AR-758

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Cooling Water Intake Structure (New Facilities) November 6, 2000
Proposed Rule Comment Clerk-W-00-3
Water Docket, Mail Code 4101
Ariel Rios Bldg
1200 Pennsylvania Avenue, NW
Washington, DC

Dear Comment Clerk:

This responds to your August 10, 2000 request for comments and information on the proposed rulemaking for cooling water intake structures (CWIS) at new facilities published in 65 FR 49060.

The discussion in the preamble to the proposed rule invites discussion on a wide range of issues concerning the administration of section 316(b) of the Clean Water Act. The information provided in this response pertains primarily to the New England geographic area which corresponds with the EPA Region I boundary.

In general, the proposals for best technology available (BTA), environmental requirements and other aspects of the framework described in Exhibit 1 of the preamble for administering section 316(b) do not adequately reflect the environmental landscape or the recent trends in steam electric power plant development in this geographic area. This divergence from the framework has been brought about in the recent past by the adoption of dry cooling technology at many new steam electric generating facilities which eliminates the need for a cooling water intake structure and attendant impacts to waters and aquatic life. What makes the technological advance more remarkable is that in many cases, the adoption of dry cooling has been a voluntary action on the part of the applicant not the result of direct regulatory action. These actions are partly attributed to market deregulation factors whereby power plants are frequently being constructed and operated by power generators as opposed to traditional utilities. That these developments are occurring in a traditionally water rich part of the United States lends an added measure of confidence concerning the practicability of dry cooling technology. These specific comments follow the format in the preamble and draft rule.

Section V.D. Flow threshold in Waters of the U.S.
In this section of the preamble and in section 125.81 of the proposed rule, a flow threshold of

two million gallons per day (MGD) would be established below which these cooling water intake rules would not apply. This is a matter of considerable concern in the northeast where we have experienced a surge of proposed natural gas fired generating stations on river systems that would likely be considered small when viewed on a national scale. A 2 MGD withdrawal is a large withdrawal when viewed in the context of the regulatory climate, population base, and hydrologic setting of the northeast. For example, the reporting threshold for water withdrawals in New Hampshire is 20,000 GPD or .02 MGD. In Massachusetts, the regulatory threshold under the Water Management Act is 100,000 GPD or 0.10 MGD. In the Vermont water quality standards, the regulatory threshold for water withdrawls is five percent of 7Q10 on a cumulative or aggregate basis. These regulatory thresholds for water withdrawals are a full order of magnitude or more below the threshold proposed in the draft rule. In the case of New Hampshire and Vermont, the thresholds are generally set at levels that allow for reasonable water use by riparian and littoral property owners, but below levels that would likely involve Public Trust issues. The statutory language in section 316(b) does not mandate a particular flow threshold nor does it appear to constrain the EPA's discretionary authority to capture all cooling water intake systems that withdraw cooling water from waters of the U.S., if the agency so chose. Consequently, the flow threshold should be set no higher than 0.10 MGD and preferably lower to help ensure greater consistency with regional hydrology, riparian, environmental, and regulatory thresholds if the proposed framework is retained.

Section **VII**. D. Defining Adverse Environmental Impacts

The third alternative discussed in this section of the preamble best describes the meaning of adverse impact within the context of section 316(b) and these rules. Webster's Third New International Dictionary defines adverse as follows: Adverse describes what is unfavorable, harmful, difficult or detrimental. Preceding parts in section VII. of the preamble adequately demonstrate how aquatic life are harmed by entrainment and impingement impacts when cooling water intake structures are withdrawing water for cooling and related purposes. The EPA presented considerable discussion in this section of the preamble about the relationship between various flow thresholds and the magnitude of the entrainment effect. However, the discussion seemed to be somewhat misdirected since adverse effects to aquatic life will occur well below the 2MGD flow threshold proposed in section 125.81 of this rule. Even at the 0.10 MGD flow threshold advocated in these comments, adverse effects would still occur albeit at a lower level than the proposed 2 MGD threshold. These adverse impacts to waters and aquatic life would be reoccurring and nontrivial on an individual and cumulative basis.

The third alternative provides a clear cut, simple and, precise definition of adverse impact. The definition fits well with the plain meaning of the language in this section of the CWA and appears to be well within EPA's discretionary authority. This definition also has the best fit with rules protecting threatened and endangered species and with section 9 of the Endangered Species Act regarding prohibitions on take of listed species. Accordingly, and because of the great importance of the meaning of the phase "adverse environmental impact" in this set of rules, the third

alternative definition of adverse impact should be adopted in section 125.83 of the final rule. A clear cut, simple and precise definition as proposed here would help to streamline and simplify administration of section 316(b).

Other Definitions in Section 125.83
The definition of littoral zone in the preamble page FR 49083 and draft rule page FR 49116 is drawn into question by the discussion of littoral zone for rivers, and lakes and reservoirs on page FR 49084. Here, the interpretation of littoral zone is different from what is implied in the stated definition and is likely to create considerable confusion. As defined on page FR 49084 for freshwater rivers, the littoral zone is the area along the shoreline that serves as the principle spawning and nursery area for many, but not all species of freshwater fish. This is considerably different from the stated definition. In contrast, the interpretation of littoral zone for lakes and reservoirs is the portion of the body of water extending from the shoreline lakeward to the deepest point at which submerged aquatic vegetation can be sustained. It appears that EPA intended for the definition of littoral zone to have separate and distinct meanings for the different categories of waters. If so, separate definitions should be set forth in the final rule if the proposed framework is retained. Under the existing definition, one could interpret the outer edge of the littoral zone in rivers to be the deepest point where submerged vegetation, e.g., algae, is sustained, not simply the area along the shoreline.

Perhaps EPA should also consider whether submerged aquatic vegetation needs to be defined since an argument could ensue as to whether it includes both non- rooted (algae) and rooted plants.

Section VIII. Best Technology Available and Section 125.84.
Exhibit 1 on page FR 49077 displays the proposed framework for administering best technology available to minimize adverse environmental impacts at cooling water intake structures. The framework would accomplish this by first grouping water bodies into four major categories and then applying location, flow (capacity), technology, and velocity standards and other unspecified requirements within each category to achieve BTA. As a consequence of this framework, different levels of protection exist based on waterbody category and location of the CWIS within the waterbody. While the framework has its advantages, it appears that the disadvantages outweigh them by some margin.

The principle and most stringent technology selected to represent BTA in the proposed framework, a closed-cycle recirculating system, does not represent BTA in the New England region. Over the last decade, dry cooling systems have emerged as the best technology to minimize impingement and entrainment impacts by avoiding cooling water use at steam electric generating stations. These projects listed below in Table 1 range in size from 24 MW to 1500 MW demonstrating the economic viability, efficiency, practicability and versatility of dry cooling technology.

Table 1 Steam Electric Stations currently operating, under construction or recently approved for construction using dry cooling in New England

Killingly, CT.	780 M.W. Dry Cooling
Oxford, CT.	512 M.W. Dry Cooling
Wallingford, CT.	250 M.W. Dry Cooling
Dighton, MA.	170 M.W. Dry Cooling
ANP Blackstone, MA.	580 M.W. Dry Cooling
ANP Bellingham, MA.	580 M.W. Dry Cooling
Sithe Mystic, MA.	1500 M.W. Dry Cooling
Cabot Island End, MA.	350 M.W. Dry Cooling
Sithe Fore River, MA.	750 M.W. Dry Cooling
IDC Bellingham, MA.	525 M.W. Dry Cooling
Medway Station, MA.	275 M.W. Dry Cooling
Wheelabrator-Sherman, ME.	24 M.W. Dry Cooling
Rumford, ME.	265 M.W. Dry Cooling
Tiverton, R.I.	265 M.W. Dry Cooling
Indeck, R.I.	350 M.W. Dry Cooling

Dry cooling technology frees the industry user groups from unnecessarily restrictive requirements to site facilities adjacent to or short distances from waterbodies or other sources of cooling water. This freedom from water dependency needs to be recognized and duly accounted for in the final rulemaking since it has major regulatory implications in section 404 of the CWA and would seemingly have similar technology and regulatory implications under sections 306 and 402. The demonstrations by the 15 facilities in Table 1 that dry cooling represents BTA is a sufficient and compelling reason for EPA to revise the proposed framework in Exhibit 1 and Section 125.84 on a regional, if not national scale.

The flow (capacity) standard proposed in sections VIII. and 125.84 for freshwater streams is not more than the more stringent of 5% of the source water mean annual flow or 25% of the source water 7Q10 flow. This is substantially lower than the flow standard used by the Service since 1981 in the New England states. The Service standard during the summer low flow period is median August flow for unregulated streams with 25 years of gaging records or 0.5 cfsm (cubic feet per second per square mile of drainage) which represents the generic median August flow for regulated and ungaged streams in New England. A Questions and Answers document on the Services' New England Flow Policy is included as an attachment to help explain the flow policy and further substantiate the need for higher flow standards. According to Service standards in New England, when streamflows reach the August monthly median or 0.5 cfsm, projects must cease withdrawal or change operation to ensure that outflow=inflow to provide instantaneous run- of-river conditions. Applicants also have the option under the flow policy to conduct a site specific flow study using a method such as the instream flow incremental method (IFIM). However, these studies have generally been restricted to by- pass reaches at hydroelectric projects as opposed to mainstream reaches in rivers or streams. The August median/0.5 cfsm standard is typically 3 to 5 times greater than the 7Q10 flow or 12 to 20 times greater than 25%

of 7Q10 and four times larger than 5% of average annual flow of New England streams which the Service has calculated to be 1.89 cfsm(see Appendix C in the Q&A document). The Service flow standards, i.e., median August, median February, are intended to represent benchmarks for the protection of aquatic life both on a project specific basis as well as on a more generic basis such as in water quality standards. Consequently, the flow standard should be raised significantly higher to avoid conflicts with hydrology standards that have been implemented to protect aquatic life including those in EPA approved State water quality standards if the proposed framework is retained.

The framework makes a distinction between lakes and reservoirs, and streams and rivers as shown in Exhibit 1 and more fully described in the preamble and draft rule. This is a cause for concern in the northeast because most reservoirs and many lakes are integral parts of streams or rivers. The framework applies different standards to these water bodies particularly for flow or water capacity standards. In fact, no flow standard is proposed for the lake/reservoir category which would allow a facility sited here to withdraw water and thereby reduce stream flow in the outlet stream without any regulation. This would frustrate the protocol in the rivers category to establish a streamflow threshold on a CWIS located downstream of the lake outlet. The definition of lake in section 125.83 specifically includes impounded sections of streams with an average hydraulic retention time of more than seven days. Reservoir is defined to mean any natural or constructed basin where water is collected and stored. This can be interpreted to mean any impoundment on a stream or river that has some storage component as an integral part of the project which would include virtually all riverine impoundments in the northeast. The definition of lake in section 125.83 needs to be changed such that it only includes those without outlet streams and for those lakes with outlet streams, the definition should require the hydraulic retention time to be ten years or more to help ensure that outlet flows would be minimally affected by cooling water use. Lakes with outlets and hydraulic retention times less than ten years should be placed in a new category or in the river category to ensure that flow (capacity) standards are imposed. The definition of reservoir in section 125.83 should be changed by including a requirement that the reservoir not be located on a perennial stream and not receive storage water from a stream or river during normal low flow periods of the year such as in the summer and winter periods. This would help ensure that reservoirs would be located off-stream and require storage water to be obtained during high flow periods such as during spring runoff and storm events. As in previous sections, these suggestions would be pertinent only if the proposed framework is retained.

Another difficulty with the proposed framework is the potential, if not likelihood, to arrive at different regulatory decisions under the CWA depending on whether section 402 or 404 is being used as the regulatory mechanism. This conflict could occur in instances where a specific project needs a section 404 permit to construct a cooling water intake structure and where a NPDES permit is also required to authorize the discharge of cooling water effluent back into waters of the U.S. or perhaps, as the preamble suggests, for discharge of stormwater. The conflict arises because in the New England States, if not the entire northeastern U.S., dry cooling technology has been demonstrated by the steam electric industry to be the least environmentally damaging practicable alternative (LEDPA) in accordance with the 404(b)(1) Guidelines, 40CFR230.10(a). In addition, the widespread adoption and use of dry cooling technology by

industry has adequately demonstrated that steam electric generating facilities are non- water dependent activities, that is, they do not require access to, siting in or adjacent to waters of the U.S. to fulfill their basic project purpose. The same disparity noted above would occur under the proposed framework in a hypothetical case where two 500 M.W. projects are located on opposite sides of the same river but where one project only needed a 402 permit since it obtained cooling water from an existing intake and the other project only needed a 404 permit to authorize the CWIS since it could discharge effluent into a municipal treatment plant. The proposed section 402 pathway would result in a closed-cycle recirculating cooling water system as BTA while the section 404 pathway would result in dry cooling as the LEDPA. Most likely, the proposed rule cannot withstand scrutiny when such disparate results are produced under two closely related sections of the CWA.

Accordingly, the proposed framework in section VIII. of the preamble and section 125.84 of the rule should be modified such that dry cooling is identified as the best technology available for minimizing adverse environmental impact at cooling water intake structures. The four categories of waters could then be deleted along with the location, capacity, velocity, other technology and unspecified requirements contained in the present draft framework since they would not be necessary with a regional or nationwide framework based on dry cooling as BTA. However, if EPA chose to adopt dry cooling as BTA but with a rebuttable presumption which an applicant would have the burden of overcoming, then some aspects of the proposed framework might be useful in the new framework.

Restructuring the proposed rule as suggested herein to establish dry cooling as the best technology available for minimizing adverse environmental impact would provide several important advantages over the proposed framework including, but not limited to:

1. Greater environmental protection particularly for waters of the U.S. and aquatic life;
2. A less complicated and greatly streamlined rule;
3. Consistent across-the-board standards for all waters of the U.S.;
4. Establishes a more levelized regulatory environment for industry;
5. Streamlines the decision making process;
6. Promotes enhanced siting flexibility for new facilities;
7. May enhance the development of more advanced cooling technology and;
8. Eliminates the need for extensive sampling and monitoring studies in waters of the U.S. formerly affected by impingement, entrainment, hydrologic, and thermal effects.

Questions on the information and suggestions contained herein should be directed to me at 603-225-1411 or e-mail vernon_lang@fws.gov. 603-223-2541

Sincerely,

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Attachment:
Questions and Answers on New England Flow Policy