those dealing with biological monitoring and other data collection and analysis, reporting, and recordkeeping. Based on its consideration of those factors, EPA was unable to justify imposing any specific BTA technology requirements on facilities below the applicable flow threshold or any uniform application requirements for entrainment for facilities with "actual intake flows"[50] at or below 125 MGD. EPA also determined it could not set BTA for existing offshore oil and gas platforms, seafood processing vessels, or offshore liquefied natural gas import terminals because it could not "identif[y] a uniformly applicable and available technology for minimizing impingement and entrainment mortality at these facilities." 76 Fed. Reg. at 22,196. Likewise, Region 1 may not impose new § 316(b) requirements to hydroelectric facilities without evaluating whether the requirements are available for the facilities in question and, if so, their costs and benefits. In particular, the Region failed to consider the important social costs (*e.g.*, energy reliability) of imposing new requirements.

[50] Actual Intake Flow ("AIF") "means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the past three years. After October 14, 2019, Actual Intake Flow means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the previous five years. Actual intake flow is measured at a location within the cooling water intake structure that the Director deems appropriate. The calculation of actual intake flow includes days of zero flow. AIF does not include flows associated with emergency and fire suppression capacity." 40 C.F.R. § 125.92(a).

Response to Comment D.1.7.4

This and similar comments on the Draft HydroGP have raised concerns that the proposed 90-day time frame to meet the BTA requirements is not practical or feasible for all hydroelectric facilities. The comment advocates for a longer period, such as 180 days. EPA initially believed that 90 days would be sufficient because, as explained elsewhere in the responses, EPA did not expect that many facilities seeking HydroGP authorization would have to implement additional controls to meet one of the BTA options proposed in Part 4.2. In response to this and other comments, EPA has provided facilities with additional flexibilities to meet one of the available impingement options without needing to install additional controls. However, EPA expects that facilities may need time to evaluate the options and determine which is most practical for their

facility. In some cases, a facility may need additional time to review existing technologies and environmental review documents to determine if one of the options will be met. EPA has revised Part 4.2 of the HydroGP to provide permittees with 180 days to meet one of the available BTA options. In the event that a facility cannot comply with one of the BTA requirements within 180 days, EPA has discretion to provide additional time. Alternatively, the applicant may submit an application for an individual permit, which will involve a site-specific BTA determination.

Finally, the commenter asserts that EPA cannot include CWIS-related provisions in the HydroGP, because, in the commenter's view, EPA has not evaluated the feasibility, cost, and benefits of the provisions. The argument is misplaced to the extent it relies on the cited national rulemakings. The HydroGP is a general permit, not a national rulemaking, and as such is not universally applicable.[32] In any event, EPA evaluated feasibility, costs, and benefits and based the BTA requirements in the Draft Permit on the best information available at the time and has supplemented that with information considered in response to public comments. In particular, EPA notes that there have been many reviews and studies on technologies for fish protection at water diversions that confirm that a suite of technologies to minimize adverse environmental impacts are feasible and available at hydroelectric facilities. *See* AR-5, AR-8, AR-10, AR-14; *see also* Response to Comment D.1.7; Comment D.1.5.3 ("FERC frequently addresses the issue of fish impingement and entrainment by requiring licensees to screen their intakes to prevent or minimize fish from entering the penstock, which can eliminate or reduce the possibility of impingement or entrainment during the diversion of water from the penstock for cooling purposes."). EPA has revised the BTA requirements in the Final HydroGP to enable Permittees to take advantage of the broad suite of technologies that may be employed for fish protection. As a result, in most cases, facilities are expected to meet one of these options without any additional controls. For example, facilities that already operate fish passage technologies (such as louvers or spillways) or a low through-screen velocity will meet the BTA without any additional controls by Permittees. Moreover, the HydroGP provides several options for facilities to satisfy the requirements of § 316(b) for impingement; not every option must be available to each facility. EPA has added a fourth option in Part 4.2 that allows facilities to demonstrate, based on site-specific aspects of the location, design, construction, and capacity of a cooling water intake, that use of existing technologies minimizes impingement mortality (e.g., cooling water volume relative to the volume of water through a penstock or water reuse). At most, EPA expects that a facility with an open intake in the source water may have to install a physical barrier to exclude larger fish from entering the intake. Based on available information, EPA expects that a stationary, coarse mesh barrier is available to most facilities for a reasonable cost. *See* AR-7, AR-13. In addition, for facilities already employing methods that minimize passage of aquatic life through the turbines, including pursuant to environmental review by FERC and other federal or state agencies, *see* Fact Sheet at 25-26, the additional cost may be zero, since such measures

[32] Further, EPA does not agree that it was "unable to justify" in the 2014 Final Rule uniform application requirements for facilities with actual intake flows ("AIF") less than 125 MGD. *See* 40 CFR § 122.21(r). As to the comment that EPA was "unable to justify imposing any specific BTA technology requirements on facilities below the applicable flow threshold," EPA notes that the comment provides no support for this assertion. The 2014 Final Rule makes clear that facilities below 2 MGD (the applicability threshold of the Final Rule) are subject to permit conditions implementing CWA section 316(b), developed on a case-by-case basis using best professional judgment. 40 CFR 125.90(b). Moreover, the 2014 Final Rule "is not intended to constrain permit writers at the Federal, State, or Tribal level, from addressing" cooling water intake structures at facilities that are below the 2 MGD applicability threshold in the rule. 78 Fed. Reg. at 48,306.

may already reduce impingement and entrainment associated with cooling water withdrawals.[33] Moreover, FERC's conclusions in many cases that employing louvers or other methods to direct fish away from the penstock or to employ screens and/or to lower velocities at intakes directly from the river reduces injury and mortality to aquatic organisms provide support for the conclusions that such techniques are available and that minimizing exposure of organisms to the cooling water intake has a benefit.

In addition, while limited information exists specific to the impacts of CWISs at hydroelectric facilities, EPA concludes that the available information supports the conclusion that CWISs at hydroelectric facilities can result in adverse environmental impact. As referenced throughout this response to comments, EPA has traditionally considered two primary adverse environmental impacts of cooling water intakes: entrainment (in which organisms are drawn through the cooling system) and impingement (in which organisms are trapped against the screening devices used to prevent debris or other material from entering the cooling system). *See, e.g.*, EPA 1977 Draft Guidance for Evaluating the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment (AR-20); 40 CFR § 125.94(c), (d). In addition, adverse impacts can result from the operation of multiple intake structures along a single waterbody. 79 Fed. Reg. at 48,321. EPA has noted that "[a]dverse environmental impact occurs whenever there will be entrainment or impingement damage as a result of the operation of a specific cooling water intake structure." AR-20 at 11; *see also* 79 Fed. Reg. at 48,355 ("[A]ny facility at any flow may have an adverse environmental impact."). EPA has also observed that:

> The effects of CWIS on aquatic habitats and biota in the waterbody do not occur in isolation from other ongoing physical, chemical, and biological stressors. Anthropogenic stressors may include: Degraded water and sediment quality, low dissolved oxygen (DO) levels, eutrophication, fishing, channel or shoreline (habitat) modification (intake structure and other flood or storm controls), hydrologic regime changes and invasive species.

79 Fed. Reg. at 48,318. Some of these types of anthropogenic stressors may be directly related to the presence of a hydroelectric dam.

Impingement and entrainment data for cooling water intakes at hydroelectric facilities are not available, and obtaining data is complicated by the unique challenges of monitoring intakes at hydroelectric facilities. As the commenter points out, an intake in the penstock or scroll case may not be accessible or may present dangerous conditions for facility staff. *See* Comment D.1.6. However, it is reasonable to expect that the withdrawal of cooling water at hydroelectric facilities can result in adverse impacts from the entrainment of aquatic organisms through the cooling system or the impingement of organisms at screens designed to prevent debris from entering the system. More specifically, cooling water use at these facilities can create the conditions for impingement mortality and entrainment that occur at other industrial facilities by the same mechanism—i.e., the withdrawal and use of water to absorb waste heat—that result in direct losses of aquatic organisms and, in some cases, ancillary effects such as impacts to population size, age distribution, predator-prey relationships, ecological niches, and food webs.

[33] The commenter appears to agree. *See* Comment D.1.5.3.

79 Fed. Reg. at 48,319-21. Entrained organisms suffer impacts from hydraulic effects of pressure changes, sheer stress, thermal shock, or exposure to chemicals such as chlorine. *See* 65 Fed. Reg. 49,072. Impinged organisms suffer starvation, exhaustion, asphyxiation, and physical stress from being trapped against the screens, all of which may result in mortality. *Id*. While the commenter asserts that the way this withdrawal velocity is created at hydroelectric facilities compared to other industrial users of cooling water (i.e., gravity-induced versus pump-induced) somehow negates the possibility of adverse impact, the commenter does not explain how any such difference would actually function to eliminate potential loss of aquatic organisms that are drawn against an intake screen or into a cooling water system. Furthermore, some of the swim studies used to establish 0.5 fps as a threshold below which most fish can avoid being impinged were performed at hydroelectric facilities, indicating that the means by which the cooing water is withdrawn does not by itself determine the impacts. Moreover, the commenter apparently concedes that at least some hydroelectric facilities do indeed employ pumps to withdraw cooling water. *See* Comment D.1.7.2. Furthermore, a CWIS at a hydroelectric facility will not be the only anthropogenic stressor on resident or migratory aquatic organisms.

In addition, the comment that impingement and entrainment do not exist at hydroelectric facilities does not convince EPA to abandon its conclusion in the HydroGP that CWISs at hydroelectric facilities can result in adverse environmental impact. EPA recognizes that the facilities in Massachusetts and New Hampshire regulated under the HydroGP are for the most part smaller than those regulated under the 2014 Final Rule and, therefore, are expected to have lower levels of adverse impact. But EPA regulations specifically provide that facilities under the threshold applicable in the Rule (2 MGD) must still satisfy § 316(b), 40 CFR § 125.90(b), and EPA has previously declined to find that CWISs at facilities under this threshold have no adverse environmental impact, AR-21 at 63. Furthermore, the comment is not supported by any reference to specific reports or data but appears to be anecdotal. Even if true in the anecdotal example, it is not clear from the comment whether such a case of no impingement and entrainment should be attributable to all hydroelectric facilities or could be influenced by measures already in place at that particular facility, perhaps even as a result of FERC or other agency requirements.

While Region 1 acknowledges uncertainty as to the level of impact caused by CWISs at hydroelectric facilities, we do not view it as so profound as to preclude any reasoned judgment. *Miami-Dade County v. EPA*, 529 F.3d 1049, 1065 (11th Cir. 2008); *see also Ethyl Corp. v. EPA*, 541 F.2d 1, 28 (D.C.Cir.1976) (en banc) ("[R]ecognizing ... the developing nature of [the field].... [t]he [EPA] Administrator may apply his expertise to draw conclusions from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like."). Moreover, EPA is obligated to exercise its scientific expertise and apply its technical judgment based on the information it has at the time of permit reissuance, which under the Act is called for at regular intervals not to exceed five years. *See Upper Blackstone*, 690 F.3d 9, 22 (1st Cir. 2012) ("[N]either the CWA nor EPA regulations permit the EPA to delay issuance of a new permit indefinitely until better science can be developed, even where there is some uncertainty in the existing data."). The available information indicates that cooling water use at hydroelectric facilities can result in adverse environmental impact, and EPA has established in the HydroGP a set of reasonable conditions related to that potential impact. Further, EPA views the lack of certainty regarding the level of impacts of CWISs at the hydroelectric facilities

eligible for coverage under this HydroGP as acceptable in this situation for the additional reason that most facilities will not have to incur any significant cost. Lastly, EPA reiterates that this is a general permit—if a facility concludes that none of the 316(b)-related options are available, that they are too costly, or that their benefits do not warrant their costs, that facility is not forced to attain coverage under the general permit. It may ask EPA to perform an individualized BTA assessment in the context of an individual permit and supply EPA with the necessary information to conduct that assessment. *See* 40 CFR § 122.28(b)(3).

D.1.8 Section 4.3 – Additional Information for Site-Specific BTA Requirements

The Proposed Permit requires the permittee to submit a number of site-specific reports describing intake volume and water withdrawal information. Based on this site-specific information, EPA may impose additional requirements using BPJ. *See* Fact Sheet § 4.3. UWAG provides the following specific comments on the reporting requirements:

- EPA requests maximum monthly average intake data during the previous five years, but these data may not be collected at hydroelectric cooling water intakes because the intake volume is so small.
- EPA requests a calculation of intake velocity at the CWIS in feet per second, but, as discussed above, intake velocity may be difficult to determine and would require the facility to make a number of assumptions to produce such a calculation.
- EPA requests a characterization of the habitat upstream of the dam, including descriptions of resident and migratory fish species. To fulfill this requirement the applicant may include the biological characterization of the habitat completed during FERC licensing. The fact that EPA is suggesting that it will rely on data collected during the licensing process to assess the environment demonstrates, again, that this process is duplicative and will provide little, if any, environmental benefit.

Response to Comment D.1.8

EPA intended that the additional information required in Part 4.3 of the Draft HydroGP would be used to determine if certain aspects of the location, design, capacity, and operation of a CWIS at each facility would be considered the BTA or a component of the BTA for entrainment. *See* Fact Sheet at 27. In response to this and other comments, EPA has reviewed Part 4.3 and recognizes that, as proposed, it did not clearly identify the BTA and could imply that additional controls would be required on a site-specific basis after the NOI is submitted. This was not EPA's intent. Consequently, EPA eliminated Part 4.3 in the Final HydroGP and developed new entrainment requirements at Part 4.2.a.

When evaluating adverse environmental impacts under Section 316(b), EPA generally considers that entrainment is proportional to the volume of the water withdrawn and that a low intake capacity is one of the most effective means of reducing entrainment. *See* 66 Fed. Reg. 65,273; 79 Fed. Reg. 48,331. In previous rulemakings, EPA has considered that withdrawing a low percentage of the waterbody flow or volume for cooling could be a factor that informs the degree of potential entrainment since smaller volumes may affect fewer fish. *See* AR-2 at 5-16, 66 Fed. Reg. 65,276-77. Unlike steam electric turbines that require large volumes of cooling water to absorb waste heat generated in the steam loop, hydroelectric facilities use relatively low volumes

of cooling water, in large part because they are not condensing steam, but rather are cooling equipment such as turbine bearings, generator bearings, and gearboxes. A review of available DMR data and flow diagrams for Permittees under the 2009 HydroGP confirms that the majority of facilities withdraw less than 100,000 gallons per day. Cooling water withdrawals at these facilities are typically less than 0.1% of the total water diverted through the penstock, even at minimum turbine capacity. In other words, a cooling water intake located within a penstock would divert a very small percentage of water for cooling and, as a result, would entrain a relatively small number of organisms. *See also* AR-33 at 3-4. In addition, many hydroelectric facilities are located on rivers with higher mean annual and low flows. For example, of the 31 facilities covered under the 2009 HydroGP in Massachusetts and New Hampshire that reported withdrawing cooling water, 19 were located on the Androscoggin, Connecticut, Deerfield, and Merrimack Rivers. The cooling water withdrawals at hydroelectric facilities in Massachusetts and New Hampshire, which are typically 1 cfs or less, are minimal relative to the mean annual source flow and low flow of the source waters (e.g., typically less than 0.01% of the 7Q10 low flow). *See also id.* at 4. Furthermore, EPA was not able to identify any available technologies for further reducing entrainment to the smallest amount reasonably possible.[34] For instance, EPA is not aware of any hydroelectric facilities that currently use certain technologies used by other industries to minimize entrainment, such as closed-cycle cooling or wedgewire screens. In addition, even if technically feasible at a given facility, these technologies could be fairly costly and may not result in significant reductions, given the expectation of already low entrainment at hydroelectric facilities in Massachusetts and New Hampshire covered under the 2009 HydroGP.

EPA has also considered water reuse to be a flow reduction technology that minimizes entrainment. In the New Facilities Rule, EPA noted that it "considers the withdrawal of water for use and reuse as both process and cooling water analogous to the reduction of cooling water intake flows achieved through the use of a recirculating cooling water system." 66 Fed. Reg. at 65,278. Under this rule, a new facility can meet the requirement in § 125.84(b) to reduce intake flow to a level commensurate with that which can be attained by closed-cycle cooling "by reusing or recycling water withdrawn for cooling purposes in subsequent industrial processes." 40 CFR § 125.86(b)(1)(ii); *see also* 66 Fed. Reg. at 65,308, 65,310. In the Existing Facilities Rule, EPA stated that "water reuse (defined as using water for multiple processes) can reduce the volume of water needed for cooling, process, or other uses. For example, a facility might withdraw water for non-contact cooling water and then reuse the heated effluent as part of an industrial process. In effect, the facility has eliminated the need to withdraw additional water for the latter process." 79 Fed. Reg. at 48,332-33; *see also id.* at 48,331. A facility applying for coverage under the HydroGP can demonstrate that it minimizes entrainment by using cooling water for multiple purposes.

[34] In addition, while studies of impacts of turbine passage on early life stages of fish are not common, a review by Cada suggests that mortality of fish eggs and larvae passing through turbines may be relatively low. AR-22. EPA found no studies of entrainment into the cooling system at hydroelectric dams, however, heat exchangers and other systems commonly used for equipment cooling may result in pressure changes, physical stress from filters or in small diameter pipes and junctions, and temperature changes that could result in more mortality for early life stages relative to that experienced from passing through the turbines. Therefore, continuing to minimize cooling water withdrawals relative to the source water flow and turbine flows can effectively minimize entrainment mortality.

For all of these reasons, the BTA requirement in the HydroGP for entrainment is to minimize the withdrawal of cooling water.[35] Facilities will demonstrate compliance with this requirement by submitting information to confirm that cooling water volumes are low, comprise a relatively small percentage of the volume of water diverted through the penstock (e.g., 0.1% or less), and are a small percentage of the mean annual flow and 7Q10 low flow of the source waterbody. Based on the low volumes of water withdrawn for cooling (compared to the volume diverted through the penstock and/or to the mean annual and 7Q10 flow of the river), EPA expects that facilities applying for coverage under the HydroGP will satisfy § 316(b) without the need for additional controls for entrainment.[36] Facilities can also demonstrate compliance with the entrainment BTA by confirming that cooling water is reused for other purposes. Alternatively, a facility can apply for a more individualized assessment in an individual permit.

The comment raises concerns that hydroelectric facilities may not be collecting the basic cooling water information requested in the Draft HydroGP and refers to earlier comments in which the commenter states that it may be "impossible to measure" intake velocity at some facilities. The 2009 HydroGP required Permittees to report flow (in gpd) for non-contact and direct cooling water. In addition, many facilities estimated cooling water volumes in line diagrams submitted with NOIs for the 2009 HydroGP. For these reasons, EPA expects that applicants will be able to provide estimates of average and maximum cooling water withdrawals. As to the generalized concern that applicants will not be able to monitor intake velocity, the Draft HydroGP proposed that Permittees either monitor or calculate intake velocity. There is no requirement that Permittees monitor intake velocity, and EPA does not expect that a facility would monitor velocity if it is dangerous to do so. *See* Response to Comment D.1.7.2. However, because EPA has refined the entrainment BTA in the Final HydroGP to require only information necessary to confirm that cooling water flows are minimized relative to the flow through the penstock and/or the source waterbody flows, EPA eliminated the requirement to report intake velocity. Estimated intake velocity (calculated or monitored) is only required for facilities that demonstrate compliance with the impingement mortality BTA at Part 4.2.b.ii. Similarly, EPA has eliminated the requirement for all facilities to provide a characterization of habitat in the vicinity of the CWIS. Facilities that have completed a biological evaluation of the impacts from the dam may include such analyses to demonstrate how the adverse impacts from impingement are minimized but this information is not required for every facility.

D.1.9 Conclusion

In sum, EPA Region 1 should not apply CWA § 316(b) to hydropower facilities. Section 316(b) was intended by Congress to address CWIS at steam electric and similar facilities, not hydropower projects. Furthermore, EPA CWIS regulations do not call for application of § 316(b) to hydropower facilities, and those regulations were not developed with any

[35] Consistent with national rulemakings, EPA uses "minimize" to mean reduce to the smallest amount, extent, or degree reasonably possible. *See* 40 CFR § 125.83, 66 Fed. Reg. 65,275, 65,276.
[36] Proportional flow values are applicable for passive, floating organisms. While impingement may also be affected by reducing flow, *see, e.g.*, 66 Fed. Reg. 65273 ("Reducing the cooling water intake structure's capacity is one of the most effective means of reducing entrainment (and impingement)."), it can also be influenced by other factors, including fish behavior and swimming ability, sweeping flow, and low intake velocity.

consideration of doing so, making it highly inappropriate for Region 1 to seek to impose the regulations or elements of them on the facilities. As noted above, the FPA and CWA § 401 fully protect both water quality and fish and wildlife in the context of hydropower facilities. Therefore, Region 1 should remove any § 316(b)-related provisions from the Proposed Permit. UWAG appreciates the opportunity to comment on the Proposed Permit and provide factual information regarding operation of our members' hydroelectric facilities. No commenter, however, can make up for the lack of a comprehensive administrative record in the first instance that provides the Agency's evaluation of the availability and feasibility of potential technologies for hydroelectric facilities. We hope that EPA will pursue our recommendations, and we look forward to working with you to address these meaningful issues.

Response to Comment D.1.9

EPA explained in detail in the responses to comments above that § 316(b) is applicable to hydroelectric facilities. *See*, *e.g*., Responses to Comments D.1.1, D.1.2, and D.1.3. As such, the Final HydroGP retains BTA requirements for cooling water intake structures. As also explained earlier, EPA agrees that hydroelectric facilities are not subject to requirements under 40 CFR §§ 125.94 through 125.99 of the 2014 Final Rule. *See*, *e.g*., Responses to Comments D.1.1 and D.1.5. As a result, EPA has revised the Final HydroGP by eliminating the eligibility requirements at Part 3.3.a, which were based on applicability of the 2014 Final Rule.

The use of a CWIS creates the potential for adverse impact to aquatic organisms, including through impingement and entrainment. The CWA requires EPA, when issuing NPDES permits to facilities that employ CWISs, to include conditions to minimize entrainment and impingement. 33 U.S.C. § 1326(b). EPA determined, based on the available info, and as described earlier, *see* Response to Comment D.1.7.4, that adverse environmental impact from CWISs at hydroelectric facilities can potentially exist. The BTA requirements in Part 4.2 of the Final HydroGP have been revised to provide additional flexibility, reduce uncertainty, and allow additional time for compliance.

For entrainment, EPA considered the low volume of cooling water used at hydroelectric facilities covered by the 2009 HydroGP relative to the water diverted through the dam, the source waterbody 7Q10 low flow, and as compared to other power generating facilities. Moreover, EPA was not able to identify any available technologies for further reducing entrainment at these facilities. The BTA for entrainment in the Final HydroGP is, therefore, to continue to minimize cooling water withdrawals. Permittees will demonstrate compliance by confirming that the cooling water withdrawn is a small percentage (e.g., less than 0.1%) of minimum and maximum turbine capacity and source waterbody mean annual and 7Q10 flow. For impingement, EPA considered possible configurations of the CWIS and the methods or conditions that facilities may already employ that minimize the potential for impingement, including fish passage devices, intake velocities, and the relatively low volume of water withdrawn for cooling.

This and other comments point out that requirements established during licensing of hydropower projects, or during applications for exemptions from licensing, including those imposed in CWA § 401 certifications, may already protect fish. EPA agrees that requirements imposed by FERC or other agencies can reduce impingement impacts and recognized as much in the Fact Sheet. FS

at 25-26. Region 1 finds that cooling water intake structures at facilities that are subject to such requirements are likely having a low impact that is not reasonable in the context of § 316(b) to reduce further. EPA is not requiring the FERC-imposed technologies; rather, where they are in place, adverse impact from the cooling water intake structure is likely already low enough that further reduction under § 316(b) is not warranted. The Final HydroGP enables Permittees to demonstrate that existing exclusion, diversion, or guidance devices (including fish passage requirements imposed by federal or state agencies) already minimize impacts from impingement. For those facilities that do not have fish passage measures in place or do not currently employ devices for fish protection, the impact of the cooling water intake structure may still be low if cooling water withdrawals are very small compared to the turbine flow or river flow. In this case, the Final HydroGP enables facilities to demonstrate that the intake velocity minimizes impingement or, for intakes located within or after a penstock and which do not already employ diversion, exclusion, or guidance devices for fish passage, that the volume of cooling water withdrawn is a small percentage (e.g., less than 0.01%) of the water that flows through the turbines. If the facility does not have a low intake velocity or withdraw a comparatively low volume, an individual assessment (i.e., in an individual permit) may be necessary. EPA also considered that some facilities may withdraw cooling water from the source water body directly. EPA determined that these Permittees may comply with the BTA requirements for impingement mortality through a low intake velocity, a physical barrier (e.g., screen), or a combination of velocity and barrier. *See* Response to Comment D.1.7.3. Because this is a general permit, EPA has considered general cost and impact information in making this determination, but an individual facility may present information that the costs of such alterations greatly outweigh the expected benefits. Such an examination, however, is more appropriate in the context of an individual permit. Finally, EPA considered that another aspect of the location, design, construction, and capacity of the intake may minimize impingement mortality. For example, certain facilities may not meet one of the compliance options above but may have biological studies to demonstrate that impingement is nonetheless minimized. For this reason, the Final HydroGP offers an additional opportunity for facilities to demonstrate that the impacts of impingement are minimized. Finally, a facility may seek permit coverage via an individual permit instead. *See* 40 CFR § 122.28(b)(3).

EPA expects that most facilities will be able to comply with the BTA requirements for entrainment and impingement in the Final HydroGP without additional controls. *See* Responses to Comments D.1.7.1, 1.7.2, 1.8. A small number of facilities that withdraw cooling water from the source waterbody may need to implement a physical barrier, but EPA has determined that this technology is feasible for this CWIS configuration (i.e., for CWISs not located within or after the intake to the dam). *See* Response to Comment D.1.7.3. Thus, the GP is available to those facilities who currently satisfy, or can reasonably add, the described measures. Those who do not or cannot, should apply for an individual permit. As noted earlier, the Region encourages facilities with such concerns to contact the Region to determine whether a general or individual permit is the better option. Similarly, if a facility determines that all of the BTA compliance alternatives create actual conflicts with requirements under other federal or state authorities, the facility should discuss specific concerns with the Region.

D.2 Section 316(b) Requirements: Submitted by Brookfield Renewable (Kelly Maloney, Northeast Compliance Manager)

Brookfield Renewable contends that the interpretation of CWA § 316(b) to apply to hydroelectric generation facilities would be a significant expansion of EPA's regulatory jurisdiction and would duplicate other federal and state requirements specifically designed to address these environmental impacts. EPA has never provided notice or an opportunity for comment on the applicability of § 316(b) to hydroelectric facilities and the preamble to the 2014 § 316(b) Rule specifically states that it would not apply to hydropower facilities.

Under the Draft HYDROGP's best technology available (BTA) requirement, Brookfield Renewable would be required to implement at least one of the following three measures within 90 days of receiving authorization to discharge under the permit:

1. physical or behavioral barrier located at first intake encountered by fish on upstream-side of dam that directs fish toward a downstream passage that safely conveys fish over the dam (without being exposed to the CWIS);
2. if cooling water is withdrawn directly from the penstock, the velocity at the cooling water intake should not exceed 0.5 fps; or
3. if cooling water is withdrawn directly from the source waterbody, the intake must be equipped with a physical screen "of sufficient mesh size to minimize the potential for adult and juvenile fish to become entrained" and the through-screen velocity must not exceed 0.5 fps.

EPA Region 1 suggests that many hydroelectric facilities in Massachusetts and New Hampshire would be able to demonstrate compliance with Option #1 (divert fish away from intake using behavioral or physical barrier) because these facilities are typically subject to site-specific fish passage requirements through the FERC licensing process and/or through certification from the Low Impact Hydropower Institute (LIHI). Hydroelectric facilities at a sufficient distance upstream in the watershed are typically not within the ranges of migratory fish species and therefore not subject to fish passage requirements, whether imposed under FERC or LIHI. This is true of GLHA's assets on the Upper Androscoggin River and BSPC's project on the Deerfield River.

EPA Region 1 provides a general discussion on design and construction technologies for compliance with Options #2 and 3 (intake velocity sufficiently low or screening to allow most juvenile and adult fish to avoid becoming entrained). However, Region 1 cites the Phase I and 2014 § 316(b) Rules in the technology discussion which, as previously discussed, do not include analysis specific to hydroelectric facilities. Screening of cooling water intakes can be further complicated due to the location of the intake and the inability to clean these intakes regularly, as well as the ability to safely access the intake to make the necessary modifications in the first place.

Response to Comment D.2:

Comment D.2 raises issues substantially similar to those raised in comment D.1, above. EPA addresses comments on the applicability of § 316(b) generally and of the 2014 Final Rule specifically in

Responses to Comments D.1.1 through D.1.5, above. EPA addresses comments on the Draft HydroGP requirements for cooling water intakes in Responses to Comments D.1.7 and D.1.8.

EPA recognizes that not every hydroelectric facility is equipped with fish passage requirements and may not be able to comply with Option 1, above, as proposed in the Draft HydroGP. For this reason, the HydroGP offers several different compliance options to demonstrate that impingement is minimized. Facilities need meet only one of the options to comply with the requirements of the HydroGP. In response to comments on the Draft HydroGP, the requirements in Part 4.2 of the Final HydroGP have been revised to provide additional flexibility, reduce uncertainty, and allow additional time for compliance. In particular, EPA has considered whether additional controls to minimize impingement are warranted where a particular facility is not already subject to fish passage requirements based on recommendations of NOAA Fisheries, USFWS, or state or tribal agencies. Some facilities, such as those identified in the comment, are not located in areas with migratory fish that require means of traversing downstream past the dam. In these rivers, the behavior of resident fish (e.g., yellow perch, minnows, and sunfish) may help fish avoid the dam (and thus avoid becoming impinged) because these fish are not attracted to the intake flow in the same way that a migratory species would.[37] Federal, state, and tribal agencies would be provided opportunity to comment on and recommend fish passage during FERC licensing or review of the FERC exemption application.[38] Moreover, the risk of impingement is potentially minimized where the cooling water intake located in the penstock or the tailrace as a result of the low volume of cooling water withdrawn is a fraction of the water that is diverted through the dam.[39]

EPA revised the HydroGP to enable facilities with cooling water intakes located in the penstock, scroll case, or tailrace of the dam, and which are not already subject to fish passage requirements or employ other technologies to minimize impingement and entrainment at the dam, to demonstrate compliance with the impingement BTA by withdrawing less than 0.1% of the volume of water diverted through the turbines for cooling purposes. Finally, this is a general permit—if a facility concludes that none of the 316(b)-related options are available, that facility is not forced to secure coverage under the general permit. It may ask EPA to perform an individualized BTA assessment in the context of an individual permit and supply EPA with the necessary information to conduct that assessment. *See* 40 CFR § 122.28(b)(3).

[37] EPA focuses here on the impacts of individual mortality as a result of passing through the turbine and being exposed to the cooling water intake. EPA recognizes that fish passage may benefit resident fish populations in addition to migratory species. *See* AR-14. Mitigating impacts for passage of resident species is a site- and species-specific question tied to the needs of target fish populations that may be addressed under section 18 of the FPA, for instance, during FERC licensing or review of license exemptions.

[38] As an example, the 2019 Environmental Assessment for the Bear Swamp Project (AR-17) indicates that there are no migratory species in the impoundments upstream of the project. The applicant did not propose any measures to mitigate fish entrainment mortality, nor did any stakeholders file comments or recommendations to reduce project effects on fish entrainment. Massachusetts Division of Fish and Wildlife, Trout Unlimited, and Connecticut River Conservancy recommended other flow measures to mitigate impacts on wildlife habitat, including trout habitat, downstream of the project but did not identify entrainment mortality as a concern for the project.

[39] Cooling water withdrawals at the four GHLA projects on the Androscoggin River as a percentage of the minimum turbine inflows range from 0.001% to 0.009%.

D.3 316(b) Requirements: Submitted by the National Hydropower Association (Jeffrey Leahey, Deputy Executive Director)

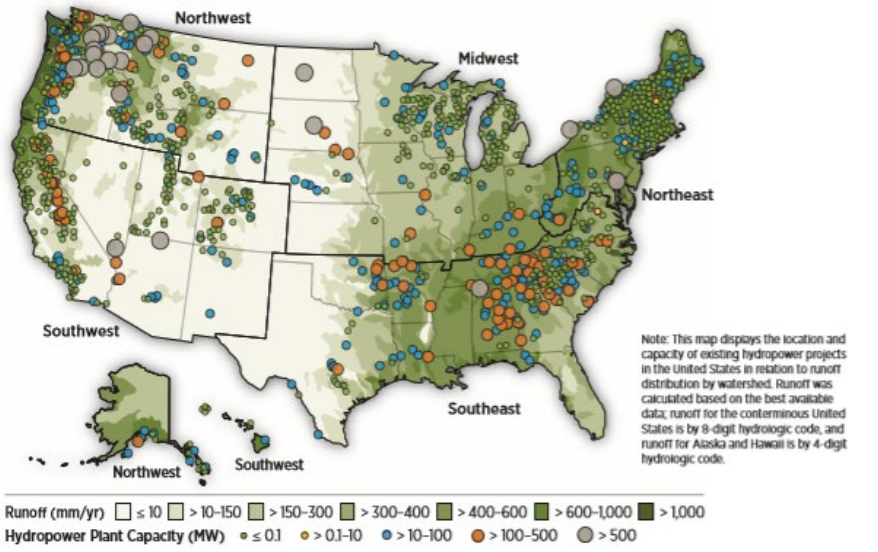
On behalf of our members in Massachusetts and New Hampshire, NHA[2] raises significant concerns regarding Region 1's proposal to subject hydroelectric facilities in these jurisdictions to the requirements of Clean Water Act (CWA) § 316(b), 33 U.S.C. § 1326(b), and EPA's 2014 Final Rule to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities, 79 Fed. Reg. 48,300 (Aug. 15, 2014) (2014 Rule or Existing Facilities Rule) and believes that the § 316 (b)-related provisions should be withdrawn.

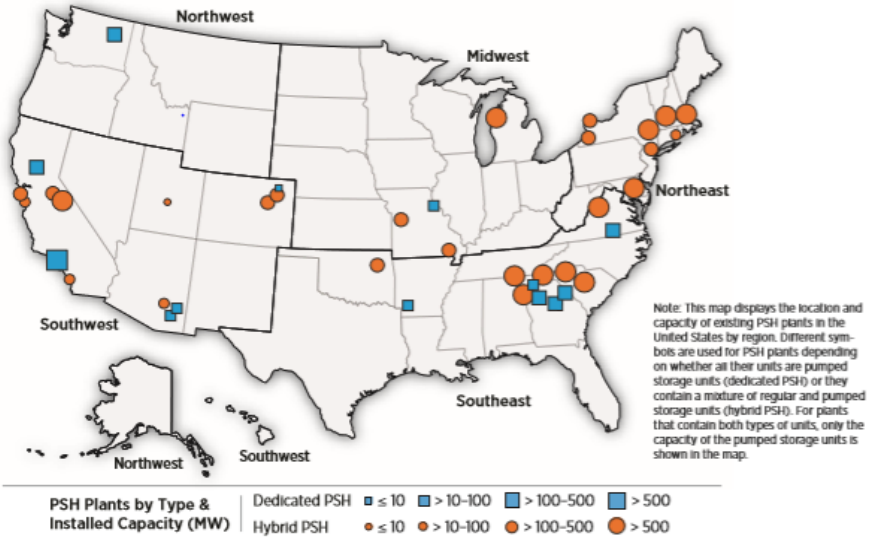
In addition to the summary response on the § 316(b) issues below, NHA is including as an attachment, the joint comments filed with the Utility Water Act Group (UWAG) on Region 10's similar proposal for hydroelectric facilities in the State of Idaho. NHA also directs Region 1 to the further analysis by UWAG in its comments on the Region 1 proposal.

Finally, NHA is aware that several of our member companies are also filing comments on the proposal. We direct EPA Region 1 to those filings with regard to the potential impacts on projects of both the § 316(b) requirements and non-316(b) requirements (such as those on pH range limitations and total suspended solids monitoring) included in the proposal.

NHA believes it is inappropriate to apply § 316(b) to hydroelectric facilities. To begin, when EPA proposed the underlying existing facility rule in 2011, it stated explicitly that withdrawals from hydroelectric facilities were not addressed in its Existing Facilities Rule. 76 Fed. Reg. 22,174, 22,190 (Apr. 20, 2011). **["hydro-electric plant withdrawals for electricity generation are not cooling water uses and are not addressed by today's proposal**"]. Emphasis added.

Because EPA viewed hydroelectric facilities as excluded, and the hydroelectric industry relied upon this statement, the agency did not solicit or collect any information on hydroelectric facilities. Further, at no point during EPA's long history of implementing § 316(b) have EPA's regulatory actions addressed or evaluated the applicability of CWA § 316(b) to hydroelectric facilities. To do so now would be a major expansion of the regulatory reach of this policy, potentially encompassing the approximately 2200 conventional hydropower and pumped storage[3] plants located across the country. See figure below.[4]





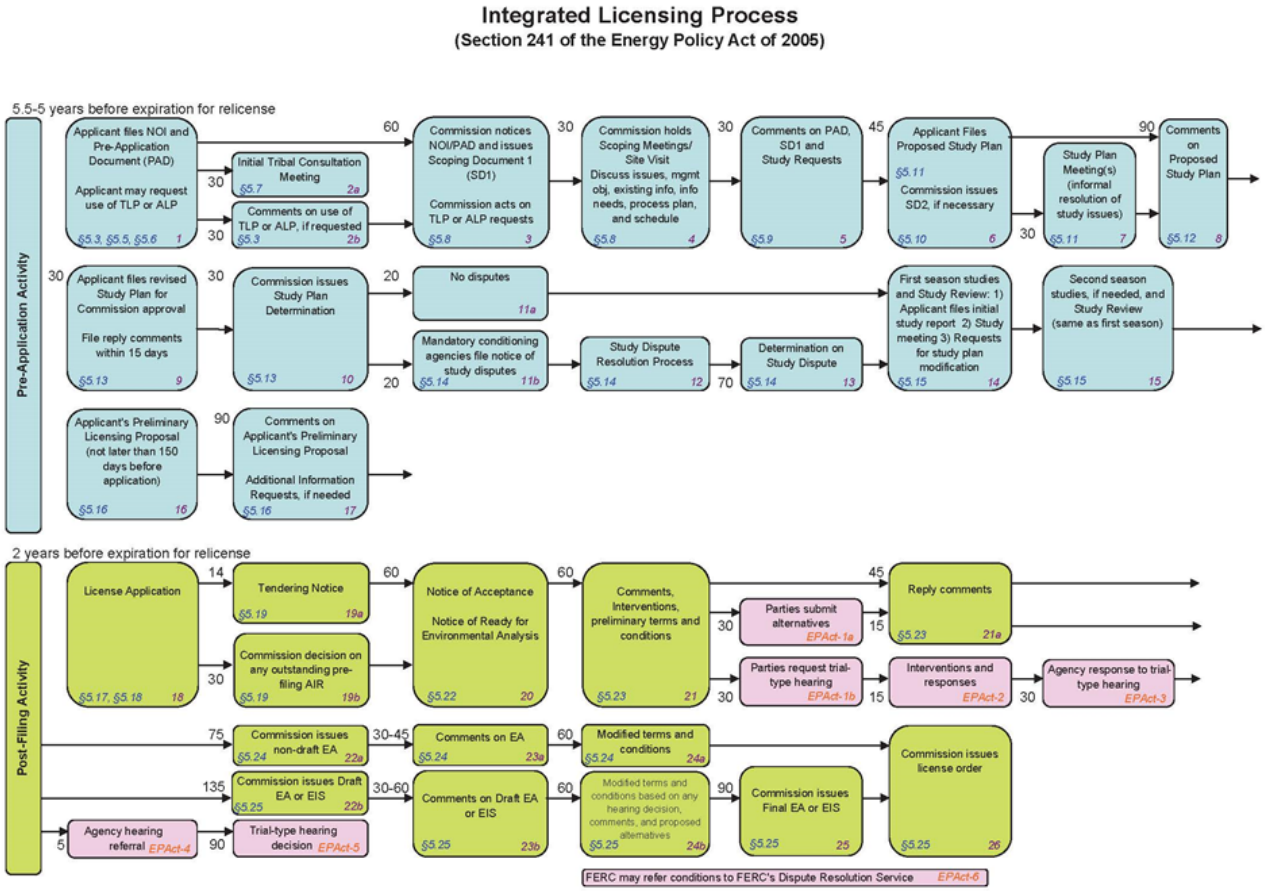
Source: Uria-Martínez et al. 2015[2]

Figure 2-6. Map of facilities in the existing U.S. hydropower fleet: conventional hydropower (top) and PSH (bottom)

Beyond the procedural deficiencies with respect to hydroelectric facilities in the development of the Existing Facilities Rule, NHA also highlights the potential conflict this proposal would have with other statutory authorities under which some of the issues proposed are already addressed, specifically the comprehensive hydropower licensing process.

Hydropower has the longest, most complex regulatory approval timeline of any of the renewable energy technologies, with some projects taking 10 years or longer. This includes both new project authorization

and existing project relicensing. The chart below outlines the integrated licensing process (ILP), the default process, of several, for authorizing hydropower projects in the United States.[5]



*Section 241 of the Energy Policy Act of 2005 in pink.

A multitude of federal and state agencies, as well as the public and other stakeholders, participate in the process. Also, additional authorizations such as those required by federal dam owners if building on their infrastructure, are not included in the chart above.

The following is a list from the Federal Energy Regulatory Commission (FERC) of pertinent federal laws related to non-federal hydropower project development. They include:

- Federal Power Act (FPA)
- Rivers and Harbors Act of 1899
- U.S. Bureau of Reclamation Statutes
- National Environmental Policy Act (NEPA)
- Clean Water Act (CWA)
- Endangered Species Act (ESA)
- Fish and Wildlife Coordination Act

- National Historic Preservation Act
- Coastal Zone Management Act
- Magnuson-Stevens Fisheries Conservation Act
- Marine Mammal Protection Act
- Wild and Scenic Rivers Act
- Pacific Northwest Power Planning and Conservation Act

This list does not include other state or local statutes or permits that may also be required in the course of developing a project.

Including § 316(b) requirements for hydroelectric facilities would duplicate (and potentially conflict) with other federal and state authorities carried out as part of the extensive FERC licensing process, through which measures to minimize environmental impacts of hydropower operations are exhaustively considered, including impingement and entrainment issues.

Finally, hydroelectric facilities do not have CWIS in the conventional industrial context upon which the § 316(b) regulations were developed, which involve use of pumps to actively withdraw cooling water from surface waters of the U.S. This concept of CWIS is inappropriate for hydroelectric facilities, which are diversion structures by design - impounding water and transporting/passing water along a contiguous waterway to turn turbines used to generate electricity.

There are numerous different configurations for hydroelectric facilities and, in particular, their pipes and structures that divert cooling water. Given the wide range of facility configurations and water diversion processes for cooling, the technologies that EPA found to be the best available technologies and sampling requirements for steam electric power plants and manufacturing plants are not necessarily appropriate or practical for hydroelectric facilities.

In fact, it may be particularly problematic for some hydroelectric facilities to feasibly comply with the requirements outlined in the proposed permit. For example, one of the compliance methods provided for in the proposed permit is to reduce velocity at the intake. But, for many hydroelectric facilities, it would be impossible to measure the velocity at the intake because the magnitude and force of the water going through the penstock is so great that no monitoring equipment could be located near the intake pipe or structure.

Moreover, even if some facilities could meet some of those requirements, the costs would likely far exceed the anticipated environmental benefits. This is particularly true for those cases where, relative to the total water transported through the facility, very small amounts of water (often, less than 1 percent) is diverted for cooling.

Water is a public resource and NHA and the hydropower industry recognize the necessity for, and value of, thorough review of project applications, which may include those issues Region 1 is looking to address in this proposal. However, NHA believes Section 316(b) was intended by Congress to address CWIS at steam electric and similar facilities, not hydropower projects. The appropriate regulatory venue for addressing the issues outlined in the proposal is through the comprehensive hydropower licensing process, not through a wholesale expansion of the Existing Facilities Rule for which there was no outreach or dialogue with the hydropower industry on its applicability or technical requirements.

Once again, NHA appreciates the opportunity to submit these comments on the proposal and also submit for your consideration the comments filed on Region 10's proposal, which provide further background and details on the association's positions on the applicability and feasibility of the § 316(b) requirements.

We look forward to further engagement with you on this proposal and offer the association as a resource as you address concerns regarding both the § 316(b) and non-§ 316(b) requirements.

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[2] The National Hydropower Association is the national non-profit trade association dedicated to promoting the growth of clean, affordable, U.S. hydropower. It seeks to secure hydropower's place as a renewable and reliable energy source that serves national environmental, energy, and economic policy objectives. NHA's membership includes more than 240 companies, from Fortune 500 corporations to family-owned small businesses. NHA members include public and investor-owned utilities, independent power producers, developers, equipment manufacturers and other service providers.

[3] NHA notes that in part 3.3 of the Draft General permit, Limitation on Coverage bullet l, states that discharges from pumped storage facilities are excluded from coverage. However, this determination is made on a case-by-case. Region 1 should provide examples as part of their fact sheet of what conditions will make a pumped storage facility eligible or ineligible.

[4] U.S. Department of Energy Hydropower Vision Report: A New Chapter for America's 1st Renewable Electricity Resource, Chapter 2, P. 79, Figure 2.6 (2016). https://www.energy.gov/sites/prod/files/2018/02/f49/Hydropower-Vision-021518.pdf

[5] More information on hydropower licensing, including the ILP and other licensing processes can be found at https://ferc.gov/industries/hydropower/gen-info/licensing.asp?csrt=4417200556526671982.

Response to Comment D.3:

Comment D.3 raises issues substantially similar to those raised in comment D.1, above. EPA addresses comments on the applicability of § 316(b) generally and of the 2014 Final Rule specifically in Responses to Comments D.1.1 through D.1.5, above. EPA has determined that hydroelectric facilities are not subject to the requirements at 40 CFR §125 Subpart J, with the exception of § 125.90(b) requiring that cooling water intake structures not subject to the Rule must meet requirements under § 316(b) on a case-by-case, best professional judgment (BPJ) basis. The eligibility requirements at Part 3.3.a, which were based on applicability of the 2014 Final Rule, are eliminated from the Final HydroGP. In addition, EPA has removed the potential in ineligibility for pumped storage facilities that was originally specified in Part 3.3.l of the Draft Permit. *See* Response to Comment C.1.

EPA addresses comments on the Draft HydroGP requirements for cooling water intakes in Responses to Comments D.1.7 and D.1.8. In response to comments on the Draft HydroGP, the requirements in Part 4.2 of the Final HydroGP have been revised to provide additional flexibility, reduce uncertainty, and allow additional time for compliance. Finally, the comment references joint comments submitted by the commenter and the Utility Water Act Group (UWAG) on EPA Region 10's Draft General Permit for hydroelectric facilities in the State of Idaho. EPA notes that this draft general permit was issued by EPA Region 10. Since notice of that draft general permit the NPDES program was delegated to the State of Idaho. At this time, the draft general permit has not been finalized and no new draft permit has been issued by the State.

D.4 Part 4.2 General BTA Requirements: Submitted by First Light Power Resources (Patty Goclowski, Environmental, Health, and Safety Manager)

Part 4.2 indicates that the permitted facility must implement at least one of the three options presented in order to meet the requirements for CWA 316(b). The objective of the rule is to minimize the environmental impact on aquatic life due to impingement and entrapment in cooling water intakes structures.

The Federal Energy Regulatory Commission (FERC), as part of its hydroelectric facilities licensing application process, requires studies on the effects of aquatic life through the passage of hydro facility equipment. FLPR has conducted several of these studies as part of the relicensing process for its FERC Licenses No. 18. Refer to attachment No.3 for the executive summaries of each the studies. The complete studies can be found at the FLPR Relicensing Website (http://www.northfieldrelicensing.com/Pages/default.aspx). These studies are:

- 3.3.2 Upstream and Downstream Adult Shad Fish Passage Study
- 3.3.3 Downstream Passage of Juvenile Shad
- 3.3.5 Downstream Passage of American Eel
- 3.3.7 Entrainment Study
- 3.3.9 Hydraulic modeling of the Northfield Tailrace under pumping and generating
- 3.3.14 Aquatic Habitat Mapping of the Turners Falls Impoundment
- 3.3.15 Sea Lamprey Spawning

All of the agencies on the service list for the FERC relicensing project have reviewed the above-listed studies. The agencies' comments on the studies provide the basis for discussion with FERC on the appropriate methods to address impingement and entrapment of aquatic life. Accordingly, FLPR recommends that EPA Region 1 consider allowing compliance with the CWA 316(b) requirements to be based on the conclusions reached through the FERC relicensing process.

Response to Comment D.4:

EPA explained in Responses to Comments D.1.5.3 and D.1.7 that proposed requirements to comply with § 316(b) are intended to leverage any methods or operational measures that hydroelectric facilities already take to protect fish, including those established through Federal Energy Regulatory Commission's (FERC) licensing process and/or the state CWA § 401 water quality certification process to address impingement and entrainment of aquatic life. The Fact Sheet (p. 25) states:

> Many of the hydroelectric facilities seeking authorization to discharge under the HYDROGP are subject to operating requirements by the Federal Energy Regulatory Commission (FERC). FERC may establish requirements for operational flows and fish passage, often through consultation with the United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS). These requirements may also serve to minimize the potential for impingement and entrainment of aquatic life in the CWIS.

In particular, the HydroGP allows facilities to explain how certain requirements of its FERC license are applicable to minimizing the adverse environmental impacts of impingement and entrainment, including any requirements informed by the various studies required during the relicensing process. For instance, the BTA requirements at Part 4.2.b of the Final HydroGP enable a Permittee to comply with the impingement mortality BTA by demonstrating that an existing technology or combination of technologies (such as that mandated in a FERC license for fish protection) is employed to effectively transport fish past the intake in a manner that minimizes the likelihood of impingement or entrainment. This BTA option does not require a facility to install a new technology but provides flexibility to leverage existing technologies that can also satisfy § 316(b), such as technologies that FirstLight Power Resources may employ and/or has studied as part of its FERC relicensing. In response to comments on the Draft HydroGP, the requirements in Part 4.2 of the Final HydroGP have been revised to provide additional flexibility, reduce uncertainty, and allow additional time for compliance. *See* Responses to Comments in D.1.7 and D.1.9.

D.5 Section 316(b) Submissions: Submitted by Brookfield Renewable (Kelly Maloney, Northeast Compliance Manager)

In addition, under the Draft HYDROGP, the permittee must submit in its Notice of Intent (NOI), due within 60 days of issuance of the Final HYDROGP, a number of site-specific reports describing intake volume and water withdrawal information that is burdensome given the limited time to submittal. Based on this site-specific information, EPA may impose additional requirements using best professional judgment which lends additional uncertainty to the permitting process. In summary, Brookfield Renewable does not support the application of § 316(b) Rule to the facilities covered by the Draft HYDROGP.

Response to Comment D.5:

Comment D.5 raises issues substantially similar to those raised in comment D.1, above. In responses to comments D.1.1 through D.1.5, above, EPA explains that CWA § 316(b) is applicable to hydroelectric facilities and that EPA must impose conditions on the cooling water intake structure to comply with § 316(b) on a case-by-case, BPJ basis. Responses to Comments D.1.6 and D.1.7 (and associated responses) address specific issues with the BPJ-based, BTA requirements in the Final HydroGP and explain that, in most cases, the existing location, design, and capacity of the intake structure will satisfy § 316(b) without imposing additional requirements. Response to Comment D.1.8 addresses issues with the site-specific reports. In addition, in the event that a facility cannot meet the BTA requirements of Part 4.2, EPA would require the facility to obtain NPDES authorization under an individual permit. *See* 40 CFR § 122.28(b)(3). In such a case, the facility would be required to submit an application for an individual permit, and the permit process would be reinitiated, including issuance of a new, individual draft permit and opportunity for public comment.

The comment also raises a concern that, as proposed, the Draft HydroGP lends additional uncertainty to the permitting process because the site-specific information could inform additional BTA requirements to be imposed after the NOI. EPA agrees that Part 4.3 of the Draft HydroGP did not clearly define how Permittees would be deemed to be in compliance with the BTA for entrainment. In response to this comment, EPA revised the Final HydroGP to remove this uncertainty and increase clarity for Permittees seeking coverage. Permittees must minimize the volume of cooling water withdrawn and will

demonstrate compliance with Part 4.2.a by submitting information on the conditions and practices that minimize cooling water withdrawals, including the volume of cooling water withdrawn as compared to total water diverted through the dam, the volume of cooling water withdrawn as a percentage of the 7Q10 low flow and mean annual flow of the source water, and water reuse. If a facility cannot demonstrate that the requirement to minimize cooling water withdrawals is satisfied, a site-specific, BPJ-based BTA determination may be required. In such a case, the Permittee would be required to seek individual permit coverage. *See* 40 CFR § 122.28(b)(3).

D.6 Part 4.3 Additional Information Required for Site-Specific BTA Requirements: submitted by First Light Power Resources (Patty Goclowski, Environmental, Health, and Safety Manager)

Section 4.3 of the draft Permit requests that the NOI include operational data to determine if the cooling water intake is in compliance with best technology available (BTA). However, some of the data requested may not be available or reflective of the intake flow. Specifically, due to the age of some of the facilities, monitoring and measuring equipment may not be present to provide accurate flow information. Accordingly, FLPR is notifying EPA Region 1 that the information requested in some circumstances will be calculated yielding estimates or sometimes it may not be available at all.

Response to Comment D.6:

Part 4.3 of the Draft HydroGP listed additional information on intake volume and the source water that a facility is required to submit with its Notice of Intent (NOI). As explained in Response to Comments D.1.8 and D.5, this information is necessary to ensure that facilities are minimizing entrainment. As the comment notes, the Draft HydroGP required that existing facilities file an NOI within 60 days of the effective date of the Final HydroGP. The Final HydroGP retains the requirement to file an NOI within 60 days of the permit's effective date. Because the Final HydroGP does not become effective until the first day of the calendar month following 60 days after issuance, however, existing facilities will have at least 120 days to assemble the information required with the NOI.

The information requested in Part 4.2.a of the Final HydroGP has been limited to estimated flow values (e.g., maximum daily and average monthly intake flow, whether any volume of cooling water flow is reused, volume of cooling water as a percentage of flow through the turbines) and source water flow values, both of which are necessary to demonstrate that the facility complies with the requirement to minimize the volume of cooling water withdrawn. The comment raises concerns that monitoring data may not be available for certain flows. The 2009 HydroGP required Permittees to monitor and report effluent flow for equipment-related cooling water (Part I.A.1) and/or flows for combined discharges, including cooling water (Part I.A.5). For this reason, EPA believes that this information should be readily available. Where Permittees reported flows for combined discharges, cooling water volumes may be estimated based on monitoring data. EPA has, however, revised the Final HydroGP to clarify certain requests (e.g., by specifying "cooling water withdrawn" in place of "intake volume" or adding more flexibility for specifying any seasonal variation in cooling water withdrawn).

The source water flow estimates may be available from the United States Geological Survey[40] or from site-specific studies that were completed during the relicensing process. *See, e.g.*, 18 CFR § 4.51(c)(2)(i). If facilities are unable to determine the mean annual and/or low flow statistics for a source waterbody, facilities may also contact EPA, MassDEP, or NHDES for help in determining these values. EPA, MassDEP, and NHDES may assist the Permittee in calculating the appropriate flow statistics.

Because Part 4.2.a more clearly defines the information required to demonstrate compliance with the requirement to minimize cooling water withdrawals, EPA revised the Final HydroGP to eliminate the need for information on whether river flows are managed and the parameters associated with such an arrangement. EPA also revised the requirement to submit a characterization of the habitat upstream of the dam. Source water biological information is likely more readily available for hydroelectric facilities that completed relicensing with FERC. *See* 18 CFR § 4.51(f)(3). However, certain facilities may receive an exemption from the FERC licensing process. *See* 18 CFR §§ 4.90, 4.101. These include conduit[41] exemptions and case-specific (10 MW) exemptions. Other hydropower facilities located on non-federally owned conduits with a maximum installed capacity of 5 MW not previously licensed or exempted on or before August 9, 2013, are not required to be licensed or are exempted by FERC under 18 CFR § 4.90 or § 4.101. Hydroelectric dams that receive an exemption or are not subject to FERC licensing may not have information on the biological characterization of the source water at hand. The Final HydroGP provides flexibility for those hydroelectric facilities that have been subject to environmental review to submit a biological evaluation demonstrating that the location, design, and capacity of the cooling water intake minimizes impingement mortality, but this submission is not required from all facilities.

[40] https://www.usgs.gov/mission-areas/water-resources/science/streamstats-streamflow-statistics-and-spatial-analysis-tools?qt-science_center_objects=0#qt-science_center_objects

[41] A conduit is any tunnel, canal, pipeline, aqueduct, flume, ditch, or similar manmade water conveyance that is operated for the distribution of water for agricultural, municipal, or industrial consumption, and is not primarily for the generation of electricity.