

## 5.0 Thermal Discharge Standards Based on State Water Quality Standards or Other Requirements of State Law

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### 5.1 Introduction

BPS discharges thermal effluent into Massachusetts waters. These discharges may also adversely affect Rhode Island waters. As a result the water quality requirements of both States must be considered in the development of the new NPDES permit for BPS. The legal requirements and context related to the potential for thermal discharge limits based on State requirements is set forth below. This discussion is followed by a description and explanation of any State requirement-based permit limitations that have, in fact, been included in the Draft permit.

### 5.2 Legal Requirements and Context

As discussed above, CWA §§ 301 and 402(a) require NPDES permits to include effluent limitations based on applicable technology standards. CWA §§ 301(b)(1)(C) and 402(a) require that permits also include “any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority of section 1370 of this title [(i.e., CWA § 510)]) . . . , or required to implement any applicable water quality standard established pursuant to this chapter.” 33 U.S.C. § 1311(b)(1)(C). Section 301(b)(1)(C)’s mandate applies regardless of whether EPA or a State is the permit issuing authority and, for an EPA-issued permit, applies regardless of whether the State expressly demands that such conditions be placed in the permit. These statutory requirements are also embodied in EPA regulations at 40 C.F.R. §§ 122.4(d) and 122.44(d)(1), (2) and (5). See PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 705 (1994) (“The Act also allows States to impose more stringent water quality controls. *See* 33 U.S.C. §§ 1311(b)(1)(C), 1370.”); Arkansas v. Oklahoma, 503 U.S. 91, 106 (1992) (“§ 301(b)(1)(C) expressly identifies the achievement of state water quality standards as one of the Act’s central objectives.”). As dictated by the statute, the cost of compliance is not to be considered in setting limits to ensure that the State’s water quality standards are satisfied.<sup>1</sup>

In addition, the CWA clearly authorizes States to impose more stringent water pollution control standards than dictated by the federal statute, at least where the statute does not expressly forbid

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<sup>1</sup> EPA regulations do allow a State to “remove a designated use” (though not an “existing use”) of a water body specified in State water quality standards if various conditions are met, including that imposing controls more stringent than standards under CWA §§ 301(b) and 306 would result in “substantial and widespread economic and social impact.” 40 C.F.R. § 131.10(g)(6).

such tougher State standards. CWA § 510 provides that:

[e]xcept as expressly provided in this chapter, nothing in this chapter shall (1) preclude or deny the right of any State . . . to adopt or enforce (A) any standard or limitation respecting discharges or pollutants, or (B) any requirement respecting control or abatement of pollution; except that if an effluent limitation . . . is in effect under this chapter, such State . . . may not adopt or enforce any effluent limitation . . . which is less stringent than the effluent limitation . . . under this chapter . . .

Thus, CWA § 510 plainly states that “[e]xcept as expressly provided in this chapter,” States may adopt or enforce standards or effluent limits under state law that are more stringent than Federal requirements, but not less stringent. See PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 705 (1994) (citing 40 C.F.R. § 131.4(a)’s reference to CWA § 510 and its support for States’ authority to adopt water quality standards more stringent than federal standards); Arkansas v. Oklahoma, 503 U.S. 91, 107 (1992) (“§ 510 allows States to adopt more demanding pollution-control standards than those established under the Act”).

Following the provisions of the statute, EPA’s regulations also dictate that States may adopt and enforce more stringent standards than imposed by the Federal law. In the regulations governing the development of water quality standards, 40 C.F.R. § 131.4(a) states that, “[a]s recognized by section 510 of the Clean Water Act, States may develop water quality standards more stringent than required by this regulation.” The Supreme Court in PUD No. 1, 511 U.S. at 705, cited to this regulation in support of the view that States could adopt water quality requirements more stringent than federal requirements. See also 40 C.F.R. § 123.25(a) and Note (regulations regarding State NPDES programs indicating that States may impose more stringent requirements).

It should also be recognized, however, that the CWA contains certain provisions that pertain specifically to State water quality standards for heat. CWA § 303(h) provides that “[f]or the purposes of this chapter the term ‘water quality standards’ includes thermal water quality standards.” In addition, CWA § 303(g) provides that “[w]ater quality standards relating to heat shall be consistent with the requirements of section 1326 of this title [(i.e., CWA § 316)].” CWA § 303(g) expressly addresses State *water quality standards* related to heat, as opposed to other possible types of State law requirements related to heat. CWA § 303(g) requires, at a minimum, that State water quality standards be at least sufficient to ensure the “protection and propagation of a balanced indigenous population of fish, shellfish, and wildlife in and on the receiving water,” as required by CWA § 316(a). Reading CWA §§ 510, 303(g), and 316(a) together, the statute indicates that State requirements could be more stringent than standards necessary to ensure the protection and propagation of a balanced indigenous population of fish, shellfish, and wildlife in and on the receiving water and still be “consistent” with the requirements of § 316(a), but the

state water cannot be less stringent. Once approved by EPA, the State's water quality standards become the applicable water quality standards for the waters of that State.

State water quality standards "shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." PUD No. 1, 511 U.S. at 704 (quoting 33 U.S.C. § 1313(c)(2)(A)). Discharges must satisfy both the "criteria" and the "designated uses" of the waters in question. Id. at 714-15. Enforceable criteria in State water quality standards may be expressed either in numeric or "broad, narrative" form. Id. at 715-18. EPA regulations also dictate that permits should contain any conditions necessary to achieve water quality standards, including narrative criteria for water quality. 40 C.F.R. § 122.44(d)(1).

NPDES permits for thermal discharges are also subject to the requirements of CWA § 401, which governs the State certification process. CWA § 401(a)(1) provides, in pertinent part, that:

*Any applicant for a Federal license or permit to conduct any activity . . . which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates . . . that any such discharge will comply with the applicable provisions of sections 1311, 1312, 1313, 1316 and 1317 of this title . . . . No license or permit shall be granted until the certification required by this section has been obtained or has been waived . . . . No license or permit shall be granted if certification has been denied by the State . . . .*

33 U.S.C. § 1341(a)(1) (emphasis added). The plain language of § 401(a) clearly states that unless certification has been waived, no EPA NPDES permit may be issued without a certification from the State. See PUD No. 1, 511 U.S. at 707. Further, it states that denial of certification by the State bars issuance of the Federal permit or license. EPA regulations reiterate these commands. See 40 C.F.R. §§ 122.4(b), 124.53(a), 124.55(a). Neither the statute nor the regulations identify any exceptions to the certification requirement. A State denial of certification could, of course, be challenged by the permittee through State legal proceedings. See, e.g., 40 C.F.R. § 124.55(e); Dubois v. U.S.D.A., 102 F.3d 1273 (1<sup>st</sup> Cir. 1996).

In addition, CWA § 401(d) provides, in pertinent part, that:

*[a]ny certification provided under this section shall set forth any effluent limitations and other limitations and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title, . . . and with any other appropriate requirement of State law set forth in such*

certification, *and shall become a condition on any Federal license or permit subject to the provisions of this section.*

33 U.S.C. § 1341(d) (emphasis added). The plain language of § 401(d) makes clear that the State's § 401 certification must contain any limitations needed to ensure compliance with CWA § 301, including § 301(b)(1)(C), and any appropriate requirement of State law, and that such limitations imposed in a certification must be included as conditions in the Federal permit. PUD No. 1, 511 U.S. at 707-08. EPA regulations repeat these commands from the statute. 40 C.F.R. §§ 124.53(e)(1), 124.55(a)(2), 122.44(d)(3), 121.2(a)(3). See also 40 C.F.R. § 122.4(d). Permit limitations based on State certification conditions can be challenged in State legal proceedings. 40 C.F.R. § 124.55(e). See also Roosevelt Campobello Int'l Park Comm'n v. United States Environmental Protection Agency, 684 F.2d 1041, 1055-56 (1<sup>st</sup> Cir. 1982).

The Supreme Court has also held that once the CWA § 401 State certification process has been triggered by the existence of a discharge, then the certification may impose conditions and limitations on *the activity as a whole*, not merely on the discharge, to the extent needed to ensure compliance with State water quality standards or other applicable requirements of State law. Thus, the Court stated:

The text [of CWA § 401d)] refers to the compliance of the applicant, not the discharge. Section 401(d) thus allows the State to impose “other limitations” on the project in general to assure compliance with various provisions of the Clean Water Act and with “any other appropriate requirement of State law.” . . . Section 401(a)(1) identifies the category of activities subject to certification – namely, those with discharges. And § 401(d) is most reasonably read as authorizing additional conditions and limitations on the activity as a whole once the threshold condition, the existence of a discharge, is satisfied.

PUD No. 1, 511 U.S. at 711-12. Thus, for example, a State could impose certification conditions related to cooling water intake structures on a permit for a facility with a discharge if those conditions were necessary to assure compliance with a requirement of State law, such as State water quality standards. See Id. at 713. This also helps to confirm that in setting *discharge* conditions to achieve water quality standards, a State can and should take account of the effects of *other aspects of the activity* that may influence the discharge conditions that will be needed to attain water quality standards.

A “mixing zone” is a permitting concept or tool under State water quality standards that may be used in applying those standards. 40 C.F.R. 131.13. See also Marathon Oil Company v. Environmental Protection Agency, 830 F.2d 1346, 1349 (5<sup>th</sup> Cir. 1987); EPA Decision of the General Counsel, In re Sierra Pacific Power Company, EPA GCO 31 (October 13, 1975). For EPA to include limitations in a permit to establish compliance with State water quality standards

based on the use of a mixing zone, the State's mixing zone policy must be properly applied so as to comply with the State's standards and the State must certify such limits under CWA § 401 (or waive certification). See EPA Guidance on Application of State Mixing Zone Policies in EPA-Issued NPDES Permits, pp. 1-2 (August 1996). Both Massachusetts and Rhode Island water quality standards provide for the use of mixing zones under certain conditions. Interestingly, although mixing zones are a tool and concept typically used in applying water quality standards, the mixing zone concept can also be used "as a mechanism for dealing with thermal discharges pursuant to section 316(a) of the Act." *U.S. EPA, Decision of the General Counsel, In Re Sierra Pacific Power Company*, EPA GCO 31 (October 14, 1975). The legislative history of CWA § 316(a) indicates that Congress felt "mixing zones" could be used in designing permit limitations based on a CWA § 316(a) variance from applicable technology standards. *Id.* In this context, in order to satisfy § 316(a), compliance with the mixing zone would need to ensure the protection and propagation of the BIP. The same mixing zone might also establish compliance with applicable State water quality standards, or State standards and § 316(a) might demand different "mixing zones."

It should also be understood that EPA generally defers to the State's application of its own standards as reflected in its certification under CWA § 401. The EPA Environmental Appeals Board (EAB) has ruled that:

It is well established that the Agency may not "look behind" a State certification issued pursuant to section 401 of the Clean Water Act, for the purpose of relaxing a requirement of that certification. In such circumstances, the person seeking a relaxation of the requirement must look to the State for relief.

In the matter of Lone Star Steel Company, 3 E.A.D. 713, 715 (1991). Accord In the Matter of General Electric Company, Hookset, New Hampshire, 4 E.A.D. 468, 470 (1993) ("Challenges to permit limitations and conditions attributable to State certification will not be considered by the Agency . . . [and instead] must be made through applicable State procedures."). Nevertheless, although EPA may not generally "look behind" State certification conditions, if EPA believes that a State has committed "clear error" by failing to include more stringent conditions required by the State's own standards, then EPA *must* include the more stringent conditions in order to comply with CWA § 301(b)(1)(C). In re Ina Road Water Pollution Control Facility, Pima County, Arizona, NPDES Appeal 84-12 (Nov. 6, 1985), at 3. See also In re American Cyanamid Col., Santa Rosa Plant, NPDES Appeal No. 92-18 (EAB Sept. 27, 1993), at 14; In re City of Jacksonville, District II Wastewater Treatment Plant, NPDES Appeal No. 91-19 (EAB Aug. 4, 1992) at 16.

The discharges of pollutants from BPS originate from the Commonwealth of Massachusetts and it is clear, as a result, that Massachusetts is the certifying State under CWA § 401(a)(1). The

discharges from BPS may also affect the water quality of the State of Rhode Island, however, and the CWA provides that discharges must be limited so that a downstream affected State's water quality requirements are also complied with. Specifically, CWA § 401(a)(2), in pertinent part, commands that:

. . . [the permitting agency] *shall* condition such license or permit in such manner as may be necessary to insure *compliance* with applicable water quality requirements [of the downstream affected State]. *If the imposition of conditions cannot insure such compliance such agency shall not issue such license or permit.*

33 U.S.C. § 1341(a)(2). Thus, Congress clearly stated that even for downstream affected States –which do not have direct certification authority under CWA § 401 – if permit conditions cannot be developed to ensure compliance with the downstream state's standards, then no permit may be issued. Accord *Arkansas v. Oklahoma*, 503 U.S. at 103 (“Section 401(a)(2) appears to prohibit the issuance of any federal license or permit over the objection of an affected State unless compliance with the State's water quality requirements can be ensured.”). Accordingly, EPA's regulations require that permits contain conditions sufficient to ensure compliance with the water quality requirements of “all affected States.” 40 C.F.R. § 122.4(d). See also 40 C.F.R. § 122.44(d)(4). *Arkansas v. Oklahoma*, 503 U.S. at 104-07.

### **5.3 Limits Required by Massachusetts Water Quality Standards**

The Massachusetts Department of Environmental Protection (MA DEP) has primary responsibility for determining what permit limitations are necessary to achieve compliance with Massachusetts water quality standards and other requirements of state law. EPA anticipates receiving a certification from the MA DEP under CWA § 401(a)(1), 33 U.S.C. § 1341(a)(1), addressing these requirements. Prior to issuance of that certification, however, EPA requested that the MA DEP determine what thermal discharge limitations would be necessary for Brayton Point Station to satisfy the state's water quality standards. The state's analysis is discussed below.

#### **5.3.1 Summary of Massachusetts Mixing Zone Requirements**

Consistent with the Massachusetts Surface Water Quality Standards promulgated at 314 CMR 4.00 and MA DEP guidance documents, MA DEP decided that it would exercise its discretion to set water quality-based thermal discharge standards based on a “mixing zone.” MA DEP developed its thermal mixing zone and related thermal discharge standards for the BPS cooling water discharge and transmitted it to EPA. The MA DEP's mixing zone document in its entirety is attached hereto as Appendix A.

Generally, mixing zones are areas in which exceedance of numerical state water quality

standards may be allowed, provided that, among other things, these exceedances do not result in acute toxicity and that the mixing zone will still be protective of the narrative requirements of the water quality standards. In addition, mixing zones cannot be disproportionately large so as to interfere with attainment of the designated uses assigned to the water body segment by the state water quality standards. All applicable numeric water quality criteria must be met at the edge of the mixing zone. Requirements of state mixing zone policies must also be satisfied.

In the mixing zone prepared for Brayton Point Station by the MA DEP, protection of designated uses and satisfaction of water quality criteria and state mixing zone policies are addressed in a direct manner. Specific provisions are outlined in the mixing zone to meet these requirements. For example, the mixing zone requires a sufficient zone of passage for anadromous fish in the Lee River, requires that normal migration of striped bass be maintained, and imposes specific temperature requirements for instream water quality. In addition, the mixing zone addresses the proliferation of nuisance species. Each of these specific requirements is explained in more detail below.

### **5.3.1a Lee River Zone of Passage**

MA DEP's mixing zone protects anadromous fish movement into and out of the Lee River by requiring that specific target ambient temperatures for the mouth of the Lee River be met. The permittee would be required to measure ambient water temperatures to demonstrate compliance with this mixing zone. The permittee would not be allowed to exceed these temperature limits either bank-to-bank or over 50% of the cross-sectional area of the river. The specific water temperature limits are defined as follows:

1. April 1 - May 14: water temperature maximum shall not equal or exceed an hourly average of 18.3° C (65° F);
2. May 15 - May 31: water temperature maximum shall not equal or exceed an hourly average of 20° C (68° F);
3. June 1 - June 7: water temperature maximum shall not equal or exceed an hourly average of 21.1° C (70° F);
4. June 8 - June 23: water temperature maximum shall not equal or exceed an hourly average of 26.7° C (80° F);
5. June 24 - July 7: water temperature maximum shall not equal or exceed an hourly average of 27.9° C (82.2° F);
6. July 8 - October 31: water temperature maximum shall not equal or exceed an hourly average of 28.9° C (84.1° F).

### **5.3.1b Requirements for Striped Bass Migration**

During October/November, the normal time for striped bass migration out of New England coastal waters, MA DEP requires the permittee to dissipate its thermal plume to an extent and duration that will allow for the normal movement of striped bass. At present, the plant's thermal discharge plume acts as an attractant interfering with normal migration and ultimately subjecting the overwintering fish to heightened risk of disease as a result of circumstances associated with being "trapped" in the thermal plume.

### **5.3.1c Requirements for Benthic Layer Monitoring and Temperature Compliance**

MA DEP selected target temperatures for the benthic layer that the permittee must meet to be in compliance with the proposed mixing zone. From February 12 to April 23, the facility's discharge must not contribute to benthic layer water temperatures exceeding 5° C. For the rest of the year the facility's discharge must not contribute to benthic layer water temperatures exceeding 24° C. These temperatures were selected based on critical temperatures for the most sensitive resident fish species. MA DEP is requiring the permittee to place thermistors along three transects that are two kilometers long. The thermistors will be placed every 200 hundred meters and the plant will be considered out of compliance with the mixing zone when it is discharging heat to the bay and the average of all the thermistors along the transect line exceed the applicable target temperature. The target temperatures are defined as one-hour averages.

### **5.3.1d Proliferation of Nuisance Species**

MA DEP has included a clause in the mixing zone that requires Brayton Point Station to reduce its thermal discharge in response to the appearance of nuisance species. Examples of nuisance species listed by the DEP include blue-green algal blooms or the appearance of comb jellies in the winter. In both of these cases, there is scientific peer-reviewed literature that show that the proliferation of these species is correlated with elevated water temperatures.

### **5.3.1e Monthly Thermal Discharge Cap**

In addition to all the specific biological criteria, MA DEP has included a monthly thermal discharge limit of 1.2 TBTU as a discharge cap or "backstop." It is anticipated that generation at Brayton Point Station would not reach this monthly discharge limit due to the other applicable limitations. However, this figure represents a maximum value that shall not be exceeded under any circumstance. In other words, MA DEP anticipates that the biological criteria will typically restrict the monthly thermal discharge.

## **5.3.2 Comparison of MA DEP Mixing Zone and EPA CWA § 316(a) Determination**



MA DEP, in the construction of its mixing zone, must assure that the thermal discharge will be protective of “excellent” fish habitat in the SA portion of Mount Hope Bay. The state’s mixing zone analysis, however, considers the impacts of the thermal discharge apart from the effects of other stressors in Mount Hope Bay. EPA’s CWA § 316(a) determination seeks to meet the environmental standard of ensuring the protection and propagation of a balanced indigenous population (BIP) of organisms in the receiving water. In doing so, EPA must consider other stressors on the BIP in addition to the thermal discharge, including the effects of entrainment and impingement. Thus, EPA’s § 316(a) determination is based on a broader analysis than the MA DEP’s thermal discharge mixing zone analysis.

EPA anticipates that the MA DEP will consider entrainment and impingement effects in developing its CWA § 401(a)(1) water quality certification and determine whether additional requirements are needed to satisfy state water quality standards or other state requirements. In addition, the state will evaluate EPA’s § 316(a) variance determination and decide whether or not the variance-based limitations should be made “site-specific limitations” under the state’s water quality standards.<sup>2</sup>

#### **5.4 Limits Required by Rhode Island Water Quality Standards**

In developing the limitations for the Brayton Point Station permit, EPA has endeavored to consider, and ensure compliance with, applicable Rhode Island water quality standards. However, Section 401(a)(2) of the CWA, 33 U.S.C. § 1341(a)(2), requires that when a CWA NPDES permit is to be issued to a facility in one state, if the permit “may affect, as determined by the Administrator, the quality of the waters of any other State, the Administrator . . . shall so notify such other State, the licensing or permitting agency, and the applicant.” Therefore, EPA sent a letter to the Rhode Island Department of Environmental Management (RI DEM) providing notice that the activities to be authorized by the NPDES permit to be issued to Brayton Point *may* affect the quality of Rhode Island waters. As required, copies of this notice letter will also be sent to the MA DEP and USGenNE. EPA will then consider any response received from the RI DEM in determining whether or not any additional limitations are needed to ensure compliance with applicable Rhode Island water quality standards.

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<sup>2</sup> The temperature criteria for Class SA and SB waters in the Massachusetts water quality standards provide as follows: “any determinations concerning thermal discharge limitations in accordance with 33 U.S.C. 1251 § 316(a) will be considered site-specific limitations in compliance with 314 CMR 4.00.” 314 CMR 4.05(4)(a)(2)(c) and 4.05(4)(b)(2)(c).