# VI. Other Permit Limits

| **Response #** VI.1 | **Document #**: 1159 |
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***Comment***
One commenter is seeking clarification on the duration of the quahog sampling and believes that quahogs close to the facility should be analyzed for polycyclic aromatic hydrocarbons (PAHs) to determine whether the coal pile is contributing to contamination in the bay.

***Response***
Historically, the sampling of quahog tissue has been done only for heavy metals. There was a concern that heavy metals could be leaching from the cooling water tubing into the environment at low concentrations but resulting in a significant mass flux of chemicals. Shellfish are excellent organisms to sample for bioaccumulation studies because they filter large quantities of water and often accumulate chemicals that are present below detectable concentrations in the water column. Sample stations were originally placed to determine the contribution of heavy metals from cooling water, and no consideration was given to the contribution of PAHs from the coal pile.

Sediments have been tested for PAHs as a result of proposed dredging projects for various parts of Mount Hope Bay. EPA will review the results of these tests and with these data in hand will be able to determine whether PAHs are elevated in Mount Hope Bay and whether additional monitoring may be required.

| **Response #** VI.2 | **Document #**: 1220, 1225 |
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***Comment***
EPA received two comments expressing concern over the impact of the discharge of chlorine on fish stocks in Mount Hope Bay.

***Response***
Chlorine has been used by BPS as a control for biofouling, although its use has been carefully regulated by the limits set in the plant's discharge permit. EPA and Massachusetts derived discharge limits based on EPA's water quality criteria for chlorine and available initial dilution in the receiving water. Brayton Point's current discharge limit for total residual oxidants is a daily maximum concentration of 0.065 mg/l. Recently, BPS has begun a biofouling program that relies more on a physical means of cleaning called SIDTEC, thus reducing its use of chlorine dramatically. The average monthly limit for chlorine in the Draft Permit is 0.0375 mg/l, with a daily maximum of 0.065 mg/l. Since the beginning of the use of the SIDTEC cleaning system, BPS has reduced its chlorine use by 50 percent in the winter months and 11 percent on an annual basis.

| **Response #** VI.3-28 | **Document #**: 1218 |
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## Timing Issues

***3. Comment***
The permittee stated that the Draft Permit does not take into account the time necessary for BPS to construct cooling towers to implement Region 1's proposed new permit conditions. The permittee stated that the minimum amount of time necessary to retrofit the entire station is 4 years (citing *2001 Demonstration*, Appendix H, section 3). The permittee stated that although it does not agree that a retrofit of the entire station is appropriate, if Region 1 continues to advocate for an entire station retrofit, the Draft Permit should be clear that during the time of construction and start-up of the new equipment, the

terms of the existing 1993 permit (as modified by MOA II) would continue to govern operations at BPS. Similarly, the permittee stated that although it does not agree that the proposed reconfiguration of the wastewater treatment system is appropriate, if the system is to be reconfigured, the permit must provide a reasonable compliance schedule and the terms of the 1993 permit should remain in effect until construction and start-up are complete.

***Response***

The permittee is incorrect in stating that the terms of the 1993 existing permit, as modified by MOA II, should continue to govern operations at BPS until it has completed construction of the technologies necessary to comply with the new permit. The conditions in this Final Permit will be effective 60 days after issuance. Therefore, a compliance schedule will be needed. Since it is not appropriate to include such a schedule in the permit itself, EPA expects to include a compliance schedule in an administrative compliance order issued under CWA § 309(a). The Agency has authority to issue a compliance order under CWA § 309(a) either unilaterally or after negotiating a schedule with the permittee. EPA expects to try to negotiate a schedule with BPS.

The permittee's comment regarding wastewater treatment system reconfiguration is addressed elsewhere in this response to comments.

## Wastewater Treatment System Issues (Outfall No. 004)

***4. Comment***

The permittee stated that the maximum daily flow rate of 1.0 MGD in § A.7 of the Draft Permit is too low. The permittee stated that Region 1 apparently misread information in a supplemental water balance diagram submitted by BPS to Region 1 on December 21, 2001, and therefore appears to have made a mistake in setting this limit. The permittee stated that the appropriate maximum daily flow limit is 4.0 MGD, which is the current permit limit for maximum daily flow as well as the design flow rate for the system. The permittee further stated that historically there have been no upsets of the wastewater treatment system attributable to too much flow, the flows from Outfall No. 004 have typically ranged from 0 MGD to 2.5 MGD, and additional flow will likely be necessary to handle the discharge from the air pollution control equipment soon to be installed.

***Response***

EPA agrees with the comment and will replace the maximum daily flow limit and the average monthly limit with limits of 4.0 MGD and 2.0 MGD, respectively. EPA has also changed the average monthly flow and maximum daily flow limits at Outfall No. 001 to 40 MGD and 42 MGD, respectively, to account for this increase in flow.

***5. Comment***

The permittee stated that the Draft Permit should not require separate wastewater treatment systems for metal-cleaning waste streams and low-volume waste streams because these wastewater streams are similar in composition and concentration. The permittee stated that (1) all the wastes entering the treatment system require the same extent of treatment, so it is inefficient to establish separate waste treatment systems, and (2) as the Draft Permit is written, all waste streams other than metal-cleaning wastes would not be treated at all, so the advantage of combining all the streams is that all waste streams are treated. The permittee stated that the effluent limitations for Outfall No. 004 set forth in §§ A.6 and A.7 of the Draft Permit are acceptable and should be applied to all the wastes handled in the wastewater treatment system. In addition, the permittee stated, the sampling schedule of the wastewater treatment should remain the same as the current permit with daily samples collected when metal-cleaning wastes are

being discharged and weekly samples collected during "normal" operations or when there are no metal-cleaning wastes.

***Response***

EPA disagrees that the Draft Permit requires separate treatment of metal-cleaning wastes and other low-volume waste streams. Section A.6 states, in part, "During the period beginning the effective date ..., the permittee is authorized to discharge from **outfall serial number 004:** the **combined treated waste stream of metal cleaning wastes and low volume waste streams**" (emphasis added).

During the development of the Draft Permit, EPA reviewed the existing permit conditions and, based on that review, determined that it would be possible to meet the existing metal limits primarily through dilution, rather than treatment, which would be improper. This determination was made in the absence of metal composition and concentration data for the other waste streams entering the wastewater treatment facility (WWTF), i.e., EPA assumed that these waste streams contained no metal constituents. EPA then developed mass-based limits for copper and iron using the flow from the metal-cleaning waste, multiplied by the effluent guideline limits for metal-cleaning wastes (1.0 mg/l for both maximum daily and average monthly, per the permit). This approach addressed the concerns regarding dilution because the limit was mass-based rather than concentration-based.

The facility has now submitted information indicating that other waste streams entering the WWTF contain metals, such as copper and iron, that are similar in concentration and composition to the metal-cleaning waste stream. Therefore, EPA agrees that the copper and iron limits as established in the Draft Permit were developed inaccurately.

On page 99 of the comments submitted by the company, the permittee states that "[t]he effluent limitations for Outfall No. 004 set forth in §§ A.6 and A.7 of the Draft Permit are acceptable and should be applied to all of the wastes handled in the wastewater treatment system." This statement is in apparent conflict with both the comments contained in this section and the comment requesting that the copper and iron limits should be effluent-based, not mass-based. EPA requested clarification from the commenter through at least one telephone conversation and also during a July 22, 2003, visit to the facility. EPA understands this comment to mean that some consideration of mass of copper and iron should be applied to the other low-volume waste streams entering the WWTF, and that it would be acceptable to apply 0.33 lb to each waste stream and then sum the totals for an overall limit at the sampling point at Outfall No. 004.

The permittee suggests, in the next comment, that this limit should be expressed on a concentration basis rather than a mass basis.

EPA agrees that the contribution of copper and iron from the low-volume waste streams should be taken into account but disagrees that a mass of 0.33 lb should be applied to each stream. EPA addresses this issue below.

EPA agrees with the commenter that the sampling schedule for the wastewater treatment should remain the same as that in the current permit, with daily samples collected when metal-cleaning wastes are being discharged and weekly samples collected during "normal" operations or when there are no metal-cleaning wastes. The Final Permit has been changed to address this comment.

EPA agrees with the commenter that "Metal cleaning waste and low volume wastes should all be treated together, not separately and to the same high standard ... ." The limits in the Final Permit are consistent with this position.

***6. Comment***

The permittee stated that the copper and iron limits should be effluent-based, not mass-based, limits. The permittee stated that Region 1 incorrectly derived the copper and iron limits from the annual average flow rates (citing Fact Sheet §§ 4.5.6, 4.5.7), and that the limits should instead be determined by the daily maximum flow value. The permittee stated that under the circumstances, however, a mass limit is not appropriate. The permittee stated that the effluent flow from the wastewater treatment system varies considerably on a day-to-day basis, cannot be easily controlled, and is influenced to a large extent by factors outside BPS's control, such as timing and amount of rainfall. Therefore, the permittee stated, it is more appropriate to set the copper and iron limits on a concentration basis rather than on a mass basis. The permittee stated that these limits should be 1.0 ppm for both copper and iron under enhanced multi-mode, as stated in the effluent limitation guidelines at 40 CFR part 423.

***Response***

40 CFR Part 423 states that effluent limits for metal-cleaning wastes should be expressed as mass-based limits but allows EPA to use its discretion to set concentration-based limits if warranted.

As explained above, EPA set mass-based limits on the assumption that any copper or iron being discharged from Outfall No. 004 was due to metal-cleaning operations. EPA now understands this to be an invalid assumption because the company has provided information indicating that this is not the case. EPA now agrees that it is acceptable to set concentration-based limits. Therefore, EPA has determined, using best professional judgment, that it is appropriate to set maximum daily and average monthly limits of 1.0 mg/l for both copper and iron for all low-volume waste streams at Outfall No. 004. This limit applies after treatment and is based on information submitted by the company and the treatment removal efficiency of the WWTF.

The permittee states that these limits should be applied "... under enhanced multi-mode, as stated in the effluent limitations guidelines at 40 CFR Part 423." EPA notes that the effluent guidelines do not mention enhanced multi-mode. The limits apply equally under enhanced multi-mode or entire station closed-cycle.

CWA § 301(b)(1)(C) provides that permit limits must achieve

> not later than July 1, 1977, any more stringent limitations, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority preserved by section 1370 of this title) or any other Federal law or regulation, or required to implement any applicable water quality standards established pursuant to this chapter.

Therefore, a comparison of technology-based versus water-quality based limits must be performed, and the more stringent limit must be applied.

**Technology-based limit for Outfall No. 004:**

*Copper and Iron*

1.0 mg/l daily maximum (acute)
Convert to mass = LIMIT x FLOW x CONVERSION FACTOR
= 1.0 mg/l x 4.0 MGD x 8.34 (lb/MG)/(mg/l)
= 33.36 lb/day

1.0 mg/l monthly average (chronic)
Convert to mass = LIMIT x FLOW x CONVERSION FACTOR
= 1.0 mg/l x 2.0 MGD x 8.34 (lb/MG)/(mg/l)

= 16.68 lb/day

**Water quality-based limit for Outfall No. 001:**

*Copper*

Massachusetts acute water-quality standard = 0.00578 mg/l
Convert to mass = STANDARD x FLOW x CONVERSION FACTOR
= 0.00578 mg/l x 42 MGD x 8.34 (lb/MG)/(mg/l)
= 2.02 lb/day

LIMIT = STANDARD x DILUTION
= 2.02 lb/day x 5
= 10.1 lb/day

Massachusetts chronic water-quality standard = 0.0037 mg/l

Convert to mass = STANDARD x FLOW x CONVERSION FACTOR
= 0.0037 mg/l x 40 MGD x 8.34 (lb/MG)/(mg/l)
= 1.23 lb/day

LIMIT = STANDARD x DILUTION
= 1.23 lb/day x 5
= 6.15 lb/day

The table below compares the results of the copper analysis.

| Limit | Acute (lb/day) | Chronic (lb/day, 30-day average) |
|---|---|---|
| Technology-based | 33.36 | 16.68 |
| Water quality-based | 10.10 | 6.15 |

As the above analysis demonstrates, the water quality-based derived limits are more stringent than the technology-based limits, and therefore EPA must apply the more stringent limit. The Final Permit limits for copper at Outfall No. 001, expressed in concentration, are

10.10 lb/day ÷ (42 MGD x 8.34 (lb/MG)/(mg/l)) = **0.0289 mg/l for acute** (daily maximum)

and

6.15 lb/day ÷ (40 MGD x 8.34 (lb/MG)/(mg/l)) = **0.0184 mg/l for chronic** (monthly average).

Because there are no marine water quality standards for iron, the effluent guideline limit of 1.0 mg/l for both maximum daily and average monthly will be used. The limit applies to Outfall No. 004 before it mixes with any other waste stream(s).

***7. Comment***

The permittee stated that Region 1 should eliminate from §§ A.6 and A.7, footnote 2, of the Draft Permit the requirement to report the influent of metal-cleaning wastes. The permittee stated that Region 1 needs information concerning the effluent from the wastewater treatment system, which will be reported in the monthly discharge monitoring report as required. The permittee stated that the influent reporting

requirement, on the other hand, is not needed to demonstrate compliance and does not supply meaningful information to Region 1.

***Response***
EPA agrees that reporting of influent metal-cleaning waste volume is not necessary. Footnote 2 in §§ A.6 and A.7 has been changed, and this requirement has been eliminated from the Final Permit.

***8. Comment***
The permittee stated that Region 1 should clarify requirements in §§ A.6 and A.7 of the Draft Permit concerning pH, oil, and grease discharges that are inconsistent with §§ 4.5.2 and 4.3.2 of the Fact Sheet. The permittee stated that it assumed the permit supercedes the Fact Sheet, but requested Region 1 confirmation.

***Response***
The steam electric effluent guidelines set a pH range of 6.0–9.0 for all discharges, except once-through cooling water. Therefore, this limit was placed in the Draft Permit and is meant to apply to internal Outfall No. 004, prior to mixing with other waste streams.

Because the facility will no longer employ once-through cooling water, the pH limits of 6.0–9.0 found in the effluent guidelines apply to every waste stream at BPS, thereby eliminating the need to measure pH at internal outfalls. That is, the pH limit could be applied to the "end of the pipe" just prior to discharge to the receiving water.

Section 4.5.2 of the Fact Sheet describes the pH limit as it applies to the point source (Outfall No. 001) prior to entering Massachusetts waters (see § A.4.a. of the Draft Permit). The Massachusetts Surface Water Quality Standards require that the pH range be between 6.5 and 8.5 for point sources discharging into marine waters.

Therefore, the more stringent pH limit of 6.5–8.5 applies to the end of the pipe, and the need to measure internal waste streams for pH is unnecessary. EPA has removed the pH monitoring requirement from internal Outfall No. 004 from the Final Permit. Compliance with the pH limit will be determined at Outfall No. 001 before the waste stream enters the receiving water.

EPA agrees that the Fact Sheet contains typographical errors in references to the oil and grease limits. The second to last sentence in § 4.3.2 of the Fact Sheet should read: "The limits for TSS are 100 mg/l maximum for any one day and 30 mg/l for an average monthly (30 consecutive days), and the limits for oil and grease are 20 mg/l maximum for any one day and 15 mg/l for an average monthly (30 consecutive days)."

Section 4.5.5 of the Fact Sheet states that "[t]he limits in the draft permit for oil and grease are 20 mg/l maximum daily and 15 mg/l average monthly. The limits apply to outfall 004." However, as the commenter points out, the limits found in the Draft Permit are actually 15 mg/l maximum daily and 15 mg/l average monthly. These limits were established in the 1993 or previous NPDES permits for BPS and therefore remain in the Final Permit. Finally, in response to the general question, the permit does govern in the event of a conflict with the Fact Sheet.

***9. Comment***
The permittee stated that Region 1 should clarify inconsistencies between § 4.3.2 of the Fact Sheet and § A.7 of the Draft Permit regarding metal sampling for Outfall No. 004 once the air pollution equipment is in place. Specifically, the permittee sought clarification as to whether quarterly grab samples for nickel and zinc are required for Outfall No. 004.

***Response***
Section A.7 of the Draft Permit requires sampling and reporting for several constituents, including the 126 priority pollutants, after the air pollution control technology equipment is operational. Since nickel and zinc are two of the 126 priority pollutants, quarterly sampling and reporting for nickel and zinc at Outfall No. 004 are required.

***10. Comment***
The permittee stated that the requirement in § 4.3.2 of the Fact Sheet requiring that average monthly values for oil, grease, and TSS be calculated based on 30 consecutive days of data is inconsistent with guidance from EPA on completing the monthly discharge monitoring report. The permittee stated that average monthly values are "calculated with samples that are collected during that month if daily and samples that are collected in the weeks [sic] that ends in that month if collected daily." The permittee stated that § 4.3.2 of the Fact Sheet "should reflect this guidance."

***Response***
EPA agrees that the inclusion of the language "30 consecutive days" in the Fact Sheet is inconsistent with EPA guidance on completing monthly discharge monitoring reports (DMRs). The language "30 consecutive days" comes from the effluent guidelines at 40 CFR Part 423, which specifies that metal-cleaning waste limits are "Maximum for any one day" and "Average of daily values for 30 consecutive days shall not exceed ..." However, in general, EPA Region 1 has allowed permittees to report this as an average monthly value for convenience and in order to be consistent with the DMR reporting guidelines. EPA notes that the Draft Permit specified that these values would be "average monthly" values. Average monthly is defined in Part II of the permit as "... the highest allowable average of 'daily discharges' over a calendar month calculated as the sum of all 'daily discharges' measured during a calendar month divided by the number of 'daily discharges' measured during that month." Therefore, this Final Permit requires that the permittee report the discharges for Outfall No. 004 as average monthly values and continue to follow the DMR guidance.

***11. Comment***
The permittee stated that the requirement in § A.4.a of the Draft Permit that total residual oxidant be measured continuously using the amperometric method described in § A.4.d of the Draft Permit cannot be achieved. In addition, the permittee stated, this requirement is not consistent with § 4.5.1.d of the Fact Sheet, which states that the total residual oxidant will be measured using the electrode method described in 40 CFR Part 136. The permittee stated that only the electrode method can perform continuous monitoring with an on-line instrument and that the Draft Permit should be clarified to allow measurement by this method.

***Response***
EPA will not require continuous monitoring for compliance with chlorine limits. EPA will require compliance monitoring using the amperometric test method on a grab sample. EPA has identified several instruments that are capable of continuous on-line measurement using a method based on the amperometric method. EPA agrees, however, that although the procedure these machines use is based on the amperometric method, the machines do not strictly meet the requirements of 40 CFR Part 136, Table 1B, for compliance purposes.

EPA will, however, require reporting of total residual oxidants using continuous monitoring. EPA Region 1's research indicates that a continuous monitor is available from Hach Corporation. The Hach CL17 chlorine analyzer uses the DPD method. EPA could not find information on the electrode method.

The permittee may choose an instrument that uses either the DPD method or the modified amperometric method. Information obtained from the continuous chlorine analyzer will be used to ensure that the facility is taking grab samples at times when the chlorine levels are expected to be at the maximum.

EPA notes that § A.5.a (cooling tower blowdown) of the Draft Permit also requires continuous monitoring of free available chlorine. Although the company did not specifically comment on this section, the comment and response above applies. Therefore, EPA has changed chlorine monitoring of the blowdown streams to allow a grab sample for free available chlorine using the amperometric method for compliance purposes. Note, the Final Permit separates the blowdown streams into three separate outfall locations (see § A.5.a,§ A.6.a,§ A.7.a). The permittee will be required to determine compliance by taking and analyzing grab samples at each outfall location. Continuous monitoring and reporting of free available chlorine levels will also be required, but it will only be a reporting requirement.

***12. Comment***

The permittee stated that it is not appropriate to establish an average monthly total residual oxidant limit that is well below the detection limit of the test method. Furthermore, the permittee stated that the average monthly limit in § A.4.a of the Draft Permit for total residual oxidant should be eliminated altogether because the maximum daily total residual oxidant limit set by the permit is merely 0.015 mg/l above the detection limit of the test method. The permittee also stated that the language in § A.4.d of the Draft Permit for averaging total residual oxidant values below the test method should be eliminated from the permit because it conflicts with EPA's guidance on reporting values below the detection limit in monthly discharge monitoring reports.

***Response***

EPA Region 1 has set a new ML of 20 µg/l (0.020 mg/l) for total residual chlorine. This ML is achievable using the amperometric method.

EPA disagrees that the average monthly limit in § A.4.a of the Draft Permit should be eliminated altogether. The average monthly limit was established in order for the permittee to meet the chronic chlorine water quality criteria of Massachusetts, i.e., the average monthly value. The average monthly limit will be calculated from the daily value, and therefore no minimum level of detection is required.

The permit has been clarified to allow the permittee to use the value of zero for any sample results at or below the ML (0.020 mg/l).

***13. Comment***

The permittee stated that § A.5.a, footnote 2, of the Draft Permit limits chlorine discharges from the cooling tower to 2 hours in a single day, and that this implies there will be only one cooling tower blowdown stream for Outfall No. 003. The permittee stated that for the enhanced multi-mode system there would be one blowdown discharge; but if the entire station was retrofitted to closed-cycle cooling, there would be three blowdown discharges (i.e., 003A, 003B, and 003C). The permittee stated that § A.5.a of the Draft Permit should be revised if the entire station is retrofitted, but that no change was required for the enhanced multi-mode system.

***Response***

EPA agrees that there should be three separate blowdown discharge streams, and therefore the Final Permit has been changed to include three different blowdown waste streams. These new waste streams are identified as internal Outfall No. 003A, blowdown from cooling tower for Units 1 and 2; Outfall No. 003B, blowdown from cooling tower for Unit 3; and Outfall No. 003C, blowdown from cooling tower for Unit 4.

EPA notes, however, that the entire station closed-cycle information submitted by the permittee in November 2001 did not identify separate blowdown streams for the different generating units.

***14. Comment***
The permittee stated that the limits in § A.5 of the Draft Permit for chromium and zinc-containing chemicals at Outfall No. 003 are not necessary because BPS does not intend to use chromium or zinc-containing chemicals when treating the cooling water.

***Response***
EPA disagrees that chromium and zinc limits should be eliminated from the permit. Permit limits for chromium and zinc were developed based on the technology limits defined in the steam electric effluent guidelines at 40 CFR Part 423. The metals chromium and zinc are limited because cooling tower chemicals might contain these constituents. Although BPS indicates it does not intend to use chromium- or zinc-containing metals, it has not submitted analytical results or engineering calculations showing that these metals will be below detection levels in its discharge. The Draft Permit prohibits priority pollutants (except chromium or zinc) from being detectable in the discharge due to the addition of chemicals added for cooling tower maintenance. Compliance with this requirement may be met either through yearly sampling and reporting or, based on the permitting authority's discretion, by engineering calculations. Since chromium and zinc are priority pollutants, the permittee may chose to demonstrate compliance with the permit limits for chromium and zinc through engineering calculations. The Final Permit has been clarified to allow this method of compliance.

***15. Comment***
The permittee stated that the pH for the discharge canal (Outfall No. 001) should be between 6.5 and 8.5 or within 0.5 ssu of background, as in the current permit. The permittee stated that it was concerned that the designated pH range might be exceeded due to naturally occurring conditions of the inlet water source.

***Response***
EPA disagrees that the 1993 permit allows the pH to be between 6.5 and 8.5 or within 0.5 ssu of background. The 1993 permit states that the pH shall not be less than 6.5 standard units nor greater than 8.5 standard units or shall not be more than 0.2 standard units from the naturally occurring range (see Part I.A.2.c, page 9 of 31, of 1993 permit). This requirement is consistent with the MA DEP water quality standards for pH. Therefore, EPA has added the following language to the permit: "The pH shall not be less than 6.5 standard units nor greater than 8.5 standard units or shall not be more than 0.2 standard units from the naturally occurring range."

***16. Comment***
The permittee stated that heat load calculations should be based on a fixed specific gravity, not the specific gravity of saltwater, which can vary. The permittee stated that to be consistent with the past reporting of heat load values, the specific gravity of pure water, 8.344, should be used rather than a variable value.

***Response***
Although it would be slightly more accurate to base the heat load calculation on the specific gravity of saltwater, EPA agrees that basing the heat load calculation on the fixed specific gravity of pure water (i.e., 8.344), as the permittee requests, will be consistent with past calculations and will be more convenient.

The Draft Permit based the value of the heat capacity ($C_p$) on water with the salinity of seawater (see page 4 of the Draft Permit). Therefore, to be consistent with the above comment and response, EPA has changed the value to be used for heat capacity from 0.94 Btu/lb°F (saline water) to a fixed value of 1.0 Btu/lb°F (pure water).

***17. Comment***

The permittee stated that the quarterly whole effluent toxicity (WET) testing schedule in § A.16 of the Draft Permit is not practical. The permittee stated that the scenarios designated by the Draft Permit are worst-case scenarios that are not likely to occur each quarter. The permittee stated that a more sensible sampling requirement would be to perform WET testing three times per year for 2 years, with each sample collected during specified discharge conditions.

***Response***

EPA disagrees with this comment and with the company's proposed sampling schedule as outlined in its comments on the Draft Permit.

The permittee states that the scenarios designated by the Draft Permit are "highly unlikely" to occur. This implies, however, that they might occur, albeit on an infrequent basis. The concept of toxicity testing is to test during "worst-case scenarios." Therefore, no changes to the toxicity testing schedule have been made in the Final Permit.

EPA believes it is possible for BPS to arrange for the discharges to occur as required, as specified by the toxicity testing requirement. However, the Final Permit will allow BPS to seek an alternative sampling scheme if, based on operation considerations, the facility is prohibited from discharging all the constituents as outlined in the permit. Therefore, the Final Permit requires that BPS collect the samples, to the maximum extent possible, as outlined in the permit. BPS will be allowed to request an alternative schedule for toxicity testing from EPA. The permittee will be required to submit any such request in writing at least 60 days prior to that quarter's sampling event and must state the reason(s) why such a variance is required. EPA may or may not grant such a change in sampling protocol based on its review of the company's submittal.

No changes to the permit's toxicity testing requirements are allowed unless the permittee receives written approval from EPA, with concurrence from the MA DEP.

***18. Comment***

The permittee stated that the flow limit for Outfall No. 017 might need to be reevaluated as the Draft Permit is further revised. The permittee stated that this would be necessary if modified intake screens are installed on Units 1 through 3 as part of the enhanced multi-mode system. The permittee stated that the maximum hourly flow rate for Outfall No. 017 in § A.8 of the Draft Permit is based on the current design of the intake screens, and that this limit would need to be revised if the enhanced multi-mode system is to be installed at BPS.

***Response***

The Final Permit is based on an entire station closed-cycle system and not the enhanced multi-mode system. The entire station closed-cycle design uses the intake for Unit 4 on the Lee River for make-up water, making it the primary source of water for the facility. Because Outfall No. 017 is for the backwash at the current intakes for Units 1, 2, and 3 in the once-through mode, it will no longer be necessary when the facility converts to the entire station closed-cycle cooling system, except for those brief periods of time when the facility is allowed to switch from closed-cycle to once-through cooling.

Because at this time the facility has not submitted any information about future modifications to the intakes and what the resulting backwash flow would be, EPA has no basis for changing the flow condition contained in the Draft Permit. Therefore, no change to the permit has been made, and the limit of 0.22 million gallons per hour applies.

***19. Comment***
The permittee stated that operation of the screen wash on Units 1, 2, and 3 should not be limited to 122 hours of operation and should not be limited to when BPS is operating on once-through cooling. The permittee stated that the screen wash system should not be limited as set forth in § A.8.d of the Draft Permit. The permittee stated that even when the intake is not in service and BPS is on closed-cycle cooling, BPS needs to maintain and test the screen wash system to ensure that all pumps are working. The permittee stated that the restrictions do not make sense and should be eliminated.

***Response***
EPA disagrees that the restrictions in screen backwash do not make sense and should be eliminated. However, EPA agrees that the Draft Permit did not allow for maintenance and testing to ensure that all the pumps are in working order. The permittee did not request alternative flow limits based on how often the screen backwash system needs testing, but EPA now understands that some allowance is needed to maintain and test the screen wash system. Therefore, EPA will require the facility to report the number of hours (and flow) when the screen wash system is tested. The Final Permit retains the requirement that the screen wash shall not operate more than 122 hours per year when it is used for once-through cooling.

***20. Comment***
The permittee stated that the flow rate limit for Outfall No. 020 in § A.9 of the Draft Permit should be changed from 13 MGD to 18.2 MGD, as requested in BPS's permit application. The permittee stated that the Lee River intake screen wash cannot be reduced by the same rate as the intake flow, and that Region 1 incorrectly stated in the Fact Sheet that BPS can reduce the screen wash flow proportionately to the cooling water flow. The permittee stated that reducing the intake flow does not reduce the screen wash flow because the wash pumps still need the proper flow to effectively clean the intake screens. In addition, the permittee stated that the fish pumps still need the proper flow for the fish bypass system to work efficiently, and the screen wash system needs to be fully operational whenever any water is being drawn through the Lee River intake.

***Response***
EPA believed it would be possible for BPS to operate fewer screens, and therefore have less screen wash, when operating the facility in closed-cycle mode. No change to flow rate for the fish bypass system was made in calculating the flow for Outfall No. 020 in the Draft Permit.

In response to the comment, EPA will change the flow limit for Outfall No. 020 from 13 MGD to 18.2 MGD as the permittee requests. However, EPA anticipates that impingement rates will decrease significantly when the facility dramatically reduces its flow by converting to closed-cycle cooling. Currently, the screens are washed continuously. In anticipation of reduced flow, EPA has changed the screenwash frequency to three times per day.

***21. Comment***
The permittee stated that 9 years of data support eliminating or at least reducing, the requirement for the canal inspection in § A.22 of the Draft Permit. The permittee stated that in the 9 years that this inspection has been performed, only one dead fish has been observed. The permittee stated that since divers are on-site three or four times a week cleaning the net and are instructed to notify BPS of any observed fish mortality, Region 1 should eliminate the inspection requirement or change the time period in § A.22 to June through September, when the discharge temperatures are higher.

***Response***
EPA has addressed this comment elsewhere in this response to comments.

***22. Comment***
The permittee stated that in the event of a fish kill, there is no need to sample for dissolved oxygen at an intake that is not in service. The permittee stated that § A.22.b.2(2) of the Draft Permit requires dissolved oxygen readings at both the Taunton and Lee River intakes and at the venturi. The permittee stated that it makes no sense to require such readings at an intake that is not in service at the time, and that this section should therefore be revised.

***Response***
In the event of a fish kill, EPA is interested in determining dissolved oxygen concentrations over a wide spatial scale. The intakes on either side of the station provide convenient sampling locations and cover a wide are in near proximity to the plant. Thus, EPA believes that dissolved oxygen readings at both locations do need to be collected in the event of a fish kill.

***23. Comment***
The permittee stated that the flow rate for Outfall No. 001 in § A.4.a of the Draft Permit needs to be raised to 132.1 MGD. The permittee stated that the flow at Outfall No. 001 was not calculated appropriately for the Draft Permit and did not include service water flow. The permittee also stated that redesign of the service water system was not considered in Stone & Webster's analysis of an entire station closed-cycle alternative.

***Response***
EPA addressed the issue of the discharge flow from Outfall No. 004 previously and agrees that the maximum daily flow in the Draft Permit was off by 3 MGD. However, EPA does not agree that the permit limit for Outfall No. 001 for closed-cycle cooling (39 MGD) was not calculated properly. BPS submitted information indicating that 38 MGD was the total blowdown volume from cooling towers. EPA used this volume in its calculation of the discharge limit at outfall 001.

In November, 2001, USGen NE submitted extensive biological, engineering, and legal information to EPA. Volumes IV and V of this five-volume set, entitled *Review of Technologies to Reduce Thermal Discharges, Entrainment, and Impingement Associated with BPS*, provided detailed engineering and costing information on the entire station closed-cycle cooling option. EPA and its consultants carefully considered this information and, in fact, relied on much of it in developing the Draft Permit conditions.

The engineering information submitted in these documents led EPA to believe that the service water flow was included in the design of the entire station closed-cycle system.

Section 2 of Volume IV provides an introduction and background information. On page 2.2 of that section, BPS states that "[t]he design circulating and **service water flow rates** and temperature rises for the four generating units for which the cooling towers are sized are presented in Table 2.2-2" (emphasis added). Table 2.2-2 then shows the combined condenser duty, flow, and maximum temperature rise for Units 1, 2, 3, and 4 and service water for four units. The combined flow listed in that table is **931,000** gallons/minute, with the service water flow accounting for **31,000** gallons/minute of the total.

The statement found on page 2.2 is repeated on page 3.3-2 of § 3.3 entitled "Closed-Cycle Cooling Towers." Table 2.2-2 is repeated as Table 3.3-2 on page 3.3-2. BPS added the following sentence directly after Table 3.3-2 on page 3.3-2: "The maximum effect on station withdrawals and heated discharges to Mount Hope Bay resulting from conversion of the entire station to mechanical-draft cooling towers would be to reduce withdrawals to 39,000 gpm in the case of salt water cooling towers ...".

In § 3.3.5, "Entire Station Closed Cycle," on page 3.3-25, BPS states that "Retrofitting of the entire Station with conventional closed-cycle mechanical-draft cooling towers that utilize salt water would reduce cooling water flows from 931,000 to 39,000 gpm or 96 percent in the total Station potential

circulating cooling water flow." Note that the 931,000 gpm is the figure cited in both Table 2.2-2 and Table 3.3-2 as the combined station flow, including the service water flow. In addition, BPS submitted a report entitled *Feasibility Study of Cooling Water System Alternatives for Brayton Point Generating Station* in January 1997 (see Administrative Record no. 211). Page 2-3 of that report states that "[a]n additional once-through flow of 31,000 gpm is used by the service water system required by all four units for bearing cooling water and other plant uses."

Therefore, based on information the company submitted, EPA reasonably concluded that the service water system was included in the design of the entire station closed-cycle system. EPA's CWA § 316(b) conclusion was based on a withdrawal of 56 MGD for the entire station closed-cycle system, not the 132.1 MGD that the company now claims is necessary.

The comment states that the service water system would require 63,000 gpm or approximately 90 MGD. EPA notes that this amount of service water flow conflicts with earlier information submitted by the company. Specifically, as mentioned above, earlier engineering information describes the service water system as requiring 31,000 gpm or about 44.6 MGD. Also, the water balance diagram the company submitted with its January 15, 1998, NPDES renewal application indicates that the service water system requires about 22 MGD. The actual amount of service water required is further put in question by an April 19, 2002, submittal from the company (see AR 536) in which the company states that the combined service water system flow rate is 59,000 gpm or about 85 MGD.

EPA also points out that the service water system contributes a thermal load to the bay. The engineering information submitted in the November 2001 documents states that the condenser duty of the service water system is 232.7 MBtu/hr, that the flow is 31,000 gpm, and that the temperature rise is 15º F. Using this design information and assuming the service water system operates for approximately 8,064 hours annually (48 out of 52 weeks of the year), the annual heat load to the bay from the service water system would be about 1.88 TBtu. The heat load to the bay would be more than doubled to 3.82 TBtu per year using the flow rate of 63,000 gpm submitted most recently by the company (flow rate x delta T x 8.34).

Regardless of whether the service flow is 31,000 gpm or the higher value of 63,000 gpm, EPA believes that the service water flow needs to be included in the design of the entire station closed-cycle system. EPA disagrees with the comment and will not allow an additional 90.1 MGD of once-through water for the service water system.

Therefore, EPA will not allow the flow rate for Outfall No. 001 to be raised to 132.1 MGD, as the company requests.

***24. Comment***

The permittee stated that the service water system for Units 1 and 2 would need to be modified for the variable speed drives (VSDs) on Units 1 and 2 to reduce cooling water flow. The permittee further stated that the service water flow would be increased from 22,000 to 29,000 under its proposed modified system to provide low-pressure screen wash water for the modified intake screens in the enhanced multi-mode system.

***Response***

The Final Permit is based on converting the entire station to closed-cycle cooling, including the service water system, as explained in response to the above comment. EPA therefore need not respond to these comments regarding service water flow for the enhanced multi-mode system.

***25. Comment***

The permittee stated that Outfall No. 005 is needed by BPS, and should remain in the permit, to allow for nonthermal backwashing of the condenser and intake piping. The permittee stated that BPS is

"infrequently" required to nonthermally backwash the condenser, a process that lasts for approximately 5 minutes.

***Response***
EPA will allow the use of Outfall No. 005 for nonthermal backwashing in the Final Permit. However, the facility will be required to apply the hours of operation of Outfall No. 005 to the facility's once-through cooling allowance, as set forth in the Final Permit.

***26. Comment***
PG&E said that EPA's Draft Permit would "essentially eliminate the withdrawal and discharge of water."

***Response***
EPA disagrees. Although the reductions of flow and heat will be substantial (94 and 96 percent, respectively), BPS will still be a "large" power plant under the proposed § 316(b) regulations and a "major discharger". After the improvements, BPS will still withdraw approximately 56 MGD from Mount Hope Bay and discharge approximately 42 MGD back to Mount Hope Bay. It will continue to be one of the largest industrial dischargers to Mount Hope Bay.

***27. Comment***
PG&E states that the membership of the TAC includes various agencies along with Save the Bay, the Taunton River Watershed Alliance, and CLF, as well as the U.S. Army Corps of Engineers. (FHE, n. 11)

***Response***
This is incorrect. The 1993 permit specified that the TAC membership would be composed of only the biologists from specific agencies. Other interested parties were, however, welcome to attend and participate in open meetings regarding the permit. The new permit does not continue to formally establish the TAC. However, EPA expects that the relevant agencies and other interested parties will continue to collaborate on scientific issues as they have in the past.

***28. Comment***
The permittee states that it understands "the importance of everyone doing its part for Mount Hope Bay," and that this is why it has proposed permit limitations that would represent a reduction in thermal discharge and cooling water intake flow from levels authorized in the current permit and Memorandum of Agreement II (MOA II) between the permittee and the regulatory agencies. Specifically, the permittee states that its proposed thermal discharge limits would require (1) a 33 percent reduction in Btus discharged from levels allowed by the MOA II, and (2) intake flow reductions of 33 percent from the level allowed in the MOA II and 50 percent from the level allowed by the current permit. The permittee states that these would be "dramatic" reductions returning thermal discharge and intake flow volume to levels that existed in 1970, before unit 4 was built at the power plant.

***Response***
EPA is pleased that the permittee appears to agree that there is a serious environmental problem in Mount Hope Bay and that changes in plant operations are a necessary part of the solution. As discussed elsewhere in this document, EPA acknowledges that the reductions in thermal discharge and intake flow proposed by the permittee are significant, but the Agency does not believe they would be sufficient to meet the standards of CWA § 316(a) and (b).

EPA further notes that the enhanced multi-mode system on which the permittee has based its proposed alternative permit limits would be capable of achieving much greater heat reductions than those suggested by the permittee (see AR 3214). The company assumed a 14 TBtu reduction, resulting in a proposed permit limit of 28 TBtu. However, using information supplied by the company, such as the heat rejection rate of the cooling tower and the number of hours of cooling tower bypass due to icing or fogging, EPA

has calculated that the enhanced multi-mode system should be able to reduce the heat load to the bay by about 23 TBtu annually. Therefore, EPA believes that a more reasonable annual heat load permit limit would be 19 TBtu for the enhanced multi-mode system.

EPA also notes that the permittee requests an annual average flow limit for the enhanced multi-mode system of 650 MGD. EPA would not typically set an annual average flow limit. Flow limits are expressed as maximum daily or average monthly limits. The company has proposed an average monthly flow limit of 925 MGD for the enhanced multi-mode system. No maximum daily flow limit has been proposed for the enhanced multi-mode system.

| **Response #** VI.29 | **Document #**: 1000, 1139, 1145, 1140, 1141 (duplicate) |
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***Comment***

Many commenters requested the following additions to the Draft Permit:

1. Stop the use of any biocide at the plant.
2. Eliminate the ability of the plant to use any once-through cooling systems.
3. Reexamine the permit in five years and enforce the CWA immediately.
4. Protect fish migration and spawning in the nearby rivers.
5. Pretreat chemical and metal wastes prior to discharge and cover the coal pile.
6. Test shellfish for arsenic, hexavalent chromium, and other metals. Also, test shellfish and sediment in the five rivers immediately and regularly.
7. The thermal discharge limit should be 0.8 TBtu.

***Response***

1. BPS has substantially reduced the use of biocides and chlorine by first using targeted chlorination and physical methods of fouling removal. This approach will not completely eliminate the use of biocides, but BPS has made substantial efforts in reducing the use of these chemicals. The use of biocides, including Spectrus CT1300, is discussed in more detail elsewhere in this document (see response to Chemicals).
2. The Final Permit allows a limited number of hours of once-through cooling. This issue is discussed elsewhere in this document.
3. The permit will expire and be up for renewal in five years.
4. EPA believes the permit will dramatically reduce impacts from the current plant operations on fish migration and spawning habitat.
5. BPS currently pretreats chemical and metal wastes prior to discharge, and although it is not feasible to cover the coal pile, regular spraying with water is performed to reduce coal dust emissions.
6. Quahogs have been routinely tested for heavy metals for a number of years, and they have for the most part contained very low levels of these contaminants.
7. Based on EPA's § 316(a) analysis, the Agency believes that a thermal discharge of 1.7 TBtu is sufficient to assure the protection and propagation of the balanced indigenous population.