Section III. Comments on Proposed Revisions to Limits and Monitoring Requirements for Outfall 001

Section III.A Revisions to Limits for Chlorine

Comment III.A.1

Mirant comments that:

> Following are Mirant Canal's comments on the new and revised permit limits and conditions the Agencies have proposed for Canal Station's Outfall 001. Outfall 001 currently receives and is permitted to discharge once-through non-contact condenser cooling water, treated station effluent from internal Outfalls 010, 011, and 012, and storm water. The Draft Permit authorizes the continued discharge of these waste streams albeit with many new restrictions or conditions. Mirant Canal requests clarification of certain provisions and objects to others, for the reasons discussed below.
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> The current permit includes a daily maximum limit on total residual chlorine ("TRC") of 0.1 mg/l, with grab sampling required Monday through Friday when the system is in use. Part I.A.2 of the Draft Permit (1) converts the limit on TRC to a limit on "total residual oxidants" ("TRO"); (2) adds a new "instantaneous maximum" TRO limit of 0.2 mg/l; and, (3) requires grab sampling once every thirty minutes during chlorination, regardless of when chlorination occurs.
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> First, the proposal to incorporate a new instantaneous maximum TRO limit of 0.2 mg/l is, contrary to EPA's assertion (Fact Sheet, pp. 17-18 of 59), unsupported by the effluent limitations guidelines for the steam electric power generating point source category ("Steam Electric Guidelines"). EPA says that this new limit is necessary because the 0.2 mg/l "maximum concentration" included in the Steam Electric Guidelines (§ 423.13(b)(1)) is an instantaneous maximum concentration that may not be exceeded at any time. *Id*. Contrary to the 1992 EPA memorandum cited as support for this proposition, however, neither the regulations nor the supporting preamble support this position. The preamble to the final Steam Electric Guidelines refers to the Best Available Technology or "BAT" limit for TRC as a "daily maximum" limit, which under the NPDES rules has long been defined as an average value. 47 Fed. Reg. 52293, col. 3 (Nov. 19, 1982) ("EPA is promulgating a daily maximum limitation for total residual chlorine (TRC) … based upon a concentration of 0.20 mg/l").
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> Moreover, in contrast to the use of the phrase "maximum concentration" to refer to the two-hour TRC limit, in the same rulemaking EPA presented the BPT guideline for TSS in coal pile runoff (§ 423.12(b)(9)) as a "maximum concentration for any time." That EPA chose to use a different term in setting the BAT limit for TRC/TRO indicates that it did not intend to apply the limit as an instantaneous maximum value.

Response III.A.1:

The Total Residual Chlorine (TRC) effluent limitations guideline for steam electric facilities (40 C.F.R. Part 423) was specified as a "maximum concentration" and not as a "daily maximum" limit.[1] After promulgation of the Steam Electric Guidelines in 1982, EPA was asked to clarify the correct interpretation of the term "maximum concentration." EPA studied this issue and, in 1992, issued guidance in the form of a memorandum to all the Regional Water Management Division Directors. The 1992 guidance explains that the term "maximum concentration" is intended to mean "instantaneous maximum." This clarification of the effluent limitation guideline was based on several factors, including the following:

- The history of the TRC effluent limitation guideline, as evidenced for example by early preamble language, indicates that it was distinguished from other limitations that measure compliance based on averaging periods. *See* 39 FR 36185 (October 8, 1974).
- The 1980 Proposed Effluent Guidelines Rulemaking publication stated that the proposed BAT limitation for once through cooling water would be a TRC value "not to be exceeded at any time."
- Handouts, summary papers, and briefing notes for Steam Electric Permit Writers Workshops differentiate between a maximum daily discharge and an "instantaneous maximum."
- The term "average concentration" is used with respect to chlorine elsewhere in the Steam Electric Guidelines to mean the average of analyses made over a single period of chlorination, not to exceed two hours.

EPA disagrees that the phrase "daily maximum limitation" necessarily implies the use of an average rather than an instantaneous maximum and sees no reason to depart from this interpretative guidance on the basis of the comment above. Moreover, the fact that the 1982 regulations use a slightly varying formulation to denote instantaneous maximum for an entirely different effluent limitations guideline (ELG) provides at best equivocal evidence of the drafter's intent. The notion that the rule makers were expressing a preference for a daily maximum rather than an instantaneous value by failing to include the words "for any time" is not a reasonable basis to reject the contrary evidence of the drafters intent cited in the 1992 memorandum and relied upon by the Region. While one might ask why EPA chose not to include the phrase "for any time" in the TRC ELG, an equally legitimate question is why EPA chose not to simply include the word "average" if that is what it truly meant. In sum, EPA believes it is reasonable to conclude that an instantaneous value was intended for purposes of compliance with the TRC (TRO) limit.

[1] As stated in the Fact Sheet, because the intake water contains bromides (i.e., saline water), the sampling parameter has been changed from total residual chlorine to total residual oxidants (TRO) in accordance with the Steam Electric Power Generating Point Source Category effluent guidelines (see 40 C.F.R. § 423.11).

Comment III.A.2:

Mirant comments that:

> Until now, EPA New England has shared this view of the TRC effluent guideline as an average value applicable over the chlorination period, as evidenced by the fact that it has not previously imposed any limit except the more stringent 0.1 mg/l TRC limit, which is water quality-based. *See* 1983 Draft National Pollutant Discharge Elimination System (NPDES) Permit to Discharge to Waters of the United States, No. MA0004928, Fact Sheet ("1983 Draft NPDES Permit Fact Sheet"), Attachment C.IV.a, p. 2. The previous permit, and the interpretations it reflects, is entitled to a presumption of regularity, especially with respect to the permit's application of effluent guidelines that had been in effect since 1982. To the extent EPA subsequently issued a memorandum purporting to "clarify" or change the applicable rule, it is without legal effect. *See Appalachian Power Co. v. EPA*, 208 F.3d 1015, 1028 (D.C. Cir. 2000) (EPA may not issue guidance significantly altering rule without going through rulemaking).

Response III.A.2:

As explained in response to comment III.A.1, EPA does not share the commenter's view of the effluent guidelines. The Region has construed the term "maximum concentration" to be an instantaneous maximum value, as evidenced by several relatively recent power plant permits, including Mystic Station, Brayton Point and West Springfield.

As the comment notes, the Region included a 0.1 mg/l water quality-based limit in the previous permit, but not the technology-based 0.2 mg/l instantaneous limit at question. There is nothing irregular or unusual about the need to impose a more stringent permit provision when reissuing a permit. NPDES permitting is necessarily an evolving, iterative process, and EPA revisits all aspects of NPDES permits at the time of permit reissuance. This reevaluation is driven by numerous factors, including the desirability of improving and updating past analyses to incorporate the best available information, in addition to legal and technical insights that may have been overlooked in the past. The imposition of more stringent limitations from permit to permit is also generally consistent with the overall objectives of the Clean Water Act (CWA). Congress made it clear when it enacted the CWA that its goal was not merely to reduce pollution in navigable waters but to eliminate it. *See* CWA § 101(a). The statute expressly provides for technology-based effluent limitations that will "result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants…." *See* CWA § 301(b)(2)(A). Congress clearly intended that EPA can, and indeed often must, revise permit requirements when EPA reissues such permits. This framework does not contemplate grandfathering of earlier permit requirements or analyses. If that were the case, there would be no need for maximum five year terms for permits under the CWA. There would also be little need for detailed permit renewal application requirements. The CWA demands that the permit issuer reevaluate the record at the permit reissuance stage and determine whether new permit conditions are warranted based on the best, reasonably available information.

Here, the failure to include the 0.2 mg/l limit in the prior permit was determined to be an oversight, and this oversight has been corrected in the current permit. EPA concluded that compliance with the existing limit would not necessarily ensure compliance with the applicable technology-based standard. The discharger could, for example, meet the overall limit of 0.1 mg/l even while discharging at an instantaneous concentration of above 0.2 mg/l multiple times during the day. Thus, EPA added the instantaneous maximum of 0.2 mg/l.

EPA believes the presumption of regularity doctrine has been misapplied by the commenter in this instance. The presumption of regularity is a judicial doctrine under which courts presume that, in the absence of clear evidence to the contrary, public officers have properly discharged their official duties. *United States v. Chem. Found., Inc.*, 272 U.S. 1, 14–15 (1926). In the administrative law context, courts will apply a rebuttable presumption that an agency has followed its own regulations. *See Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415 (1971). In other words, the presumption a reviewing court would provide EPA with respect to its application of the Steam Electric Guidelines would run against the commenter because it would support the notion that the Region was properly carrying out its regulatory duties in the current permit. In any event, the Region observes that it has interpreted the TRC (TRO) limit as an instantaneous maximum in several recent permits and the Region has clearly provided a reasonable basis for its approach.

The comment suggests that rulemaking procedures were required for the 1992 memorandum because it clarified a provision in the Steam Electric Guidelines. This is incorrect. By way of background, the Administrative Procedure Act (APA) imposes certain requirements, most importantly notice and opportunity for comment, when EPA promulgates "substantive" or "legislative" rules (*i.e.*, rules intended to establish substantive requirements that bind the public or the agency). 5 U.S.C. § 553. Substantive rules are issued through notice and comment rulemaking procedures pursuant to adequate statutory authority. A substantive rule has the force and effect of law and is legally binding on the public and the agency in the same way as a statute. *American Mining Congress v. Mine Safety & Health Administration,* 995 F.2d 1106, 1109 (D.C. Cir. 1993). A substantive rule modifies or adds to an existing legal norm, based on the agency's own authority. It supplements a statute by resolving inconsistencies or filling in gaps, rather than simply construing existing requirements. *Syncor Intern. Corp. v. Shalala*, 127 F.3d 90, 94–95 (D.C. Cir. 1997).

However, certain other rules**,** including "general statements of policy" and "interpretative rules," are exempt from notice and comment requirements. *Id.* at § 553(b). Thus, EPA issues general policy statements (often referred to as "guidance documents") and interpretative rules (which construe existing statutory or regulatory requirements) without notice and comment. The function of the APA's interpretive rule exemption is "to allow agencies to explain ambiguous terms in legislative enactments without having to undertake cumbersome proceedings." *American Hospital Assn. v. Bowen*, 834 F.2d 1037, 1045 (D.C. Cir. 1987). An interpretive rule "indicates an agency's reading of a statute or rule. It does not create new rights or duties, but only 'reminds' affected parties of existing duties." *Orengo Caraballo v. Reich*, 11 F.3d 186, 195 (D.C. Cir. 1993). Although interpretive rules cannot go beyond the text of a statute or regulation, this does not "imply that an interpretive statement may only paraphrase statutory or regulatory language… Accordingly, an interpretive statement may 'supply crisper and more

detailed lines than the authority being interpreted' without losing its exemption from notice and comment requirements under [the APA]." *Id*.

The distinction between an interpretative rule and a substantive rule "likely turns on how tightly the agency's interpretation is drawn linguistically from the actual language of the statute." *Syncor*, 127 F.3d at 94 (citations omitted). "If the statute or rule to be interpreted is itself very general, using terms like 'equitable' or 'fair,' and the 'interpretation' really provides all the guidance, then the latter will more likely be a substantive regulation," as opposed to a situation where the government's position "is driven by the actual meaning it ascribes" to the phrase in a substantive rule. *Paralyzed Veterans of America v. D.C. Arena*, 117 F.3d 579, 588 (D.C. Cir. 1997). *See also Health Ins. Ass'n of Am. v. Shalala*, 23 F.3d 412, 423 (D.C. Cir. 1994) (An agency can properly rely on interpretative rules to "resolve . . . ambiguities" or, to transform a "vague . . . duty or right into a sharply delineated duty or right.").

As described in Response III.A.1, the 1992 memorandum clarified the term "maximum concentration" as used in the guidelines and codified at 40 C.F.R. Part 423. The memorandum did not modify the guidelines; rather, the memorandum simply explained the Agency's interpretation of an ambiguous term. In so doing, it describes the basis for EPA's interpretation of "maximum concentration," which includes textual analysis, regulatory history, and contemporaneous evidence of the drafters' intent. In other words, the memorandum does not itself have "the force and effect of law," but rather "spell[s] out a duty fairly encompassed within the [guidelines]." *Paralyzed Veterans*, 117 F.3d at 588. The memorandum was thus interpretative guidance rather than a substantive rule. As such, there was no impediment to EPA issuing the memorandum, without rulemaking proceedings, and there is likewise no infirmity in the Region's subsequent reliance upon it as guidance. *American Hospital Assn.*, 834 F.2d at 1045 (D.C. Cir. 1987).

Comment III.A.3:

Mirant comments that:

> Third, the Draft Permit would dramatically increase the frequency of compliance monitoring required for chlorine, without adequate justification. The current permit requires at most one (1) sample per day, five (5) days per week (*i.e.*, sampling daily when the system is in use, except Saturday and Sunday). In setting these requirements and others in previous permits, EPA said, "The monitoring program in the permit specifies routine sampling and analysis which will provide continuous general information on the reliability and effectiveness of the installed pollution abatement equipment." *See* 1983 Draft Permit Fact Sheet, Attachment C., Part IV.a, p. 2. The Agency concluded that "[t]he effluent monitoring requirements have been established to yield data representative of the discharges under the authority of Section 308(a) of the Clean Water Act" and its implementing regulations. *Id.* at pp. 2-3. The Fact Sheet supporting the 1988 Draft Permit repeats this language in support of the same monitoring requirements. *See* 1988 Canal Station Draft NPDES Permit, Fact Sheet, Part.IV.a, p.2.

Under the proposed Draft Permit, Mirant Canal would have to sample every thirty minutes during any chlorination event, no matter when it occurs. Assuming daily chlorination for two hours per day per unit, the Station would have to collect and analyze *one hundred and twelve (112)* samples over the course of a week ((4 samples per hour x 4 hours) x 7 days). This is a huge increase in sampling, and it is particularly burdensome because it will require sampling not just during business hours, when daily chlorine sampling usually occurs, but during non-business hours and on weekends when chlorine dosing occurs automatically. The cost of these additional requirements will go far beyond the additional analytical costs, requiring additional personnel and overtime costs.

An overview of Mirant Canal's current protocol for applying chlorine demonstrates why this is so. At present, it is Mirant Canal's practice to apply chlorine for one two-hour period in the late morning or early afternoon (typically, around 1 p.m.). At that time, on week days plant personnel carefully check the chlorine applicator and the resulting effluent concentrations, which Mirant Canal samples at the bridge immediately adjacent to Unit 2. The second two-hour chlorination period then occurs roughly twelve hours after the first. If chlorine is applied from 1 p.m. - 3 p.m. in the afternoon, the next application will not occur until 1 a.m. in the morning. However, if the afternoon sampling and applicator check disclose any unresolved abnormality with the applicator, the second dose of chlorine is not applied. If the proposed additional monitoring requirements are imposed, the Station would have to make special arrangements for personnel to come on site during late night/early morning hours and on weekends solely for purposes of taking these samples and arranging for their analysis. Thus, instead of the $1500 Mirant Canal estimates it currently spends annually on monitoring for compliance with this limit, the Station estimates it would now have to spend $33,600 annually on compliance sampling for this one limit. This is a *2240*% increase in cost.

There is no environmental or other basis for this increase. EPA has not identified any factual basis for concluding that the Agencies' previous judgments about the appropriate frequency of chlorine monitoring were wrong, nor is there any evidence to suggest that the current sampling regime has failed to detect compliance issues. In fact, the Station's current practice, which takes a precautionary approach with regard to dosing chlorine, already is extremely protective. Moreover, the Canal Station has experienced no instances of non-compliance from 1999 to the present, with the exception of a one-time malfunction of the chlorination system in June of 1999. The Canal Station's precautionary approach to chlorine application is designed to prevent such incidents, which it has done successfully.

Response III.A.3:

EPA acknowledges that the Draft Permit would have significantly increased the frequency of compliance monitoring for TRO compared to the prior permit. (Mirant Canal's current permit requires one TRC sample per day when in use, except weekends). The increase in sampling was intended to ensure that the chlorine injection equipment operates properly and was not causing any exceedances of the chlorine limits, particularly as it currently operates unattended most times

(nights and weekends).[2] Automatic chlorination can be precarious because chlorine demand changes throughout the year and flow changes depending on the tide level. Chlorine and chlorine compounds can be extremely toxic to aquatic life and over-chlorination can lead to significant environmental consequences. EPA therefore disagrees that there is no environmental rationale for increased monitoring. Furthermore, in the October, 2003 NPDES Permit Application, Attachment C.1, page A1-8, Mirant indicates that "[o]n June 7, 8, 16, and 22, 1999 the plant experienced problems with the chlorine injections. On these dates, several species were impinged and some in great numbers…." Four documented instances of chlorine injection problems resulting in elevated impingement rates, albeit during one month, does not appear to be a "one-time" malfunction as Mirant claims. EPA also does not regard a cost of $33,600 per year for chlorine monitoring by Canal Station to be excessive if needed to adequately monitor chlorine discharges.

With that said, EPA has concluded that the monitoring frequency can be reduced from that proposed in the Draft Permit while still ensuring representative effluent monitoring. EPA agrees to reduce monitoring frequency to two grab samples during each chlorination event (one grab sample per Unit). According to Mirant's chlorination schedule, this amounts to a maximum of four samples per day. This frequency will ensure that each chlorination event is assessed for the correct dosing and for any equipment malfunctions. EPA does not believe that this is a burdensome requirement compared to sampling performed at other power plants such as Pilgrim Station, which samples every ten minutes during every chlorination event to verify compliance with permit limits. EPA has also added the requirement to report all sampling data for each month that chlorination occurs. Finally, EPA has added the following requirement, "If the daily sampling and applicator checks disclose any unresolved abnormality with the applicators or feed rates, all subsequent dosing of chlorine is prohibited until the abnormality is corrected." This requirement is consistent with Mirant Canal's stated "current protocol."

As explained in Comment III.A.2 above, there is no grandfathering of conditions from prior permits. To the contrary, permit terms can and often do become more stringent based upon an analysis of the information available to EPA during the reissuance process.

Comment III.A.4 from Commonwealth of Massachusetts - Office of Coastal Zone Management

MA CZM comments that:

> Section 4.4.1 (p. 16 of 59) of the fact sheet: EPA states that "Considering the high current flows through the Cape Cod Canal, EPA believes there is always more than 6191

[2] EPA does not agree that automatic dosing during non-business hours (night and weekends) is a "precautionary approach." In addition, EPA has no way of determining if compliance sampling is performed at times when chlorine levels are expected to be at the maximum. Furthermore, the facility is not equipped with an alarm system that would indicate either a chlorine exceedance or a malfunction in the chlorine delivery system, which could cause an exceedance of the limits. Therefore, EPA has no way of independently verifying that there have been "no [additional] instances of non-compliance" since the malfunctions in 1999.

cfs of flow to dilute the effluent." However, there are two times each day where the current reverses itself, thus the current flowing in each direction would be diminishing to some point less than 6191 cfs and close to 0 cfs (as noted later in the Fact Sheet, section 5.2.3, p.42). CZM would like an explanation of how long during each tidal cycle the dilution in the canal is less than the dilution factor necessary to achieve the Water Quality Standard of 0.013 mg/l for chlorine (it is likely less than an hour during each 12-hour tidal cycle). CZM is concerned that chlorination during or within an hour of slack tide may result in higher than anticipated chlorine levels in the effluent. CZM recommends that the two hours of chlorine use per day allowed in the permit be limited to when flow in the canal is greater than 6191 cfs (e.g., at least one hour past or before slack tide).

Response III.A.4:

Slack tide occurs briefly for a few minutes around the turning of the tide. Water movement slows for a brief duration at this time, but available dilution does not approach zero. EPA's nationally recommended acute water quality criterion for chlorine, which has been adopted by Massachusetts, is based on a 4-hour exposure time. The limited duration of slack tide in this area makes the probability of a discharge of chlorine during those times fairly limited. If a discharge does occur during slack tide, the duration of lower initial dilution will be a matter of minutes. EPA does not believe that this will lead to a significant risk of acute mortality.

Section III.B Whole Effluent Toxicity Monitoring

Comment III.B.1:

Mirant comments that:

Part I.A.2 of the Draft Permit also includes a new permit condition requiring extensive monitoring for acute and chronic "whole effluent toxicity" ("WET") using chronic and modified acute test protocols for inland silverside and sea urchin, respectively, specified by EPA New England. Part I.A.2.d further provides, "If, after eight consecutive sampling periods (two years), no test shows a $LC_{50} < 100$ % and a C-NOEC < 20 %, the permittee may request a reduction in toxicity testing. A variance from the … WET testing schedule may be allowed upon written approval from EPA with concurrence from Mass DEP."

This proposed requirement is not based on a determination that there is a reasonable potential for Mirant Canal's discharge to cause toxicity. Rather, as indicated in the Fact Sheet, p. 19, EPA has proposed WET testing because it claims to have "inadequate information" on which to base a determination of reasonable potential. In essence, EPA is requiring WET testing because no WET testing has previously been done at this plant.

In fact, based on long experience with WET testing in similar situations, EPA should determine that there is no reasonable potential for this discharge to cause toxicity. The discharge of large amounts of cooling water, taken from and returned to the Canal, which has its own extremely large flow, with the addition of very minor amounts of pollutants other than heat that WET testing would not evaluate, mean it is certain that this discharge

> does not have any reasonable potential to cause toxicity as measured by WET tests. EPA should not require Mirant Canal to perform WET tests just for the sake of conducting WET tests, and certainly it should not require the performance of WET tests indefinitely.

Response III.B.1:

EPA explains on its website http://cfpub.epa.gov/npdes/wqbasedpermitting/wet.cfm that:

> "WET tests replicate the total effect and actual environmental exposure of aquatic life to toxic pollutants in an effluent without requiring the identification of the specific pollutants. WET testing is a vital component of the water quality standards implementation through the NPDES permitting process... To protect water quality, EPA recommends that WET tests be used in NPDES permits together with requirements based on chemical-specific water quality criteria… WET tests are designed to predict the impact and toxicity of effluents discharges from point sources into waters of the U.S. WET limits, developed by permitting authorities, are included in NPDES permits to ensure that state or tribal water quality criteria for toxicity are met. WET monitoring requirements are included in NPDES permits to generate data for use in assessing whether a WET limit has been exceeded or to assess if a WET limit is needed."

Mirant Canal is discharging to near-shore coastal waters affecting two different estuarine systems (Buzzard's Bay and Cape Cod Bay). EPA has begun requiring toxicity testing for cooling water discharges in estuarine and coastal areas, such as for Brayton Point Station, Mirant Kendall Station, and Taunton Municipal Lighting Plant. This is in part due to the recognition that these areas provide important spawning and nursery habitat. EPA's 1977 draft Interagency 316(a) Technical Guidance Manual specifically highlights the general incompatibility of cooling water discharges and estuarine spawning and nursery habitat, specifying that "areas supporting critical functions should be avoided." In this case, critical function is defined as "one that is limited in extent and necessary for the propagation and survival of a species." For pre-existing facilities that discharge to coastal and estuarine habitats, EPA wants to ensure that the impacts from discharges to these sensitive habitat areas are being minimized. Because the potential for causing toxicity is unknown at Mirant Canal, WET testing has been included in the permit in order to establish whether the discharge causes, has the reasonable potential to cause, or contributes to an excursion above the toxics criterion, which will aid the Region in assessing the need for future permit limits.[3] In addition, the WET tests allow one to determine the actual

[3] EPA's Technical Support Document for Water Quality-based Toxics Control (TSD), Chapter 3.2, p. 55, states:

> If the regulatory authority, after evaluating all available information on the effluent, in the absence of effluent monitoring data, is not able to decide whether the discharge causes, has the reasonable potential to cause, or contributes to, an excursion above a numeric or narrative criterion for whole effluent toxicity or for individual toxicants, the authority should require whole effluent toxicity or chemical-specific testing to gather further evidence. In such a case, the regulatory authority can require the monitoring prior to permit issuance, if sufficient time exists, or it may require the testing as a condition of the issued/reissued permit.

See also Massachusetts Water Quality Standards, Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990) (containing recommended methods for toxicity testing for NPDES permits, including coastal and marine waters).

environmental exposure of aquatic life to an effluent or ambient water, even if there is a lack of knowledge of the chemical, physical, and biological characteristics of that discharge or ambient water.

As noted above, and as set forth in Part I.A.2.d of the Draft Permit, EPA is not necessarily requiring the WET tests indefinitely, but has included a mechanism that would allow the Permittee to seek a reduction if test results indicate that there is no toxicity problem associated with the effluent.

Comment III.B.2:

Mirant comments that:

> Mirant Canal notes that EPA does not always require WET tests from dischargers, even power plants. See, for example, NPDES Permit No. MA0004707 issued November 4, 2004 to the West Springfield Station along the Connecticut River.

Response III.B.2:

There are two major differences between West Springfield Station and Mirant Canal that are relevant for understanding why the former is not currently required to undertake WET testing but the latter is. First, as stated in the prior response, Mirant Canal discharges to coastal and estuarine habitats, while West Springfield Station is a riverine discharge less likely to provide habitat to significant numbers of sensitive, early life stages of aquatic organisms. Second, West Springfield Station sends most of their process waste to the municipal sewer system, so it primarily discharges cooling water. Mirant Canal mixes most of its process wastewater with its cooling water discharge.

Comment III.B.3:

Mirant comments that:

> Mirant Canal appreciates that the Agencies have provided an opportunity for Mirant Canal to request a reduction in WET testing after two years. To qualify for some reduction in or elimination of either WET test requirement, however, Mirant Canal would have to show that its effluent passes both tests for each consecutive quarters with no "toxicity" as defined by the test methods and the evaluative standards EPA has specified. This is the case, apparently, even if a test "fails" by only the narrowest of margins, such that it may likely be attributable to test variability rather than true effluent toxicity. It also appears to be the case even if an isolated test failure can be traced to abnormal operating circumstances or otherwise explained by conditions that would not justify "restarting" the eight-quarter test cycle anew.
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> That relief from the WET testing requirements is available only under such limited circumstances is of concern to Mirant Canal given the substantial cost and burdens that these new testing requirements will impose. As EPA may be aware, each modified acute

test can be expected to cost approximately $2000, and each chronic test will cost approximately $3500, with an additional $750 in supporting chemistry costs covering both tests (assuming they can be done simultaneously). This is a total of approximately $6250 per quarter, or $25,000 per year (assuming no test needs to be repeated for any reason)). Such a substantial cost can be justified only where it is clearly warranted. That is not the case here, especially since (1) the state standards include no criterion for WET *per se*, and (2) the Agencies have no independent basis for believing that the Canal Station is causing or contributing to an exceedance of narrative water quality standards. Moreover, unlike other categories of industrial discharges, power plant discharges are relatively non-variable because, while the plant capacity utilization rate may change, the plant processes and the output produced -- power -- does not. Thus, requiring two full years of testing is not necessary to capture effluent "variability." Moreover, while the permit entitles Mirant Canal to request a reduction in WET testing requirements after two years, it provides no assurance that such reductions will be forthcoming, nor does it indicate what level of reduction may be expected.

Response III.B.3:

Please see Response III.B.2 above for an explanation of the rationale behind the WET testing requirement. Massachusetts Water Quality Standards prohibit the discharge of toxic pollutants in toxic amounts. *See also* Massachusetts Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990) (containing recommended methods for toxicity testing for NPDES permits, including coastal and marine waters).

EPA disagrees with Mirant Canal's premise that their discharge is "relatively non-variable." The chemistry of the source water changes seasonally and from year to year. In addition, the facility's discharge of low volume and metal cleaning wastes is not constant. Thus, EPA believes that the four WET tests per year for two years is a reasonable way to capture this variability.

EPA has determined that WET testing is required and has given the Permittee the opportunity for this requirement to be reduced if effluent consistently satisfies the tests. EPA is not in a position to account for the numerous potential contingencies associated with future WET testing, such as measurement error, in the permit itself. EPA believes that a simple (as opposed to heavily caveated or qualified) statement of the applicable standard will assist both EPA and the Permittee insofar as it provides a clear rule from the standpoint of compliance. Moreover, a failed WET test would be a cause of considerable concern to EPA given the sensitive nature of the receiving waters and, in light of this, EPA would presume its validity unless shown otherwise. The Permittee is free to present information to EPA if a test does not pass due to what the Permittee believes is testing or measurement error. The Permittee can be assured that EPA will assess these future matters reasonably and objectively, as it is in EPA's interest as well as the Permittee's to ensure the data relied on for permitting purposes are valid. EPA will review the data and make a determination on the validity of the test, as well as the continuing need for WET testing, on a case-by-case basis based on all the facts and circumstances available at the time. For instance, the Permittee may pass the eight consecutive WET tests but within a small margin or proper quality control procedures may not have been followed.

Comment III.B.4:

Mirant comments that:

> For the reasons discussed above, Mirant Canal believes that there is no principled basis for imposing the WET testing requirements, and they should be deleted. If, after consideration of all of the facts, EPA finds some independent basis for imposing WET testing requirements, however, Mirant Canal requests that the Agencies revise Part I.A.2.d as follows:
>
> - Reduce the number of consecutive quarters required before a reduction in testing can be requested from eight (8) to four (4);
> - Apply the WET testing requirements independently, so that Mirant Canal may request a reduction in either form of test once satisfactory testing in four consecutive quarters has been performed;
> - Provide a mechanism by which Mirant Canal may demonstrate that a test result not meeting the evaluation criterion is likely attributable to test method variability or to a specific, remediable cause, in which case the period before which a reduction in testing may be requested would be extended by one (1) quarter, but not restarted; and
> - Provide that Mirant Canal may request a reduction in or elimination of WET testing requirements, and the permitting authorities will not unreasonably withhold such approval upon a showing that the provisions of Part I.A.2.d have been satisfied.

Response III.B.4: Each request is addressed individually below:

To assess potential variability, EPA routinely requires a minimum of two full years of testing. Fewer than eight quarterly tests will not provide necessary data to analyze seasonal and year-to-year variability in a statistically meaningful fashion. The Permittee has not provided any particular rationale to reduce testing from eight to four quarters. In light of the fact that the receiving water functions as productive near-shore coastal water, EPA believes it is appropriate to adopt a reasonably conservative approach in this context.

One of the strengths of the WET testing approach is the use of multiple organisms with differing sensitivities to different pollutants. The two test species are representing all life stages of all the resident species. EPA sees no ecological advantage or scientific justification for reducing the number of test species to one. These tests provide snapshots of the possible effects of the discharge. With variable patterns in chlorination and boiler blowdown, the nature of the effluent changes on an hourly basis. As a result, four tests that do not produce toxicity in one species are not sufficient to prove that the effluent is non-toxic to that species. EPA will require that both species be tested as long as there is a need for toxicity testing.

The Permittee is always free to submit information if it feels a certain test result is not valid. EPA will review this information and make an independent, reasonable determination regarding the test's validity.

After eight quarters of testing and assuming that the Permittee requests a reduction or elimination of testing frequency, EPA will review all of the WET results and make an informed decision about the need to continue with this testing regime. At this point in time, as discussed above, EPA will not commit itself to an automatic reduction or elimination of this program before having actual data.

Comment III.B.5 from Commonwealth of Massachusetts - Riverways Program

> The permit will require quarterly Whole Effluent Toxicity tests with two different organisms to determine if the effluent may be causing acute or chronic toxicity. Unfortunately the WET testing will fail to capture the influence of the thermal pollutant discharged by this plant on both the organisms directly and the possible synergistic interactions with other pollutants present in the effluent. Would it be possible to amend the WET testing protocols to have the laboratory growing conditions faithfully mimic the conditions in the receiving water plus providing a more accurate picture of the potential for chronic or acute effects on the test organisms and, by extrapolation, the potential for the effluent to impair the propagation of an indigenous, balanced population of fish, shellfish and wildlife?

Response III.B.5:

Dilution modeling and in stream monitoring at the point of discharge suggest that the thermal plume dissipates fairly quickly (in a matter of minutes at most) to temperatures equivalent with background. The thermal plume covers a fairly limited geographical area and moves with the tide. Organisms in the receiving water should be exposed to elevated temperature for relatively brief periods of time. Thus, EPA does not see a need to deviate from the standard protocol for toxicity testing.

Section III.C Revisions to the pH Limit

Comment III.C.1:

Mirant comments that:

> The Draft Permit, Part I.A.2, revises the current limits on pH, presenting them as "monthly range" values of $\geq$ 6.5 and $\leq$ 8.5 standard units ("S.U.") and requiring monitoring by recorder. The current permit, while imposing a limit, did not specify monitoring type or frequency for this outfall, although the Company has consistently monitored and reported pH via weekly grab sampling, as is required for internal Outfall 010. In addition to the new averaging period and monitoring requirements for pH, EPA also proposes to include a second pH limit in footnote 3 to Part I.A.2, specifying that "pH shall not be more than 0.2 units outside the naturally occurring range."
>
> Mirant Canal does not believe that EPA is justified in requiring pH sampling by recorder at Outfall 001. Instead, we believe that weekly grab sampling would be more appropriate. If EPA can identify a principled basis for requiring more frequent

> monitoring of pH at this outfall, then some greater frequency (*e.g.*, daily sampling) might be justified, but monitoring should still be performed via grab sampling. Based on our current evaluation, we believe that retrofitting a recorder at the outfall would be accomplished by installing a pH detector cell at the end of the flume and connecting it to the PI data historian system via a communications cable. The cost of installing even a relatively simple recorder system of this kind is nevertheless likely to be considerable. We estimate that cost of the detector cell and communications cable would be between $10,000 and $15,000. Also, to ensure the accuracy of our data, it is Mirant Canal's current practice to calibrate our pH meters daily with full documentation. Although daily calibration of an automatic recorder is not feasible, given the characteristics of such systems, they will require frequent calibration and maintenance. This will impose additional costs, and during maintenance and calibration it will be impossible to sample with the recorder system, which is not the case with grab sampling.

Response III.C.1:

EPA is aware that the current permit had permit limits for pH but did not require monitoring or reporting. To ensure that the pH limits are being met, EPA is now requiring monitoring and reporting. EPA agrees that continuous monitoring is not necessary as long as representative weekly grab samples are taken. EPA agrees that weekly grab samples should be adequately representative for pH of the discharge because the discharge is primarily heated seawater and there is a lack of significant variability from day to day in the pH of seawater, even at elevated temperatures.[4] Therefore, EPA requires weekly grab samples for pH at outfall 001 in the Final Permit.

Comment III.C.2:

Mirant comments that:

> Imposing these additional costs and burdens is wholly unwarranted, especially given EPA's previous determination regarding the adequacy of far less onerous monitoring requirements, and Canal Station's excellent record of compliance. As noted above, although the current permit does not require pH monitoring at this outfall, the Canal Station nevertheless has monitored and reported pH weekly. The pH range at this outfall consistently ranges between 7.8 - 8.2 S.U., reflecting full compliance with the permit. Thus, Mirant Canal submits that the costs and other burdens imposed by requiring installation of this new system are wholly unwarranted.

Response III.C.2:

EPA has removed the requirement for continuous pH monitoring. See Response to Comment III.C.1 above.

[4] The change in temperature of seawater (at pH 8) from 25ºC to 85ºC, changes pH measurements less than 0.2 units. See http://www.sensorex.com/support/education/pH_education.html

Comment III.C.3:

Mirant comments that:

> In addition to our objection to the new monitoring requirement, the "monthly range" pH limit EPA proposes is confusing and undefined. In the absence of any definition of this term or guidance as to how it is to be interpreted and applied, Mirant Canal respectfully objects to its imposition. Once EPA has supplied an explanation of the term, Mirant Canal reserves a further opportunity for comment.

Response III.C.3:

The pH limit ($\geq$ 6.5 and $\leq$ 8.5 s.u.) is an instantaneous limit that must be met at all times pursuant to the Massachusetts Water Quality Standards. EPA requires in the Final Permit that Mirant Canal report the highest and lowest pH reading of each month as well as all violations (see Part II.D.g of the Final Permit).

Please see Response to Comment II.E regarding Mirant Canal's reservation of rights to comment. *See also, In re Caribe Gen. Elec. Prods., Inc.,* 8 E.A.D. 696, 705 n.19 (EAB 2000) (explaining that the appellate review process provides petitioner with the opportunity to question the validity of material in the administrative record, including new information added by the permit issuer in response to comments).

Comment III.C.4:

Mirant comments that:

> Mirant Canal also objects to the imposition of a second pH limit requiring that pH be not more than 0.2 units outside the "naturally occurring range" which, according to the Fact Sheet, p. 18, is based on the Massachusetts Surface Water Quality Standards at 314 C.M.R. 4.00. The surface water quality standard in question provides that the pH range for Class SB waters is not more than 0.2 units outside the normally occurring range. There is no evidence from the Fact Sheet or elsewhere in the record that the Agencies have made any evaluation of "reasonable potential" to determine whether this limit is needed, in light of the characteristics of the effluent (which already is subject to pH limits) and the characteristics of the waterbody. To the best of our knowledge, neither agency has ever done any study to characterize the "normally occurring" pH range of waters in the Cape Cod Canal, nor has either considered what pH range would be consistent with this standard. In the absence of such an analysis, there simply is no basis in fact or law for imposing such a limit on the Canal Station.

Response III.C.4:

Water Quality Standards for Massachusetts specify that the pH for Class SB waters "[s]hall be in the range of 6.5 through 8.5 standard units and not more than 0.2 units outside of the natural background range." *See* 314 C.M.R. 4.05(4)(b)(3). After consulting with MassDEP, EPA is

removing the second requirement that the pH shall not be more than "0.2 units outside of the natural background range" due to uncertainty about what precisely constitutes the natural background range.

Comment III.C.5:

Mirant comments that:

> Also, Mirant Canal notes that the Massachusetts DEP recently proposed modifications to its water quality standards for pH in class SB waters, proposing to substitute the phrase "natural background range" for the current language "normally occurring range." There is no basis or authority for EPA and DEP to transpose a proposed water quality standard into an effluent limitation in a permit, particularly without evidence or reason to expect that there is reasonable potential for the discharge to cause any exceedance of the existing water quality standard for pH.

Response III.C.5:

This requirement has been removed from the Final Permit. See response III.C.4 above.

Section III.D Revised Limitations for Temperature

Comment III.D.1:

Mirant comments that:

> In Part I.A.2 of the Draft Permit, and subsections a. and c. of that Part, the Agencies propose two new thermal limitations and several new thermal monitoring requirements for Outfall 001. According to the Fact Sheet, pp. 11, 20-24, these limits are intended to reflect EPA's decision to grant Mirant Canal's request for a § 316(a) variance from otherwise applicable water quality-based thermal limits, based on EPA's determinations that the Canal Station's existing thermal discharges have not caused prior appreciable harm to a "balanced indigenous population" ("BIP") of aquatic life, and that continuation of those discharges will not cause appreciable harm to the BIP.[5] The proposed permit

[5] In both 1983 and 1988, EPA evaluated the Canal Station's thermal discharge (which is the same as the present discharge) and concluded that it met the §316(a) variance standard. In the Fact Sheets supporting the 1983 and 1988 draft permits, the Agency said:

> In late 1982, a document was submitted to EPA, entitled, The Effects of Power Generation of some of the Living Marine resources of the Cape Cod Canal and Approaches. The document was authored by personnel from the Massachusetts Department of Fisheries, Wildlife and Recreational Vehicles, Division of Marine Fisheries (the "Division"). Division personnel served as principal investigators of the biological studies that were required by the previous NPDES permit. The major results of the studies indicated that the marine resources in the Cape Cod Canal and surrounding water bodies were adequately protected by the environmental safeguards contained within the NPDES permit….

limits include: (1) a new maximum daily temperature limit of 107°F, measured continuously by recorder; (2) a new maximum daily limit of 33°F on the temperature rise across the condenser or "ΔT," measured continuously via recorder as the discharge temperature minus the inlet temperature; and (3) a new ambient thermal monitoring requirement, pursuant to which Mirant Canal would be required to record the temperature of the water within the top fifteen (15) from the surface, directly above the discharge diffuser, during slack tide, once per week during the generation of electricity, for the duration of the permit.

Mirant Canal agrees that EPA was fully justified in granting the § 316(a) variance request, consistent with applicable regulations (40 C.F.R. Pt. 125, Subpart H), based on the Company's demonstration that the existing discharge has not caused and will not cause appreciable harm to the BIP. However, we have several concerns with the thermal requirements as proposed.

First, the ambient monitoring requirements imposed are, Mirant Canal believes, unreasonably burdensome for several reasons. The Draft Permit would require such monitoring year round, even though there is no reason to believe that ambient water temperatures would even approach 86°F except during the summer months. Thus, Part 1.A.2.c should be re-written to require sampling only from June 1 through August 31. Also, even if the sampling period were cut back to a more reasonable period, the Draft Permit requires weekly sampling during slack tide for the duration of the permit. As EPA is aware, slack tide in the Cape Cod Canal occurs intermittently and for a fairly brief period -- roughly 25-45 minutes. *See, e.g.,* Mirant Canal § 316(a) Thermal Variance Report: Alternative Discharge Limits Under § 316(a) of the Clean Water Act ("Mirant Canal § 316(a) Demonstration"), p. 8. Arranging for personnel to go out in a boat at exactly the appropriate time, at the appropriate place, regardless of the time of day or weather conditions, every week (even if monitoring is limited to the summer months) for the duration of the permit will be extremely burdensome and is entirely unwarranted. If EPA's goal is to ensure adequate sampling under representative plant and waterbody conditions, Mirant Canal believes that this could be accomplished by requiring ambient monitoring, *bi-weekly* during slack tide, from June 1 through August 31, for two years. If, as we believe, ambient temperatures at the monitoring point are consistently within the required limit, no further monitoring should be required.

Response III.D.1:

The thermal limit and monitoring requirements were set with the goal of protecting the balanced indigenous population (BIP) of organisms in and on the water body receiving Canal Station's thermal discharge. In order to protect the BIP, the thermal tolerances of all life stages of the

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Since little if any impact from the thermal plume upon the biological community has been detected, and since the station has operated without any obvious environmental degradation, a favorable 316(a) determination can be made.

Fact Sheet, 1983 Draft NPDES Permit MA0004928, Attachment III, Part IV.b, p. 4; Fact Sheet, 1988 Draft NPDES Permit MA0004928, Part IV.b, p. 4.

representative important species need to be taken into account. For example, the various life stages (eggs, larvae, juveniles and adults) have substantially different thermal requirements. Winter flounder eggs are most prevalent in late winter/early spring and their hatching rate and the size of emerging larvae are temperature-dependent. If ambient temperatures are elevated above their preferred range, hatching success quickly declines. It is necessary for EPA to continue to receive these data on an ongoing basis to ensure that the thermal limit is sufficiently stringent to reasonably assure the protection and propagation of the BIP. Thus, to ensure the protection of the BIP, EPA is concerned about the potential for thermal impacts year-round.

EPA is interested in determining what ambient water temperatures are under worst case conditions, which is at slack tide. This does not necessarily need to be done manually by personnel in a boat. We suggest a more efficient way to collect this information is to deploy a series of continuous temperature recording devices in the proper location around and in the discharge. There are several small, inexpensive (about $100 a sensor) sensors that could be deployed for up to 30 days and collect data at predetermined time intervals. These sensors can be retrieved, the data downloaded and then redeployed. This approach would require one boat trip every 30 days at a time of the Permittee's choosing and it would give the regulators a more complete picture of plume dynamics than just weekly collection of single discrete data points. Again, EPA believes it is necessary to continue to receive these data on an ongoing basis to confirm that the thermal limit is sufficiently stringent to reasonably assure the protection and propagation of the BIP. The Permittee has not provided any specific rationale for limiting this data collection at two years. However, EPA does believe that the Permittee provides a valid point regarding ambient monitoring necessary only during the warmest time of the year. The applicant offers to collect ambient data from June 1 to August 31. EPA believes a slightly modified schedule would be more appropriate; monitoring from July 1 to September 30 would reflect the time of year when ambient water temperatures are highest. EPA will benefit from having a statistically robust data set on worst case conditions in the Canal in order to inform future permitting decisions and meet its statutory obligation to *assure* the protection and propagation of the BIP.

Comment III.D.2:

Mirant comments that:

> Second, although Mirant Canal does not oppose the proposed thermal discharge and ΔT limits so long as they are, as indicated in the Draft Permit, applied as maximum daily values (that is, average values over a 24-hour period), the Fact Sheet creates some confusion by referring to the discharge limitation as a "maximum instantaneous temperature." We do not believe that is what EPA intended, because that is not what EPA provided in the Draft Permit, nor would the application of either limit as an instantaneous maximum be consistent with EPA's findings about the existing discharge. Those findings were based on information presented in the 1976 NEGEA Circulating Water Discharge Temperature Survey (referenced by the Fact Sheet, pp. 11, 23); the Mirant Canal § 316(a) Demonstration, which incorporated more recent information from 1999-2000; and the information EPA itself had collected on the thermal discharge characteristics (*see* Fact Sheet, p. 9, Table 4.3). As the information in those reports and

> tables' shows, (1) discharge temperature is a function of intake temperature, and may vary over time, exceeding 107° F for very brief periods, and (2) ΔT values also will vary with ambient conditions and operating loads, exceeding 33°F periodically. Indeed, EPA itself noted in the Fact Sheet that the highest ΔT measured during the 1976 study was 35°F, and the data provided in Mirant Canal § 316(a) Demonstration, Section B.4, Figure 3.18, indicate ΔTs of 40°F during boat monitoring studies (albeit rarely, and for very brief periods). Moreover, as Table 4.3 indicates, the Canal Station's existing discharge can reach instantaneous maximum temperatures of 111°F (albeit very rarely).

Response III.D.2:

The Fact Sheet is correct; the thermal discharge limit is intended to be an instantaneous maximum. There was a clerical error in the Draft Permit which has been corrected in the Final Permit. EPA does not believe that this clarification amounts to a substantial new question warranting reopening of the public comment period. Notwithstanding the discrepancy between the Fact Sheet and the Draft Permit, the commenter has been provided with an opportunity to comment on the instantaneous temperature limit actually being imposed in the permit, and indeed has done so. If the commenter is dissatisfied with EPA's response to its comment, it may petition the Environmental Appeals Board (EAB) for review of the condition.

A permit limit defined as a daily average discharge of temperature of 107^{o} F could allow prolonged durations (hours) of discharge at 107^{o} F or even higher. Based on EPA's experience at other power plants, discharges of temperatures at or above 95^{o} have been shown to be acutely toxic to Atlantic menhaden. At Brayton Point Station, mass mortalities of Atlantic menhaden occurred in the discharge canal when water temperature exceeded 95^{o} F. Atlantic menhaden is an important component of the BIP in the receiving water and should not be exposed to temperatures that could trigger a mass mortality. Temperatures in the mid to high 90s can result in acute toxicity to various life stages of alewives, blueback herring and striped bass, all species which are important components of the BIP in this area.

The delta T (ΔT) limit of 33^{o} F is a daily average limit as indicated in the Draft Permit. EPA believes that the combination of a discharge temperature limit measured instantaneously with a maximum daily calculated ΔT limit is a sufficiently protective approach to prevent acute mortality to Atlantic menhaden and should not result in significant habitat avoidance by other species.

Comment III.D.3:

Mirant comments that:

> All available data suggest that these brief, periodic instances of higher discharge and Δ temperatures are consistent with ensuring that the 86°F temperature limit is met at the appropriate point instream. Thus, there is no basis in the record for EPA to establish instantaneous maximum limits for the existing discharge at these levels. Nor would the establishment of instantaneous maximum limits be biologically appropriate, given (1) the existence of an ambient limit, which will ensure protection of receiving waters under all

> discharge conditions, (2) the hydrological conditions instream, which are attributable both to the discharge diffuser and the current speed of the receiving water, both of which ensure rapid mixing, and (3) and the behavioral characteristics of potentially exposed organisms, which are unlikely to be affected by brief periods of elevated temperatures.
>
> In any case, if EPA intended to establish instantaneous maximum limits, it has given neither adequate notice of that intention (due to the discrepancy between the permit and the Fact Sheet), nor an adequate explanation of the basis for the values it has chosen. Thus, before EPA could proceed with establishment of any such limits, it would be obliged under the Administrative Procedures Act to provide clear and adequate notice of the limits it intends to impose and the basis for those limits, as well as an opportunity for comment.

Response III.D.3:

Available instream temperature data does not cover a potential worst case scenario, which would be discharge temperatures in excess of 107°F at periods of slack tide. The periods of higher temperature with reduced dilution could result in ambient temperatures exceeding the thermal tolerance of Atlantic menhaden. The biological basis for instantaneous temperature limits is to prevent mass mortalities of Atlantic menhaden, which have been shown to suffer these in Mount Hope Bay after a brief exposure to warm water. Instantaneous temperatures above 107°F in the discharge flume could also increase water column temperatures above 86°F, thereby exceeding avoidance temperatures for Atlantic menhaden, winter flounder, American lobster, and Atlantic silversides. EPA does not believe that this clarification amounts to a substantial new question warranting reopening of the public comment period. Notwithstanding the discrepancy between the Fact Sheet and the Draft Permit, the commenter has been provided with an opportunity to comment on the instantaneous temperature limit actually being imposed in the permit, and indeed has done so.

Comment III.D.4 from Commonwealth of Massachusetts - Riverways Program

MA Riverways comments that:

> The Fact Sheet provides a thorough overview and explanation of the issues, permit conditions and facility operations. The Draft Permit is equally thorough and detailed. The Fact Sheet explains the temperature monitoring at the facility has been in the discharge flume and information in a 1976 report is used to interpolate the temperature in the waters above the diffuser. The addition of a permit requirement to monitor the water temperatures above the diffuser in addition to the discharge flume temperature is welcome. The facility has been relying on correlations determined nearly 30 years ago for a discharge releasing a significant volume of heated effluent; this additional monitoring will provide essential in situ data on the thermal impacts in the receiving water. We would also like to advocate for further adjusting the maximum instantaneous temperature limitation so the receiving water will reach a predicted and actual daily maximum of only 85°F, (State Water Quality Maximum Daily Temperature for Class SB

> water) instead of 86°F. While only a degree in difference the slight change to meet State Water Quality Standards is a minimum goal.

Response III.D.4:

The Draft Permit granted a §316(a) variance allowing the thermal discharge to exceed Massachusetts Water Quality Standards for temperature. In EPA's judgment, the instantaneous maximum temperature limit is protective of the balanced indigenous population. The added monitoring requirements, however, will provide valuable information for future permit decisions.

Comment III.D.5 from Commonwealth of Massachusetts - Riverways Program

MA Riverways comments that:

> We would also suggest the annual reporting of the receiving water temperatures above the diffuser (Part 1.A.2.C) be reconsidered. Should there be issues with unpredicted and unacceptable temperature increases due to the effluent discharge, there could be a significant delay in noting the problem or trend if there is only annual reporting. Since monthly reporting is required for most all other parameters on the discharge monitoring report, we would like to advocate for a monthly reporting requirement for this weekly temperature measure.

Response III.D.5:

EPA does not feel that it is necessary to receive monthly reports for the in-stream Cape Cod Canal temperature monitoring requirement because the Permittee is required, pursuant to Part II.D.1.e and g of the Final Permit, to report all instances of non-compliance. Furthermore, Part II.A.3 and Part II.C.2.b of the Final Permit provide that the Regional Administrator may request this information at any time.

Comment III.D.6 from Commonwealth of Massachusetts - Riverways Program

MA Riverways comments that:

> It is unclear if the thermal plume modeling was undertaken with only outfall 001 effluent flows or if the additional heated effluent from outfall 002 was also included in the modeling. The variance to allow for outfall 002 uses, as justification, the rapid dissipation modeled for outfall 001 as indicative of an even more rapid assimilation for the smaller outfall 002 discharge. This may not be as transferable since, it appears, outfall 002 does not have a diffuser and the interaction between the two outfalls thermal plumes has not, apparently, been tested.

Response III.D.6:

Outfall 002, to EPA's knowledge, was not included in the thermal plume modeling. However, this outfall only discharges approximately 3 million gallons per day of heated condenser water

(from outfall 001) which is used to flush debris from the flume. EPA feels that 3 million gallons, even when discharged from a single point rather than a diffuser, would not substantially alter the thermal conditions dominated by discharge of 518 million gallons per day, particularly because dissipation of the plume is not only related to the diffuser, but is strongly associated with the powerful currents in the canal.

Comment III.D.7 from Commonwealth of Massachusetts - Riverways Program

MA Riverways comments that:

> The required biological monitoring will provide valuable information on the entrainment and impingement losses associated with the intake. Unfortunately the monitoring will not capture the potential impacts occurring due to the thermal discharge from the facility. The Fact Sheet states the EPA is unaware of, "any biological evidence of past appreciable harm to a balanced indigenous population" in the receiving water but has there been a directed assessment of the receiving water to determine if the thermal inputs are having a deleterious effect on a BIP? Without such a study, the impact of the thermal pollutant from the facility remains speculative. Given the obvious, (relative) abundance of marine life in the canal, it would be judicious to determine if there are overlooked impacts from the thermal plume in this dynamic environment. This could be accomplished by requiring an expanded study to determine impacts to the receiving water biota from the thermal inputs in addition to the impingement and entrainment impacts.

Response III.D.7:

Under Part 1.A.11, the Permittee is required to visually inspect the shoreline areas adjacent to the discharge canal daily for any sign of environmental stress and/or fish mortality. Characterization of fish killed and water quality analysis will follow an event with more than 25 dead fish within any 24 hour period. EPA feels that discharge related mortality monitoring is sufficient in this case to identify adverse impacts of thermal discharge on the Balanced Indigenous Population.

Comment III.D.8 from Commonwealth of Massachusetts - Division of Marine Fisheries

MA Division of Marine Fisheries comments that:

> Section 5.1 of the Fact Sheet presents thermal discharge modeling to support granting a waiver under section 316(a) of the Clean Water Act by EPA. Modeling results for temperature at the bottom of the canal were not included. Increased temperatures from the discharge could adversely alter the benthic habitat. Several of the species listed in Table 5.3 are demersal, and temperature requirements for some of these species are listed in Table 6.2. Based on this information, it appears the heated effluent from the discharge could render the benthic habitat unsuitable. EPA should evaluate thermal discharge modeling of bottom temperatures to determine whether a waiver from 316(a) may adversely impact demersal fishery resources.

Response III.D.8:

The 1999 Canal Station Thermal Monitoring Study indicates that Cape Cod Canal is well-mixed with little thermal stratification. Further, the thermal plume from Canal Station is predominantly a surface feature with limited penetration in the water column, and is quickly dissipated by strong currents. EPA feels that thermal discharge limits in the Draft Permit are sufficient to protect demersal fishery resources in the canal.

Comment III.D.9 from Commonwealth of Massachusetts - Office of Coastal Zone Management

MA Office of Coastal Zone Management comments that:

> Section A.2 of the permit and Section 5.1 (pages 21-23 of 59) of the fact sheet: It isn't clear how raising the permit limit for the Canal Station discharge temperature from 86º F to 107ºF (with a limit of 86º F in the upper 15 feet of water above the diffuser) is protective of the fisheries resources in the Cape Cod Canal on a year-round basis. In particular, benthic fisheries resources appear to have been overlooked. Section 6.C of the fact sheet states that "based on the thermal monitoring and hydrodynamic modeling as discussed in Section 5.1 of this fact sheet and the temperature tolerance data for the relevant EFH [Essential Fish Habitat] species, EPA does not believe that significant impacts will occur to essential fish habitat." Section 5.1 of the fact sheet mentions a 1999 Canal Station study on the thermal plume that consisted of a two-month survey using thermistors and an intensive one-day study using data from fixed thermistors and observations made from a boat. This information and Figure 5.1 suggest that the thermal studies were only performed in July and August.
>
> Because important temperature-dependent spawning activities occur in months other than July and August (e.g., winter flounder spawning in late winter/early spring) CZM does not believe that a Clean Water Act section 316(a) variance from Water Quality Standards for temperature is appropriate until the magnitude, extent, and potential effects of the thermal plume are investigated for time periods other than July and August.

Response III.D.9:

EPA agrees that important temperature-dependent spawning activities occur in months in which thermal discharge has not been monitored, and is requiring year-round, weekly monitoring of water column temperature 15 feet above the discharge to supplement the data provided in the study. The prior thermal studies were performed during the time of year (July and August) which represented a worst case scenario, with maximum water column stratification that would result in reduced vertical mixing of the thermal plume. EPA believes that similar studies at other points of the year would show a similar or greater level of dispersion. Thus, given that the plume is predominantly confined to surface waters and dissipates quickly in the strong currents, EPA feels the thermal discharge limits of 107º F at the diffuser and 86º F within the 15 feet above the diffuser is sufficient to protect all life stages of benthic species.

Section III.E Sampling Location

Comment III.E:

Mirant comments that:

> Subsection a. of Part I.A.2 of the Draft Permit specifies that effluent samples shall be taken within the last 10 feet of the 750-foot open discharge flume prior to discharging through the diffuser to the Cape Cod Canal. Mirant Canal requests that, to allow the facility flexibility to choose an appropriate monitoring that is both representative of the effluent discharge and efficient as a measurement point, EPA revise this provision as follows:
>
> > Effluent samples shall be taken at a point within the 750-foot open discharge flume prior to discharging through the diffuser to the Cape Cod Canal. The permittee shall identify the monitoring point(s) for each pollutant on the first DMR submitted after the effective date of the permit, and report any subsequent changes on the DMR submitted in the month in which any such change occurs.
>
> Also, we note that the Draft Permit defines the ΔT as the difference between the discharge temperature and the "inlet temperature." Currently, Mirant Canal measures the inlet temperature at the water box inlet, and we request that EPA confirm that sampling at this location would satisfy the proposed permit requirement.

Response III.E:

EPA determined that the most representative sampling location that is reasonably accessible for outfall 001 was within the last 10 feet of the 750-foot open discharge flume prior to discharging through the diffuser in the Cape Cod Canal. This sampling point will allow for complete mixing and/or heat dispersion afforded by the lengthy discharge flume and will provide a more accurate characterization of the actual discharge for compliance purposes. The Permittee itself states that "because of the cooling effects … an accurate measurement of the thermal load to the Canal can only be taken at the end of the discharge flume." (See Comment VIII.A, in which Mirant discusses the measurement point for the plant's heat load determination). The Permittee does not provide any explanation as to why it cannot conduct sampling for any of the required parameters (heat, pH, TRO and WET) within 10 feet of the discharge flume, and EPA is not aware of any impediment to its doing so. While the permit condition proposed by the Permittee would provide it with an extra measure of flexibility, from EPA's perspective it could also lead to confusion or unnecessary complexity when analyzing sampling data to the extent sampling points change from one DMR to the next. EPA will therefore retain the sampling location language in the Final Permit.

Inlet temperature measurement can be taken at the "water box inlet" if the water temperature at this location is representative of the incoming ambient cooling water.

In addition to the effluent monitoring requirements for the open discharge flume (outfall 001) and consistent with the use of closed-cycle cooling (as discussed in response to comment IX.A), the Final Permit includes limits on cooling tower blowdown, only if the Permittee chooses to comply with Part I.A.13.g of the Final Permit by using closed-cycle cooling to reduce the impacts of impingement and entrainment. See Part I.A.2.f of the Final Permit. The description of outfall serial number: 001 has been changed to reflect that cooling tower blowdown may also discharge at this location by removing the term "once-through" from: "once-through non-contact condenser cooling water" in Part I.A.2 of the Final Permit. Furthermore, the TRO limit of 0.2 mg/L is required for once-through cooling water pursuant to 40 C.F.R. 423.13(b)(1) at outfall 001 while cooling tower blowdown is not subject to this limit. Therefore, footnote 1 of Part.I.A.2 of the Final Permit has been supplemented with the following: "This limit only applies to the extent that the Permittee utilizes once-through cooling water." If, for instance, the Permittee decides to convert the entire Station to closed-cycle cooling (i.e. cooling towers) to meet the BTA requirements of Part I.A.13.g of the Final Permit, the 0.2 mg/L TRO limit does not apply to the cooling tower blowdown. The limit does apply, however, to the outfall 001 discharge to the extent that the Permittee employs an alternative method of complying with Part I.A.13.g of the Final Permit (e.g., partial conversion to closed-cycle cooling, flow reduction, etc.) that continues to generate once-through cooling water.