AUTHORIZATION TO DISCHARGE UNDER
THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

Procter and Gamble-Gillette

is authorized to discharge from a facility located at

Gillette Park
Boston, MA 02127

to receiving water named

Fort Point Channel
Boston Inner Harbor (MA70-02)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This Permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[1]

This Permit expires at midnight, five years from the last day of the month preceding the effective date.

This Permit supersedes the Permit issued on July 10, 2012.

This Permit consists of this **cover page, Part I**, **Attachment A** (Marine Acute Toxicity Test Procedure and Protocol, July 2012) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

_____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the Permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Outfall 001
   During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge **Reverse osmosis reject/backwash**, **boiler blowdown**, and **non-contact cooling water** through Outfall Serial Number 001 to Fort Point Channel. The discharge shall be limited and monitored as specified below; the receiving water shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow	Report MGD	26.0 (summer) [6] 23.5 (non-summer) [6]	1/Day	Estimate
pH[7]	6.5 - 8.5 S.U.		5/Week	Grab
Effluent Temperature	Report ^{o}F	83^{o}F	1/Day [8]	Grab
Rise in temperature (Delta T)	Report ^{o}F	Report ^{o}F	1/Day[9]	Calculation
Heat Load	Report mBTU/day	Report mBTU/day	1/Day[10]	Calculation
Total Suspended Solids (TSS) [11]	------	Report mg/L	1/Quarter	Grab
Oil & Grease[11]	----	Report mg/L	1/Quarter	Grab
Whole Effluent Toxicity (WET) Testing[12, 13]				
LC_{50}	---	Report %	1/year	Composite
Hardness	---	Report mg/L	1/year	Composite
Ammonia Nitrogen	---	Report mg/L	1/year	Composite
Total Cadmium	---	Report mg/L	1/year	Composite
Total Copper	---	Report mg/L	1/year	Composite
Total Nickel	---	Report mg/L	1/year	Composite
Total Lead	---	Report mg/L	1/year	Composite

Ambient Characteristic[14]	Reporting Requirements		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Hardness	---	Report mg/L	1/quarter	Grab
Ammonia Nitrogen	---	Report mg/L	1/quarter	Grab
Total Cadmium	---	Report mg/L	1/quarter	Grab
Total Copper	---	Report mg/L	1/quarter	Grab
Total Nickel	---	Report mg/L	1/quarter	Grab
Total Lead	---	Report mg/L	1/quarter	Grab
Total Zinc	---	Report mg/L	1/quarter	Grab
pH[15]	---	Report S.U.	1/quarter	Grab
Temperature[15]	---	Report °C	1/quarter	Grab

See Pages 6 to 8 for footnotes

2. Outfall 002

During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge **filter backwash** and **non-contact cooling water** through Outfall Serial Number 002 to Fort Point Channel. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	Effluent Limitations		Monitoring Requirements[1,2,3]	
	Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type[5]
Effluent Flow	Report MGD	26.0 (summer) [6] 23.5 (non-summer) [6]	1/Day	Estimate
pH[7]	6.5 - 8.5 S.U.		5/Week	Grab
Effluent Temperature	Report ^{o}F	83 ^{o}F	1/Day [8]	Grab
Rise in temperature (Delta T)	Report ^{o}F	Report ^{o}F	1/Day[9]	Calculation
Heat Load	Report million BTU/day	Report million BTU/day	1/Day[10]	Calculation
Total Suspended Solids (TSS) [11]	------	Report mg/L	1/Quarter	Grab
Oil & Grease[11]	----	Report mg/L	1/Quarter	Grab

See Pages 6 to 8 for footnotes

3. Outfall 003
   During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge **filter backwash** and **non-contact cooling water** through Outfall Serial Number 003 to Fort Point Channel. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow	Report MGD	8.1 (summer) [6] 7.4 (non-summer) [6]	1/Day	Estimate
pH[7]	6.5 - 8.5 S.U.		5/Week	Grab
Effluent Temperature	Report ^{o}F	83^{o}F	1/Day [8]	Grab
Rise in temperature (Delta T)	Report ^{o}F	Report ^{o}F	1/Day[9]	Calculation
Heat Load	Report mBTU/day	Report mBTU/day	1/Day[10]	Calculation
Total Suspended Solids (TSS) [11]	------	Report mg/L	1/Quarter	Grab
Oil & Grease[11]	----	Report mg/L	1/Quarter	Grab

See Pages 6 to 8 for footnotes

4. Outfall 004
   During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge **non-contact cooling water** through Outfall Serial Number 004 to Fort Point Channel. The discharge shall be limited and monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Effluent Flow	Report MGD	19.6 (summer) [6] 15.4 (non-summer) [6]	1/Day	Estimate
pH[9]	6.5 - 8.5 S.U.		5/Week	Grab
Effluent Temperature	Report ^{o}F	83^{o}F	1/Day [8]	Grab
Rise in temperature (Delta T)	Report ^{o}F	Report ^{o}F	1/Day[9]	Calculation
Heat Load	Report million BTU/day	Report million BTU/day	1/Day[10]	Calculation

See Pages 6 to 8 for footnotes

5. Outfall 005 (Cooling Water Intake Structure)
   During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to withdraw **seawater** at the cooling water intake structure (Outfall 005) from Fort Point Channel. Such withdrawals shall be limited and monitored as specified below.

Withdrawal Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Intake Flow	28 MGD (summer) 25 MGD (non-summer)	45 MGD (summer) [6] 35 MGD (non-summer) [6]	Continuous	Meter
Intake Through-Screen Velocity[16]	Report	0.5 Feet/sec	Continuous	Meter

6. Combined Outfalls
   During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge **heated effluent** from Outfalls 001, 002, 003 and 004 to Fort Point Channel. The total discharge from all outfalls shall be limited and monitored as specified below.

Effluent Characteristic	**Effluent Limitations**		**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Maximum Daily**	**Measurement Frequency[4]**	**Sample Type[5]**
Heat Load	Report million BTU/day	8,782 million BTU/day	1/Day[10]	Calculation

See Pages 6 to 8 for footnotes

Footnotes:

1. Effluent samples shall yield data representative of the discharge. A routine sampling program shall be developed in which samples are taken at the discharge point to the receiving water and prior to co-mingling with any other wastestream. Changes in sampling location must be approved in writing by the Environmental Protection Agency Region 1 (EPA). The Permittee shall report the results to EPA and the Massachusetts Department of Environmental Protection (the "State") of any additional testing above that required herein, if testing is done in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For calculating and reporting the average monthly concentration when one or more values are not detected, assign a value of zero to all non-detects and report the average of all the results. The number of exceedances shall be enumerated for each parameter in the field provided on every Discharge Monitoring Report (DMR).

4. Measurement frequency of 1/day is defined as the recording of one measurement for each 24-hour period. Measurement frequency of 1/week is defined as the sampling of one discharge event in each seven-day calendar week. Calendar quarters are defined as January through March, inclusive, April through June, inclusive, July through September, inclusive and October through December, inclusive. If no sample is collected during the measurement frequencies defined above, the Permittee must report an appropriate No Data Indicator Code.

5. Each composite sample will consist of at least eight grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow.

6. Summer operating conditions are permitted from June 1 through September 30. Non-summer operating conditions are permitted from October 1 through May 31.

7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). pH samples for Outfalls 001, 002, and 004 shall be collected from the end of the outfall pipe prior to mixing with the receiving water 5 days per week, Monday through Friday. pH Samples for Outfall 003 shall be collected at the North Dock sampling port 5 days per week, Monday through Friday.

8. Discharge temperature at each outfall shall be monitored at the end of pipe prior to mixing with the receiving water once daily within one (1) hour before or after peak low tide based on the daily tide prediction at NOAA Boston Station 8443970. Intake water temperature shall also be monitored during this period at the CWIS after passing through the wedgewire screens but prior to being pumped to buildings. When the tide schedule permits, monitoring shall take place during low tide occurring between the hours of 9:00 am and 5:00 pm. The permittee shall report the date and time of day that each temperature measurement (intake or discharge) is taken and the time of the corresponding low tide based on the tide chart in monthly discharge monitoring reports.

9. The temperature rise (ΔT) is the difference between the discharge temperature (measured at each of the four outfalls) and the intake temperature (measured at the CWIS after passing through the wedgewire screens but prior to being pumped to buildings) at the time of collection of the grab sample for temperature (see Footnote 8) at each outfall.

10. The heat load shall be calculated on a daily basis using the following equation:

$$Q = Cp*m*\Delta T$$

where:

Q = Heat load, million British Thermal Units (MM Btu)/day
Cp = Heat capacity (specific heat) of water = 1.0 BTU/pound ˚F
m = mass of water = cooling water flow rate (MGD) x density of intake water (8.34 pounds/gallon)
ΔT = discharge temperature – intake temperature, ˚F

Daily heat load for each outfall shall be calculated using the estimated daily flow rate and observed ΔT. Maximum daily heat load from all outfalls shall be calculated using the single highest ΔT observed among the four outfalls and the total daily cooling water flow measured at the cooling water intake structure

11. Total suspended solids and oil and grease samples shall be taken at a point representative of the discharge through the outfall prior to mixing with non-contact cooling water or any other discharges.

12. The Permittee shall conduct acute toxicity tests (LC_{50}) once per year in accordance with test procedures and protocols specified in **Attachment A** of this permit. LC_{50} and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the Mysid Shrimp, *Americamysis bahia* and the Inland Silverside, *Menidia beryllina*. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal that includes the results for that toxicity test.

13. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A**, Section IV., DILUTION WATER. Even where alternate dilution water has been used, the results of the receiving water control (0% effluent) analyses must be reported. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

14. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A**. Minimum levels and test methods are specified in **Attachment A**, Part VI. CHEMICAL ANALYSIS.

15. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocol.

16. Through-screen velocity must be estimated for the intake structure at a location representative of the point of entry through the screen or other exclusionary device. Through-screen velocity must be estimated based on pump pressure and flow rate and must be achieved under all conditions including during periods of maximum head loss across the screens during operation of the cooling water intake structure.

Part I.A.

7. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify EPA as soon as they know or have reason to believe (40 CFR § 122.42):

    a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 100 micrograms per liter (µg/L);
        (2) 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (mg/L) for antimony;
        (3) Five times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

    b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

        (1) 500 µg/L;
        (2) One mg/L for antimony;
        (3) 10 times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
        (4) Any other notification level established by EPA in accordance with 40 CFR § 122.44(f) and State regulations.

    c. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

B. UNAUTHORIZED DISCHARGES

This permit authorizes discharges only from the outfall(s) listed in Parts I.A.1 through I.A.4 in accordance with the terms and conditions of this Permit. Discharges of wastewater from any other point sources are not authorized by this Permit and shall be reported in accordance with Part II.D.1.e.(1) of this Permit (24-hour reporting).

C. SPECIAL CONDITIONS

1. Discharges of Chemicals and Additives

The discharge of any chemical or additive, including chemical substitution that was not reported in the application submitted to EPA or provided through a subsequent written notification submitted to EPA is prohibited. Upon the effective date of this Permit, chemicals and/or additives that have been disclosed to EPA may be discharged up to the frequency and level disclosed, provided that such discharge does not violate §§ 307 or 311 of the CWA or applicable State water quality standards. Discharges of a new chemical or additive are authorized under this Permit 30 days following written notification to EPA unless otherwise notified by EPA. To request authorization to discharge a new chemical or additive, the Permittee must submit a written notification to EPA in accordance with Part I.D.3 of this permit. The written notification must include the following information, at a minimum:

a. The following information for each chemical and/or additive that will be discharged:

(1) Product name, chemical formula, general description, and manufacturer of the chemical/additive;
(2) Purpose or use of the chemical/additive;
(3) Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive;
(4) The frequency (e.g., hourly, daily), magnitude (i.e., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive;
(5) If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC50 in percent for aquatic organism(s)).

b. Written rationale that demonstrates that the discharge of such chemicals and/or additives as proposed: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to those currently in this permit.

2. Best Technology Available

a. Under Section 316(b) of the CWA, the location, design, construction, and capacity of the permittee's cooling water intake structure (CWIS) shall reflect the best technology available (BTA) for minimizing adverse environmental impacts from entrainment. In order to satisfy this BTA requirement, the permittee shall operate the CWIS in compliance with the following specifications:

i. The permittee shall, to the extent practicable, schedule its annual maintenance outage between May 15th and June 1st.
ii. The permittee shall use the existing variable frequency drives to limit the summer operating monthly average intake flow at the CWIS to 28 MGD and the non-summer operating monthly average intake flow at the CWIS to 25 MGD. Summer operating conditions apply from June 1 through September 30 and non-summer operating conditions apply from October 1 and May 31.

b. Under Section 316(b) of the CWA, the location, design, construction, and capacity of the permittee's CWIS shall also reflect the BTA for minimizing adverse environmental impacts from impingement. In order to satisfy this BTA requirement, the permittee shall continue to withdraw all cooling water from the Fort Point Channel through the existing 9.5 mm wedgewire screens at a maximum through-screen velocity no greater than 0.5 fps at all times.

c. The intake structure must be inspected weekly to ensure that any technologies operated to comply with the BTA requirement of Section 316(b) of the CWA for impingement and entrainment function as designed while the structure is in operation.

d. Any change in the location, design, or capacity of the intake structure outside of the specifications of this Permit must be approved in advance in writing by EPA and MassDEP and may require a permit modification. The Permittee shall notify EPA and MassDEP and obtain their written approval prior to implementing any such proposed change.

e. The permittee will submit a report with cost estimates for the construction required to implement closed-cycle cooling along with the next NPDES permit application. The report:

(1) Shall provide an update on the technological, financial, and logistical feasibility of constructing mechanical draft towers for a closed-cycle cooling system on the Gillette facility.

(2) Shall present a preliminary cost estimate for construction of the system and this estimate should break out into separate line items the different components of the overall cost, such as, without limitation, any costs attributed to plant downtime, loss of revenue, and other cost

(3) Shall provide information on the expected remaining plant life and may annualize costs over that period of time.

(4) Does not need to provide engineering drawings or schematics for any potential construction. Only preliminary information suitable for the purposes of supporting a basic cost estimate is required so as to support an evaluation of closed-cycle cooling as a possible BTA for the next permit.

3. Biological Monitoring

a. The Permittee shall conduct entrainment sampling three (3) times per week between February 15 and July 30 every other year. Three entrainment samples shall be collected each sampling week and shall target three separate periods of the diurnal cycle (for example, once on Monday morning at 8:00 am, once on Wednesday afternoon at 2:00 pm, and once on Friday night at 8:00 pm). At a minimum, the sampling program shall address the following:

(1) Samples shall be collected from the manhole cover in the pump house using the same methodology as the permittee's 2013-2015 entrainment studies. Sampling shall be conducted using a 0.333-millimeter mesh 60-centimeter plankton net. The volume of water sampled shall be measured and equal to approximately 100 cubic meters (m3). A standard mesh of 0.202 mm shall be required during the period of highest abundance of early-stage winter flounder (March 15 to April 30). (2) In the laboratory, all eggs and larvae shall be identified to the lowest practical taxa and counted. Subsampling with a plankton splitter shall be used if the count of eggs and larvae in a sample is greater than 400 organisms so that a minimum of 200 eggs and larvae will be present in any subsample.

b. Egg and larvae counts shall be converted to densities per 100 m3 of water based on the flow through the sampling net and the data shall be presented in the annual Biological Monitoring Report (BMR) detailed in Part C.3.e below. Estimates of total numbers of eggs and larvae based on facility flow rates shall also be provided. Entrainment losses shall be converted from weekly estimates of density per unit volume, to monthly and annual loss estimates based on the permitted flow. In addition, loss estimates should be converted to adult equivalents for species for which regionally specific larval survival rates are available.

c. Larval winter flounder shall be enumerated by stage as follows:
(1) Stage 1: From hatching until the yolk sac is fully absorbed (approximately 2.3 to approximately 3.8 mm);

(2) Stage 2: From the end of Stage 1 until a loop or coil forms in the gut (approximately 2.6 to approximately 4.0 mm);
(3) Stage 3: From the end of Stage 2 until the left eye migrates past the midline of the head during transformation (approximately 3.5 to approximately 8.0 mm);
(4) Stage 4: From the end of Stage 3 until the full complement of juvenile characteristics is present (approximately 7.5 to approximately 8.2mm).
(5) Stage 0: Larvae that are identifiable to species but are damaged and it is not possible to determine the life stage.

d. The permittee will conduct this monitoring every other year until this permit is reissued. The first year of monitoring will be conducted during the first full sampling season (February 15 to July 30) after the effective date of this permit.

e. Results of the entrainment monitoring shall be reported in a CWIS Biological Monitoring Report following each year of the study, which shall include monitoring logs and raw data collected in the previous year and summarize the data both graphically, where appropriate, and in text. The monitoring report shall also include the results of all calculations conducted in accordance with Part I.D.2. The CWIS Biological Monitoring Report shall be submitted to EPA, MassDEP, and Massachusetts Division of Marine Fisheries by February 28 each year.

4. In-Channel Temperature Monitoring

a. Within sixty (60) days of the effective date of this permit, the permittee shall install two strings of continuous temperature monitors in the Fort Point Channel. The permittee shall install one string suspended from the Evelyn Moakley Bridge and a second string suspended from the Summer Street Bridge consistent with the monitoring locations from the previous ambient temperature study. Each string shall consist of five temperature probes positioned at fixed intervals from 0.5 to 5.5 meters below the water surface.

b. Each string shall be equipped with a data logging device to allow the development of a continuous data record. The temperature monitoring equipment shall remain in place for one year from the commencement of monitoring. The permittee is solely responsible for gaining all permits and authorizations necessary for the placement of the temperature monitoring strings in the Fort Point Channel. The data shall be summarized and reported to EPA and MassDEP quarterly in as similar a manner to the 2012-2013 temperature data.

D. REPORTING REQUIREMENTS

Unless otherwise specified in this Permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the month following the monitoring period. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

Unless otherwise specified in this Permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. See Part I.D.5. for more information on State reporting. Because the due dates for reports described in this Permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month following the monitoring period), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the particular report due date specified in this Permit.

3. Submittal of Requests and Reports to EPA Water Division (WD)

a. The following requests, reports, and information described in this Permit shall be submitted to the NPDES Applications Coordinator in EPA WD:

(1) Transfer of Permit notice;
(2) Request for changes in sampling location;
(3) Request to discharge new chemicals or additives; and
(4) Report on unacceptable dilution water/request for alternative dilution water for WET testing.

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

4. Written Notifications

Written notifications required by Part II, Standard Conditions must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved

EPA system that will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

5. State Reporting

   Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

6. Verbal Reports and Verbal Notifications

   a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this Permit, shall be made to both EPA and to the State. This includes verbal reports and notifications that require reporting within 24 hours (e.g., Part II.B.4.c. (2), Part II.B.5.c. (3), and Part II.D.1.e.).

   b. Verbal reports and verbal notifications shall be made to EPA's Enforcement and Compliance Assurance Division (ECAD) at: **617-918-1510**

   c. Verbal reports and verbal notifications shall be made to the State's Emergency Response at: **888-304-1133**

E. STATE 401 CERTIFICATION CONDITIONS

This Permit is in the process of receiving State water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate all appropriate State water quality certification requirements (if any) into the Final Permit.

Attachment A -MARINE ACUTE

TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **2007.0 - Mysid Shrimp (Americamysis bahia) definitive 48 hour test.**
- **2006.0 - Inland Silverside (Menidia beryllina) definitive 48 hour test.**

Acute toxicity data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use the most recent 40 CFR Part 136 methods. Whole Effluent Toxicity (WET) Test Methods and guidance may be found at:

https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge and receiving water sample shall be collected. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any holding time extension. Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine[1] (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate

[1] For this protocol, total residual chlorine is synonymous with total residual oxidants.

prior to sample use for toxicity testing. If performed on site the results should be included on the chain of custody (COC) presented to WET laboratory.

Standard Methods for the Examination of Water and Wastewater describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1 mg/L chlorine. If dechlorination is necessary, a thiosulfate control consisting of the maximum concentration of thiosulfate used to dechlorinate the sample in the toxicity test control water must also be run in the WET test.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol. Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

IV. DILUTION WATER

Samples of receiving water must be collected from a reasonably accessible location in the receiving water body immediately upstream of the permitted discharge's zone of influence. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water is found to be, or suspected to be toxic or unreliable, ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is

species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first case is when repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use by the permittee and toxicity testing laboratory. The second is when two of the most recent documented incidents of unacceptable site dilution water toxicity require ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW with supporting documentation must be sent electronically to the NPDES Applications Coordinator in EPA Water Division (WD) at the following email address:

R1NPDESReporting@epa.gov

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the EPA Region 1 website at: www.epa.gov/aboutepa/epa-region-1-new-england (click on NPDES, EPA Permit Attachments, Self-Implementing Alternate Dilution Water Guidance) for important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA Region 1 requires tests be performed using four replicates of each control and effluent concentration because the non-parametric statistical tests cannot be used with data from fewer replicates. The following tables summarize the accepted Americamysis and Menidia toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE MYSID, AMERICAMYSIS BAHIA 48 HOUR TEST[1]

1. Test type	48hr Static, non-renewal
2. Salinity	25ppt ± 10 percent for all dilutions by adding dry ocean salts
3. Temperature (^{o}C)	20^{o}C ± 1^{o}C or 25^{o}C ± 1^{o}C, temperature must not deviate by more than 3^{o}C during test
4. Light quality	Ambient laboratory illumination
5. Photoperiod	16 hour light, 8 hour dark
6. Test chamber size	250 ml (minimum)
7. Test solution volume	200 ml/replicate (minimum)
8. Age of test organisms	1-5 days, < 24 hours age range
9. No. Mysids per test chamber	10
10. No. of replicate test chambers per treatment	4
11. Total no. Mysids per test concentration	40
12. Feeding regime	Light feeding using concentrated Artemia naupli while holding prior to initiating the test
13. Aeration [2]	None
14. Dilution water	5-30 ppt, +/- 10%; Natural seawater, or deionized water mixed with artificial sea salts
15. Dilution factor	≥ 0.5
16. Number of dilutions [3]	5 plus a control. An additional dilution at the permitted effluent concentration (%

	effluent) is required if it is not included in the dilution series.
17. Effect measured	Mortality - no movement of body appendages on gentle prodding
18. Test acceptability	90% or greater survival of test organisms in control solution
19. Sampling requirements	For on-site tests, samples are used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
20. Sample volume required	Minimum 1 liter for effluents and 2 liters for receiving waters

Footnotes:

[1] Adapted from EPA 821-R-02-012.

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

EPA NEW ENGLAND TOXICITY TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA 48 HOUR TEST[1]

1. Test Type	48 hr Static, non-renewal
2. Salinity	25 ppt ± 10 % by adding dry ocean salts
3. Temperature	20°C ± 1°C or 25°C ± 1°C, temperature must not deviate by more than 3°C during test
4. Light Quality	Ambient laboratory illumination
5. Photoperiod	16 hr light, 8 hr dark
6. Size of test vessel	250 mL (minimum)
7. Volume of test solution	200 mL/replicate (minimum)
8. Age of fish	9-14 days; 24 hr age range
9. No. fish per chamber	10 (not to exceed loading limits)
10. No. of replicate test vessels per treatment	4
11. Total no. organisms per concentration	40
12. Feeding regime	Light feeding using concentrated Artemia nauplii while holding prior to initiating the test
13. Aeration[2]	None
14. Dilution water	5-32 ppt, +/- 10% ; Natural seawater, or deionized water mixed with artificial sea salts.
15. Dilution factor	≥ 0.5
16. Number of dilutions[3]	5 plus a control. An additional dilution at the permitted concentration (% effluent) is required if it is not included in the dilution series.
17. Effect measured	Mortality-no movement on gentle prodding.

18. Test acceptability	90% or greater survival of test organisms in control solution.
19. Sampling requirements	For on-site tests, samples must be used within 24 hours of the time they are removed from the sampling device. Off-site test samples must be used within 36 hours of collection.
20. Sample volume required	Minimum 1 liter for effluents and 2 liters for receiving waters.

Footnotes:

[1] Adapted from EPA 821-R-02-012.

[2] If dissolved oxygen falls below 4.0 mg/L, aerate at rate of less than 100 bubbles/min. Routine D.O. checks recommended.

[3] When receiving water is used for dilution, an additional control made up of standard laboratory dilution water (0% effluent) is required.

V.1. Test Acceptability Criteria

If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.2. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

In general, if reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary as prescribed below.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.2.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. ≥3 standard deviations for IC25s and LC50 values and ≥ two concentration intervals for NOECs or NOAECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

VI. CHEMICAL ANALYSIS

At the beginning of the static acute test, pH, salinity, and temperature must be measured at the beginning and end of each 24 hour period in each dilution and in the controls. The following chemical analyses shall be performed for each sampling event.

Parameter	Effluent	Diluent	Minimum Level for effluent [*1] (mg/L)
pH	x	x	---
Salinity	x	x	ppt(o/oo)
Total Residual Chlorine [*2]	x	x	0.02
Total Solids and Suspended Solids	x	x	---
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005

Superscript:

[*1] These are the minimum levels for effluent (fresh water) samples. Tests on diluents (marine waters) shall be conducted using the Part 136 methods that yield the lowest MLs.

[*2] Either of the following methods from the 18th Edition of the APHA Standard Methods for the Examination of Water and Wastewater must be used for these analyses:

-Method 4500-Cl E Low Level Amperometric Titration (the preferred method);
-Method 4500-CL G DPD Photometric Method.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

An estimate of the concentration of effluent or toxicant that is lethal to 50% of the test organisms during the time prescribed by the test method.

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See flow chart in Figure 6 on page 73 of EPA 821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See flow chart in Figure 13 on page 87 of EPA 821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) which includes:
    - Facility name
    - NPDES permit number
    - Outfall number
    - Sample type
    - Sampling method
    - Effluent TRC concentration
    - Dilution water used
    - Receiving water name and sampling location
    - Test type and species
    - Test start date
    - Effluent concentrations tested (%) and permit limit concentration
    - Applicable reference toxicity test date and whether acceptable or not
    - Age, age range and source of test organisms used for testing
    - Results of TAC review for all applicable controls
    - Permit limit and toxicity test results
    - Summary of any test sensitivity and concentration response evaluation that was conducted

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at: www.epa.gov/compliance/discharge-monitoring-reports-avoiding-common-mistakes

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures;
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s);
- Reference toxicity test control charts;
- All sample chemical/physical data generated, including minimum levels (MLs) and analytical methods used;
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis;
- A discussion of any deviations from test conditions; and
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint.

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing

endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit

condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

b. Claims of confidentiality for the following information will be denied:

(1) The name and address of any permit applicant or Permittee;
(2) Permit applications, permits, and effluent data.

c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity

covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or

improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or

knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any

relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in

"approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means 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.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any

other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be

publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials

(except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does

not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and

disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

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BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0003832

PUBLIC NOTICE START AND END DATES:

NAME AND MAILING ADDRESS OF APPLICANT:

Procter and Gamble-Gillette
One Gillette Park
Boston, MA 02127

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Procter and Gamble-Gillette
Gillette Park
Boston, MA 02127

RECEIVING WATER AND CLASSIFICATION:

Fort Point Channel
Boston Inner Harbor (MA70-02), Class SB (CSO)

SIC CODE: 3421 - Cutlery, Handtools, and Hardware
NAICS CODE: 332215 - Metal Kitchen Cookware, Utensil, Cutlery, and Flatware Manufacturing

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1.0 Proposed Action

Procter and Gamble-Gillette (the "Permittee") has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of National Pollutant Discharge Elimination System (NPDES) permit No. MA0003832 to authorize pollutant discharges to and cooling water withdrawals from its manufacturing facility located in Gillette Park along the Fort Point Channel in Boston, MA (the "Facility"). The Facility also includes a dedicated power plant that provides it with electricity.

The permit currently in effect was issued by EPA on July 10, 2012, with an effective date of October 1, 2012, and it expired on September 30, 2017 (the "2012 Permit"). The Permittee filed an application seeking NPDES permit reissuance from EPA dated March 10, 2017, as required by 40 Code of Federal Regulations (CFR) §§ 122.6 and 122.21(d). Since the permit application was deemed timely and complete pursuant to 40 CFR § 122.21(e) by EPA on June 13, 2017, the Facility's 2012 Permit has been administratively continued pursuant to 40 CFR § 122.6(a). EPA and the Massachusetts Department of Environmental Protection (MassDEP or the "State") conducted a site visit on April 3, 2025.

2.0 Statutory and Regulatory Authority for Setting NPDES Permit Requirements

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. §§ 1251 – 1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except to the extent authorized under specific provisions of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" on the condition that the discharge will comply with the standards specified in certain other provisions of the statute (e.g., CWA §§ 301, 306 and 403). CWA § 402(a)(1). NPDES permits generally contain discharge limitations and, if applicable, cooling water intake structure (CWIS) requirements, and they also establish related monitoring and reporting requirements. *See* CWA §§ 402(a)(1) and (2) and 316(b). The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" to achieve the statutory mandates of Sections 301 and 402 of the CWA. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). Technology-based effluent limitations (TBELs) represent the minimum level of pollutant discharge control that must be satisfied under Sections 301(b) and 402(a)(1) of the CWA. *See also* 40 CFR § 125.3(a). When limits more stringent than technology-based limits are needed to maintain or achieve compliance with state water quality standards (WQS), then NPDES permit must include water quality-based effluent limits (QBELs). *See* CWA §§ 301(b)(1)(C) and 401; 40 CFR §§ 122.4(d), 122.44(d)(1) and (5), 124.53, and 124.55.

In addition, point source dischargers subject to Sections 301 or 306 that have cooling water intake structures must meet the cooling water intake structure requirements of CWA § 316(b), 33 U.S.C. § 1326(b). The federal standards for cooling water intake structures are specified in 40 CFR Part 125, subparts I (for new facilities) and J (for existing facilities), as well as subpart N (for new offshore oil and gas extraction facilities). In addition, NPDES permits must also include any more stringent permit conditions needed for cooling water intake structures to satisfy state law requirements, including state water quality standards. 40 CFR §§ 125.84(e) and 125.94(i).

2.1 Technology-Based Requirements

NPDES permit limits must, at a minimum, satisfy applicable federal technology standards under the CWA. CWA §§ 301(b), 304(b) and 402(a); 40 CFR § 125.3(a). The statute specifies several different narrative technology standards that apply to different types of pollutants. Technology-based effluent limitations are set to reflect the greatest degree of pollution control that can be achieved by using a technology that satisfies the applicable technology standard. Effluent limitations based on the best practicable control technology currently available (BPT) standard apply to "conventional pollutants" under certain circumstances, while effluent limitations applied to conventional pollutants are otherwise based on the best conventional control technology standard (BCT). *See* CWA §§ 301(b)(2)(E) and 304(a)(4), (b)(1) and (b)(4). *See also* 40 CFR §§ 125.3(a)(2)(i) and (ii). Effluent limitations based on the best available technology economically achievable (BAT) apply to toxic and non-conventional pollutants. *See* CWA § 301(b)(1)(A) and (b)(2)(A) – (D) and (F), and 304(b)(2); 40 CFR §§ 125.3(a)(iii) and (iv); and 401.12. If a discharger is a "new source" under Section 306 of the CWA, 33 U.S.C. § 1316, however, then it must meet new source standards based on the "best available demonstrated technology" (BADT). *See also* 40 CFR §§ 122.2 (definition of "new source") and 122.29.

Subpart A of 40 CFR Part 125 establishes criteria and standards for developing and applying technology-based requirements in permits under § 301(b) and 402(a) of the CWA. Where EPA has established national effluent limitation guidelines (ELGs) for an industrial category or subcategory, permit *limits* for a facility within that category are set by applying the limits from the national guideline. 40 CFR § 125.3(c)(1). *See also* CWA § 402(a)(1)(A). Where EPA has not yet promulgated an applicable national ELG, then the permitting authority develops permit limits based on a facility specific, Best Professional Judgment (BPJ) application of the relevant technology standard. 40 CFR § 125.3(c)(2). *See also* CWA § 402(a)(1)(B). Where national ELGs have been promulgated for some, but not all, of the pollutants regulated by the permit, limits are set using the appropriate approach for each pollutant. 40 CFR § 125.3(c)(3).

This permit has no requirements for stormwater discharges as the Facility's stormwater discharges are covered by MSGP # MAR053258.

For CWISs, CWA § 316(b) requires that their construction, location, design, and capacity reflect the best technology available for minimizing adverse environmental effects (BTA). CWIS requirements for new facilities are determined in accordance with 40 CFR Part 125, Subpart I (the "New Facilities Rule"). *See* 40 CFR §§ 125.80(c), 125.81(d) and 125.90(b). Furthermore,

CWIS requirements for new offshore oil and gas extraction facilities are determined in accordance with 40 CFR Part 125, subpart N. Cooling water intake structure requirements for existing facilities are developed in accordance with 40 CFR Part 125, Subpart J (the "Existing Facilities Rule"). For some facilities, the Rule provides specific requirements for satisfying the BTA standard, whereas for other existing facilities, the Rule provides that requirements should be determined on a BPJ basis. *See* 40 CFR §§ 122.44(b)(3), 125.90(b), 125.91, and 125.94.

Discharges from facilities other than publicly owned sewage treatment plants must generally comply with technology standards as expeditiously as practicable but in no case later than either three years after the date such limitations are established or March 31, 1989, whichever comes first. *See* 40 CFR § 125.3(a)(2). NPDES permits may not include compliance schedules inconsistent with a CWA statutory compliance deadline. *See* 40 CFR§ 122.47(a)(1).

2.2 Water Quality-Based Requirements

The CWA and EPA regulations require that NPDES permits include effluent limits and/or CWIS requirements based on water quality considerations when such limits are necessary to meet state or federal WQS that apply to the affected waterbodies. Such water quality-based effluent limits (WQBELs) are necessary when TBELs would be less stringent and would interfere with the attainment or maintenance of WQS in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1),122.44(d)(5), 125.84(e) and 125.94(i).

In the Draft Permit, EPA is proposing changes to previous water quality-based permit requirements to comport with the Supreme Court's decision in *City and County of San Francisco v. EPA*, No. 23-753 (S. Ct. Mar. 4, 2025). At issue in that case were two broad narrative provisions prohibiting discharges that cause or contribute to violations of applicable water quality standards. The Supreme Court's opinion refers to these narrative provisions as "end-result" requirements, explaining them as "permit provisions that do not spell out what a permittee must do or refrain from doing but instead make a permittee responsible for the quality of the water in the body of water into which the permittee discharges pollutants." *San Francisco v. EPA*, No. 23-753, *slip op.* at 2. The Supreme Court held that the Clean Water Act "does not authorize EPA to include 'end-result' provisions in NPDES permits." *Id.* At 20. Consistent with this holding in *San Francisco v. EPA*, EPA is not including language in the Draft Permit that is analogous to the permit text rejected by the Court (i.e., "The discharge shall not cause a violation of the water quality standards of the receiving water."). Specifically, these analogous requirements that have been removed in the Draft Permit are in Section I.A of the 2012 Permit.

In the development of the Draft Permit, EPA conducted a thorough reasonable potential analysis on all pollutants of concern (*i.e.*, all pollutants identified in the past five years of monthly Discharge Monitoring Reports [DMRs] and in the most recent permit application) using all available information to ensure that all pollutants of concern were either already consistently below levels that may violate applicable water quality standards (WQS) or received a protective WQBEL in the permit if the data demonstrated the reasonable potential to cause or

contribute to an excursion of WQS. Additionally, the Whole Effluent Toxicity (WET) testing limitations in the Draft Permit operate as a surrogate for other potential sources of toxicity and the recent DMR data show consistent compliance with these WET limits.

Based on this information, EPA has determined that the permit is fully protective of all applicable water quality standards based on all currently available information. The narrative water quality-based requirements in previous iterations of this permit (*e.g.*, "The discharge shall not cause a violation of the water quality standards of the receiving waters") were not in lieu of any more specific water quality requirements. To be clear, the Draft Permit without these generic narrative conditions is sufficiently stringent to ensure compliance with water quality standards under current conditions and their removal does not allow for any associated lowering of water quality in the effluent. Therefore, these conditions are not necessary given EPA's determination that the limits in this permit are sufficient to meet WQS, and thus they are not included in the Draft Permit as requirements based on CWA Section 301(b)(1)(C).[1]

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQS) for all water bodies within the state. *See* CWA § 303 and 40 CFR §§ 131.10 - 131.12. Generally, WQS consist of three parts: 1) beneficial designated uses for a water body or a segment of a water body; 2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. In this case, the applicable state WQS are found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00)

As a matter of state law, state WQS specify different water body classifications, each of which is associated with certain designated uses and particular numeric and narrative water quality criteria intended to help attain the designated uses. Then the state assigns one of the water body classifications to each water body in the state. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to monthly average limits.

When permit effluent limit(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the

[1] Given that the removal of these provisions is not considered relaxation of the permit, this change is consistent with CWA § 402(o) and § 303(d)(4).

permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case" assessment using CWA § 304(a) recommended water quality criteria supplemented as necessary by other relevant information; or 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A) – (C). Furthermore, when CWIS requirements are needed to ensure that state WQS are satisfied, the permitting authority should establish those requirements on a case-by-case basis. *See* CWA § 301(b)(1)(C); 40 CFR §§ 125.84(e) and 125.94(i); and N.H. Code R. Env-Wq 1701.02(b) (Applicability).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high-quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions," is found in the State's WQS at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00," dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or

more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of a pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQS for the designated uses, and allocates that load among the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C), and 40 CFR § 122.44(d)(1), NPDES permits must include any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. In addition, permit limits "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).
If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQS, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State's WQS, or the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State may provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law, including water quality standards.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQS and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

Note that the draft state certification will also be made available by the State for public comment separately from this Draft Permit as part of the permit reissuance process.[2] EPA does not have authority to make changes to the state certification conditions. Any comments regarding the draft state certification conditions should be made directly to MassDEP as part of that separate public notice.

2.3 Effluent Flow Requirements

Generally, EPA uses a discharger's effluent flow volume both to determine whether an NPDES permit needs certain effluent limitations and to calculate the effluent limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in its reasonable potential and WQBEL calculations to ensure compliance with WQS under CWA § 301(b)(1)(C). Should a facility's effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations might not be

[2] Once the public notice period for the MassDEP's draft 401 certification begins, it will be posted here: https://www.mass.gov/info-details/massdep-permits-approvals-for-comment. Following MassDEP's public notice period, the draft certification will be moved to here: https://www.mass.gov/info-details/massachusetts-draft-individual-surface-water-discharge-permits-and-associated-documents.

sufficiently protective (i.e., might not meet WQS). Further, pollutants that do not have the reasonable potential to exceed WQS at a lower discharge flow may have a reasonable potential to do so at a higher flow due to the decreased dilution in the receiving water (which, conversely, means there will be a higher concentration of the pollutants). In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" effluent flow assumptions through imposition of permit conditions for effluent flow.[3] In this regard, the effluent flow limitation is a component of any WQBELs because the WQBELs are premised on a maximum flow level. The effluent flow limit may also be necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQS.

Setting limits on effluent flow volumes is within EPA's authority to condition a permit to carry out the objectives and satisfy the requirements of the CWA. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). Regulating the quantity of pollutants in the discharge through a restriction on the quantity of effluent is also consistent with EPA's authorities under the CWA.

As provided in Part II.B.1 (Standard Conditions) of the proposed permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Consequently, an effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Cooling Water Intake Structure Requirements

2.4.1 CWA § 316(b) – The BTA Standard

Section 316(b) is the CWA's only provision that directly requires regulation of the withdrawal of water from a water body, as opposed to the discharge of pollutants into a water body. Rather than address all types of water withdrawal, however, this provision only governs the withdrawal of water for cooling purposes through a CWIS by a point source discharger. Specifically, CWA § 316(b) provides that:

> [a]ny standard established pursuant to [CWA sections 301 or 306] and applicable to a point source shall require that the location, design, construction, and capacity of cooling

[3] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id.* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.*, 14 E.A.D. 577, 599 (EAB 2010). EPA guidance directs that this "reasonable potential" analysis be based on "worst-case" conditions. *See In re Washington Aqueduct Water Supply Sys.,* 11 E.A.D. 565, 584 (EAB 2004).

> water intake structures reflect the best technology available for minimizing adverse environmental impact.

33 U.S.C. § 1326(b). The plain meaning of this language is that Congress wanted EPA to ensure that the best technology available (BTA) for minimizing adverse environmental impacts from CWISs would be utilized by plants withdrawing water from the Nation's water bodies for their cooling processes. The legislative history related to CWA § 316(b) is relatively sparse, but what exists reinforces the plain meaning of the statutory language. In the House Consideration of the Report of the Conference Committee (Oct. 4, 1972) on the final version of the 1972 CWA Amendments, Representative Clausen stated that "[s]ection 316(b) requires the location, design, construction and capacity of cooling water intake structures of steam-electric generating plants to reflect the best technology available for minimizing any adverse environmental impact." 1972 Legislative History at 264.

The impetus for enacting CWA § 316(b) seems to have been Congressional awareness of the problem of fish being harmed by power plant CWISs, as evidenced by the Senate Consideration of the Report of the Conference Committee (Oct. 4, 1972) for the final 1972 CWA Amendments. Id. at 196–99, 202.[4] CWA § 316(b) does not, however, apply only to steam-electric power plants. It also applies to other types of point source dischargers, such as manufacturing facilities, that withdraw water through a CWIS from a water of the United States to use for cooling. *See* 79 Fed. Reg. 48300 (Aug. 15, 2014) (Final Rule) (the "Existing Facilities Rule").

The two primary types of adverse environmental impact caused by the withdrawal of water through a cooling water intake structure are "impingement" and "entrainment." Impingement occurs when a facility draws water into its CWIS and organisms too large to pass through the CWIS's screens are unable to swim away and become trapped against the screens and other parts of the intake structure. The extent to which a CWIS impinges aquatic life can be affected by the number and type of organisms present in the water body from which the cooling water is withdrawn, the size of the organisms relative to the size of the openings in the CWIS's screens, and the velocity and volume of water being withdrawn through the CWIS. Impinged organisms may be killed, injured or weakened from contacting the CWIS's screens and fish return system (i.e., the system used to return impinged organisms back to the source water) depending on the characteristics of those systems, including any systems used to clean and backwash the screens. In some cases, contact with screens or other equipment can directly kill an organism, whereas in other cases it can strip an organism of its protective slime and/or scales or cause other injuries, which may result in delayed mortality. *See* 66 Fed. Reg. 65263.

Entrainment occurs when a facility takes water from a water body through its CWIS and fish eggs, larvae, and other planktonic organisms small enough to pass through the intake screens are in the water and are pulled into the cooling system along with the water. *See* 76 Fed. Reg.

[4] In re Pub. Serv. Co. of New Hampshire (Seabrook Station, Units 1 and 2), 1 E.A.D. 332 (Adm'r 1977), 1977 EPA App. LEXIS 16, *19–*20; In re Brunswick Steam Elec. Plant, Decision of the Gen. Counsel No. 41, at 200–01 (1976) [hereinafter "Brunswick"].

22197. Entrained organisms are typically killed by exposure to high water velocity and pressure, collisions with CWIS surfaces, exposure to increased water temperature, and/or exposure to chemical anti-biofouling agents. *See* 79 Fed. Reg. 48318. The number of organisms entrained is dependent upon the volume and velocity of cooling water flow drawn through the plant and the concentration of organisms in the source water body that are small enough to pass through the CWIS screens. *See* 79 Fed. Reg. 48321 n. 37. The extent of entrainment can also be affected by an intake structure's location, the type and quantity of organisms present in the water body, and the characteristics of any intake screening system or other entrainment reduction equipment used by the facility. Entrainment may also vary by season because of seasonal differences in the assemblage of organisms present in the water. For example, a CWIS located near a fish spawning area is likely to entrain larger numbers of eggs and larvae during the spawning season.

2.4.2 CWA § 316(b) - Regulations

On April 20, 2011, EPA proposed new regulations for applying the BTA standard of CWA § 316(b) to CWISs at existing power plants and manufacturers, and to CWISs for new units at existing facilities. 76 Fed. Reg. 22174 (Apr. 20, 2011) (the "Proposed Existing Facilities Rule").

On August 15, 2014, EPA promulgated those regulations in final form. 79 Fed. Reg. 48300. The Existing Facilities CWIS Rule establishes detailed requirements for determining and implementing the BTA for minimizing impingement and entrainment impacts of CWISs at existing facilities that have cumulative design intake flows greater than 2 million gallons per day (MGD) and that use 25% or more of the intake water for cooling purposes. 40 CFR § 125.91(a). These requirements apply to Gillette, which has a design intake flow of 64.8 MGD through its CWIS and uses 100% of the water withdrawn exclusively for cooling. The Existing Facilities Rule became effective October 14, 2014, and was upheld on appeal by the U.S. Court of Appeals for the Second Circuit on July 23, 2018.[5]

The Existing Facilities Rule bases the national BTA standard for minimizing impingement mortality on the performance of well-operated modified traveling screens, including an effective fish handling and return system. *See* 79 Fed. Reg. 48328 - 329; 40 CFR §§ 125.92(s) and 125.94(c)(5). The 2014 regulations also provide six other compliance alternatives generally deemed to provide equivalent or better performance than modified traveling screens. *See* 40 CFR §§ 125.94(c)(1) – (4), (6) – (7). Under 40 CFR § 125.94(c)(1) – (7), the owner or operator of an existing facility must choose an approach to satisfying the BTA standard for impingement mortality from the seven specified compliance options. These options are briefly summarized below:

1. Operate a modified traveling screen that the permitting authority determines meets the definition at §125.92(s), and that, after review of the information required in the impingement technology performance optimization study at 40 CFR 122.21(r)(6)(i), the

[5] *Cooling Water Intake Structure Coal. v. EPA*, 905 F.3d 49 (2d Cir. 2018).

Director determines is the BTA for impingement reduction at the facility; or
2. Operate a closed-cycle recirculating system as defined by §125.92(c), including at least daily monitoring of either actual intake flows or cycles of concentration; or
3. Operate a CWIS that has a maximum design through-screen velocity of 0.5 fps under all source water hydraulic and facility operating conditions, with the velocity measured perpendicular to the intake screen mesh; or
4. Operate a CWIS so that the actual through screen velocity does not exceed 0.5 fps under all source water hydraulic and facility operating conditions, with the velocity measured perpendicular to the intake screen; or
5. Operate an offshore velocity cap as defined by §125.92(v) that was installed on or before October 14, 2014 (a proposed new velocity cap must satisfy the requirements of either option 6 or option 7 below); or
6. Operate a system of technologies, management practices, and operational measures determined by the permitting authority to be the BTA; or
7. Achieve a 12-month impingement mortality performance standard for all life stages of fish and shellfish of no more than 24 percent mortality, including latent mortality.

In its permit application, the permittee must identify the option it has chosen for complying with the BTA standard for limiting impingement mortality. *See* 40 CFR § 122.21(r)(6). Since the regulations allow a facility to propose alternative technologies to satisfy the BTA standard if it can demonstrate that they will perform adequately (options 6 and 7 above), the approval of such alternative technologies would involve a site-specific decision. The regulations also have several additional provisions that pertain to specific issues concerning impingement, such as fragile species, de minimis effects, and more. See, e.g., 40 CFR §§ 125.94(c)(8)-(12).

For entrainment control, the regulations establish a framework under which the permitting agency determines for each cooling water intake structure, on a site-specific basis, the technologies and/or practices yielding "the maximum reduction in entrainment warranted after consideration of the relevant factors as specified in § 125.98." 40 CFR §§ 125.94(d), 125.98(f). In determining the maximum reduction in entrainment warranted, the regulations require the permitting authority to consider the following factors:

(i) numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally listed, threatened and endangered species, and designated critical habitat (e.g., prey base);
(ii) impact of changes in particulate emissions or other pollutants associated with entrainment technologies;
(iii) land availability inasmuch as it relates to the feasibility of entrainment technology;
(iv) remaining useful plant life; and
(v) quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

Id. § 125.98(f)(2). The regulations provide the permitting authority with the discretion to determine the weight given to each factor "based upon the circumstances of each facility." *Id*. In addition, 40 CFR § 125.98(f)(3) provides that the following additional factors may be considered in determining a site-specific BTA to the extent the applicant submitted information under 40 CFR § 122.21(r) on these factors:

(i) entrainment impacts on the waterbody;
(ii) thermal discharge impacts;
(iii) credit for reductions in flow associated with the retirement of units occurring within the ten years preceding October 14, 2014;
(iv) impacts on the reliability of energy delivery within the immediate area;
(v) impacts on water consumption; and
(vi) availability of process water, gray water, wastewater, reclaimed water, or other waters of appropriate quantity and quality for reuse as cooling water.

The 2014 Regulations also give permitting authorities the discretion to "reject an otherwise available technology" as the BTA for entrainment if the social costs are "not justified" by the social benefits or if there are other unacceptable adverse factors that cannot be mitigated. Id. § 125.98(f)(4); 79 Fed. Reg. at 48351-52.

Consistent with the U.S. Supreme Court's decision in *Entergy Corp. v. Riverkeeper, Inc*., 556 U.S. 208 (2009), EPA's 2014 Regulations recognize that the CWA gives EPA the discretion to consider relative costs and benefits in determining the site-specific BTA for entrainment. In determining the site specific BTA for entrainment reduction at an existing facility, the quantified and qualitative social benefits and costs of available entrainment technologies must be considered "when such information on both benefits and costs is of sufficient rigor to make a decision." 40 CFR § 125.98(f)(2)(v). See also 40 CFR §§ 125.92(x) and (y) (definitions of social benefits and social costs); 79 Fed. Reg. 48368, 48371. Also consistent with *Entergy*, the 2014 Regulations do not propose a specific comparative cost/benefit test, instead granting the permitting authority the discretion to determine "the maximum reduction in entrainment warranted after consideration of the relevant factors as specified in § 125.98." 40 CFR § 125.94(d) (emphasis added). *See also* 40 CFR § 125.98(f).

As required by federal regulations, Gillette submitted to EPA the permit application material prescribed by 40 CFR § 122.21(r)(2) through (8). The report, titled "Clean Water Act Section 316(b) CFR § 122.21(r) (2-8) Application Submittals," is dated March 25, 2016. Prior to that, Gillette submitted to EPA three entrainment reports, dated February 2014, October 2014, and January 2016, respectively, for monitoring done in 2013, 2014, and 2015. The application was prepared by Environmental Resources Management, and the entrainment reports were prepared by Normandeau Associates. These reports provided valuable information that aided EPA in determining the BTA for Gillette's CWIS.

Sections 301(b)(1)(C), 401, and 510 of the CWA authorize EPA to issue permit conditions to ensure that cooling water withdrawals are consistent with state WQS, because NPDES permits

must assure that the overall "activity" associated with a discharge will not violate applicable WQS. *See PUD No. 1 of Jefferson Cty. v. Washington Dept. of Ecology*, 511 U.S. 700, 711 – 12 (1994); *Riverkeeper, Inc. v. U.S. EPA*, 358 F.3d 174, 200 – 202 (2d Cir. 2004) (Riverkeeper I)(upholding 40 CFR § 125.84(e)); *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 619-41 (EAB 2006). Accordingly, EPA regulations specify that permits should include any more stringent BTA conditions needed to comply with applicable state law requirements, including state WQS. *See* 40 CFR §§ 125.84(e), 125.94(i). Therefore, EPA-issued NPDES permits addressing CWISs must satisfy: (1) the BTA standard of CWA § 316(b); (2) applicable state water quality requirements; and (3) applicable conditions of a state certification under CWA § 401. The standards that are most stringent ultimately determine the Final Permit limits.

Massachusetts interprets its WQS as being applicable to cooling water withdrawals. Though the standards for Class SB waters, such as Fort Point Channel, do not include any specific numeric criteria that apply to cooling water intakes, it is nevertheless clear that MassDEP must impose the conditions it determines are necessary to protect the designated uses of the channel, including that it provide good quality habitat for fish and other aquatic life and be a recreational fishing resource. *See* 314 CMR 4.05(4)(b). In addition, 314 CMR 4.05(1) of the Massachusetts WQS provides that each water classification "is identified by the most sensitive, and therefore governing, water uses to be achieved and protected." This means that where a classification lists several uses, permit requirements must be sufficient to protect the most sensitive use. Finally, 314 CMR 4.05(4)(b)(2)(d) for Class SB waters states that "in the case of a cooling water intake structure (CWIS) regulated by EPA under 33 USC § 1251 (FWPCA, §316(b)), the Department has the authority under 33 USC § 1251 (FWPCA, §401), M.G.L. c. 21, §§ 26 through 53 and 314 CMR 3.00 to condition the CWIS to assure compliance of the withdrawal activity with 314 CMR 4.00, including, but not limited to, compliance with narrative and numerical criteria and protection of existing and designated uses."

In summary, Massachusetts WQS apply to CWISs, and the Draft Permit's requirements must ensure that the Facility's CWIS neither causes nor contributes to violations of the WQS and must satisfy the terms of the state's water quality certification under § CWA 401. EPA anticipates that MassDEP will provide its water quality certification before the issuance of the Final Permit.

2.5 Monitoring and Reporting Requirements

2.5.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges and cooling water withdrawals in accordance with

CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(h), (j) and (1)(9), 122.43(a), 122.44(i), 122.48, and 125.96. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges, as well as monitoring of the volume of water being withdrawn for cooling and the number and species of organisms subjected to entrainment by the CWIS. *See* Draft Permit, Parts I.A.1 – 7, and C. 3. The monitoring program is needed to enable EPA and the State to determine (a) the characteristics of the Facility's pollutant discharges and cooling water withdrawals, (b) whether Facility discharges and cooling water withdrawals are complying with permit limits, and (c) whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numeric effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. *See* 40 CFR § 122.41(j)(4). Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*; 79 Fed. Reg. 49001 (Aug. 19, 2014). This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[6] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

[6] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

2.5.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs to EPA electronically via a secure internet application through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[7]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Exceptions are provided in the permit such as for providing certain reports, information, and requests to EPA's NPDES Applications Coordinator in the Water Division and written notifications required under Part II Standard Conditions.

2.6 Standard Conditions

The Standard Conditions, included as Part II of the Draft Permit, are based on applicable regulations found in EPA's NPDES permitting regulations. *See* 40 CFR § 122.41. *See also, generally,* 40 CFR Part 122.

2.7 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified with conditions less stringent than the corresponding conditions in a previous permit issued to the same facility unless doing so is authorized by one of the specified exceptions to the anti-backsliding requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality, and/or State certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2012 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

[7] https://netdmr.zendesk.com/hc/en-us

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The Facility is located along the eastern bank of the Fort Point Channel in Gillette Park in Boston, MA. A location map is provided in Figure 7 at the end of this Fact Sheet. The main features of the Facility are a large main building that occupies most of the property, two parking lots situated between the main building and Fort Point Channel, a cooling water intake structure located at the northeast edge of the property along the channel, and four outfalls along the channel that are upstream (southwest) of the intake structure and adjacent to a publicly accessible harbor walk. Outfall 4 is farthest upstream from the intake structure, followed by Outfall 1, Outfall 2, and then Outfall 3. The main building houses offices, the manufacturing floor, and a powerplant to provide electricity for the facility. A site plan is provided in Figure 8.

The bulk of the water withdrawn from Fort Point Channel through the Facility's CWIS – a daily maximum volume of 45 MGD from June 1 to September 30, and 35 MGD from October 1 to May 31, *see* Draft Permit, Part I.A.5 – is sent to the onsite powerplant and used in various chillers, heat exchangers, and condensers. Some of the intake water is also used for Taprogge© strainer flushing and to operate the heat exchangers for the building HVAC system. In addition to cooling water effluent, Outfalls 001 and 003 also receive discharges from storm drains located on the property. The Facility also uses a smaller amount of city-supplied water that it discharges through Outfall 001. are added. A detailed flow diagram is provided in Figure 1.

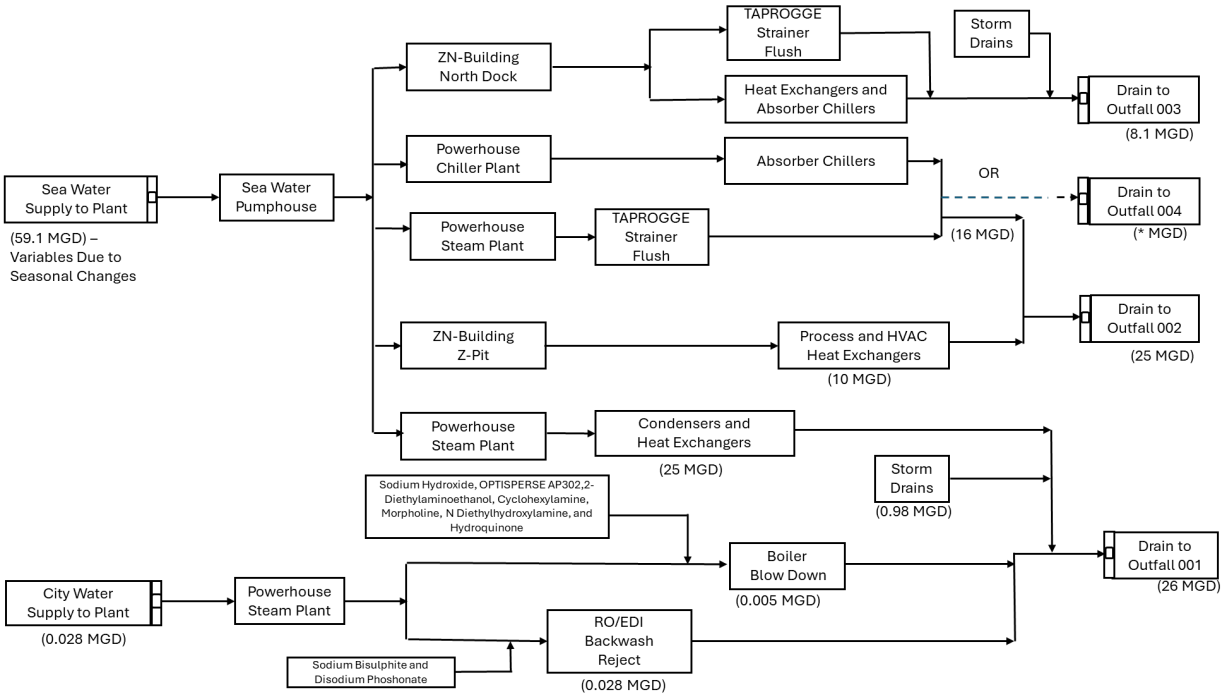


Figure 1: Detailed Flow Diagram of Facility

3.1.1 Effluent Limitation Guidelines

EPA has not promulgated technology-based effluent limitation guidelines (ELGs) for SIC 3421 (Cutlery, Handtools, and Hardware) in 40 CFR Subchapter N Parts 405 through 471. Therefore, in accordance with CWA § 402(a)(1)(B) and 40 CFR § 125.3(c)(2), EPA may establish technology-based effluent limitations on a case-by-case basis using BPJ. EPA's NPDES permitting regulations at 40 CFR §125.3(c)(2) state that permits developed on a case-by-case basis under Section 402 (a)(1)(B) of the CWA shall apply the appropriate factors listed in 40 CFR § 125.3(d) and must consider 1) the appropriate technology for the category or class of point sources of which the applicant is a member, based on available information, and 2) any unique factors relating to the applicant.

3.2 Location and Type of Discharge

The Draft Permit authorizes discharges to Fort Point Channel via Outfalls 001, 002, 003, and 004. The type of effluent discharged from each outfall, and the outfall's approximate latitude and longitude, are shown in Table 1.

Table 1: Outfall Locations

Outfall Number	Discharge	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)
001	Power plant cooling (non-contact cooling water), boiler blowdown, boiler makeup water, treatment reverse osmosis backwash and reject, stormwater runoff	42° 20' 49.30" N	71° 03' 13.70" W
002	Process and air conditioning heat exchanger cooling (non-contact cooling water), Taprogge© strainer flush (building Z), powerhouse steam plant Taprogge© strainer flush and powerhouse chiller plant heat exchanger cooling (non-contact cooling water)	42° 20' 49.30" N	71° 03' 13.70" W
003	Process cooling (non-contact cooling water) Taprogge© strainer flush, stormwater runoff	42° 20' 49.30" N	71° 03' 13.70" W
004	Powerhouse chiller plant heat exchanger cooling water (non-contact cooling water)	42° 20' 44.27" N	71° 03' 20.70" W

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the Permittee, including Discharge Monitoring Reports (DMRs), from July 2020 through August 2025, is provided in Appendix A of this Fact Sheet.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Facility discharges through Outfall 001, 002, 003, and 004 to Fort Point Channel which is a part of the Boston Inner Harbor (MA70-02) and has a surface area of 2.56 square miles between the neighborhood of East Boston and the rest of the city of Boston, Massachusetts.

Fort Point Channel is classified as a Class SB (CSO) water in the Massachusetts WQS. 314 CMR 4.06. Class SB waters are described in the Massachusetts WQS at 314 CMR 4.05(4)(b) as follows:

> [t]hese waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth, and other critical functions, and for primary and secondary contact recreation. In certain waters, habitat for fish, other aquatic life and wildlife may include, but is not limited to, seagrass. Where designated for shellfishing in 314 CMR 4.06(6)(b), these waters shall be suitable for shellfish harvesting with depuration (Restricted and Conditionally Restricted Shellfish Areas). These waters shall have consistently good aesthetic value.

Class SB (CSO) waters are then further described in the Massachusetts WQS at 314 CMR 4.06(1)(d)(11) as follows:

> [t]hose Class SB partial use Coastal and Marine Waters occasionally subject to short-term impairment of swimming or other recreational uses due to untreated CSO discharges in a typical year, and the aquatic life community may suffer adverse impact yet is still generally viable. The uses for Class SB waters are maintained after the implementation of long-term control measures described in the approved CSO long-term control plan except as identified in such plan [see 314 CMR 4.06(1)(d)11.]

Fort Point Channel (Boston Inner Harbor MA70-02) is listed in the *Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle* ("303(d) List") as a Category 5 "Waters Requiring a TMDL."[8] The pollutants and conditions requiring a TMDL are benthic Dissolved Oxygen, Enterococcus, Fecal Coliform, PCBs in Fish Tissue, and Cause Unknown [Contaminants

[8] Final *Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle*. MassDEP Division of Watershed Management
Watershed Planning Program, Worcester, Massachusetts; May 2023; CN: 568.1. Available at: https://www.mass.gov/doc/final-massachusetts-integrated-list-of-waters-for-the-clean-water-act-2022-reporting-cycle/download.

in Fish and/or Shellfish]. To date only a Pathogen TMDL has been developed for this waterbody for Enterococcus and Fecal Coliform. The status of each designated use is presented in Table 2.

Table 2: Summary of Designated Uses, Listing Status, Cause, and Source

Designated Use	Attainment Status	Cause	Source
Fish Consumption	Not Supporting	CAUSE UNKNOWN [Contaminants in Fish and/or Shellfish]	DISCHARGES FROM BIOSOLIDS (SLUDGE) STORAGE, APPLICATION OR DISPOSAL
Secondary Contact Recreation	Not Supporting	ENTEROCOCCUS	COMBINED SEWER OVERFLOWS
Primary Contact Recreation	Not Supporting	ENTEROCOCCUS	COMBINED SEWER OVERFLOWS
Primary Contact Recreation	Not Supporting	ENTEROCOCCUS	DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)
Primary Contact Recreation	Not Supporting	ENTEROCOCCUS	SOURCE UNKNOWN
Secondary Contact Recreation	Not Supporting	ENTEROCOCCUS	DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)
Secondary Contact Recreation	Not Supporting	ENTEROCOCCUS	SOURCE UNKNOWN
Shellfish Harvesting	Not Supporting	FECAL COLIFORM	COMBINED SEWER OVERFLOWS
Shellfish Harvesting	Not Supporting	FECAL COLIFORM	DISCHARGES FROM MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)
Shellfish Harvesting	Not Supporting	FECAL COLIFORM	SOURCE UNKNOWN
Fish Consumption	Not Supporting	CAUSE UNKNOWN [Contaminants in Fish and/or Shellfish]	UPSTREAM SOURCE
Fish Consumption	Not Supporting	CAUSE UNKNOWN [Contaminants in Fish and/or Shellfish]	WET WEATHER DISCHARGES (POINT SOURCE AND COMBINATION OF STORMWATER, SSO OR CSO)
Fish Consumption	Not Supporting	PCBS IN FISH TISSUE	CONTAMINATED SEDIMENTS

Fish Consumption	Not Supporting	PCBS IN FISH TISSUE	UPSTREAM SOURCE
Fish Consumption	Not Supporting	PCBS IN FISH TISSUE	WET WEATHER DISCHARGES (POINT SOURCE AND COMBINATION OF STORMWATER, SSO OR CSO)
Fish, other Aquatic Life and Wildlife	Not Supporting	DISSOLVED OXYGEN	SOURCE UNKNOWN
Aesthetic	Not Assessed		
Fish Consumption	Not Supporting	CAUSE UNKNOWN [Contaminants in Fish and/or Shellfish]	CONTAMINATED SEDIMENTS

4.2 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQS under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[9] State WQS specify the hydrologic condition at which water quality criteria must be applied.

In coastal and marine waters and for lakes and ponds, the extreme hydrologic conditions at which aquatic life criteria must be applied are established on a case-by-case basis. In all cases existing uses shall be protected and the selection of extreme hydrologic conditions shall not interfere with the attainment of designated uses. *See* 314 CMR 4.03(3)(c). The State has determined that the dilution factor for the Facility is zero (i.e., 1:1).

5.0 Proposed Permit Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQS are described below. These proposed effluent limitations and conditions may be found in Part I of the Draft Permit, and their basis is discussed throughout this Fact Sheet.

5.1 Effluent Limitations and Monitoring Requirements

The State and Federal regulations, data regarding discharge characteristics, and data regarding ambient characteristics described above, were used during the process of developing effluent limitations. Discharge data are included in Appendix A.

[9] EPA Permit Writer's Manual, Section 6.2.4

5.1.1 Effluent Flow

The Facility's 2012 Permit includes a maximum daily flow limit for each outfall that varies by season and monthly average reporting requirements. From August 2020 through July 2025 (Appendix A), daily maximum effluent flow has ranged from 2.182 MGD (Million Gallons per Day) to 10.715 MGD across all outfalls and there has been no exceedance of any flow limits. A more detailed breakdown of the effluent flow rates by outfall is presented in Table 3.

Table 3: A Summary of Daily Maximum Effluent Flow by Outfall August 2020 - July 2025

Outfall	Daily Maximum Flow Limit (MGD)	Minimum Daily Maximum Flow (MGD)	Maximum Daily Maximum Flow (MGD)	Median Daily Maximum Flow (MGD)
001 (Summer)	26.0	8.242	10.715	9.3415
001 (Non-Summer)	23.5	6.931	10.351	8.433
002 (Summer)	26.0	8.242	10.715	9.3415
002 (Non-Summer)	23.5	6.931	10.351	8.433
003 (Summer)	8.1	2.594	3.373	2.9405
003 (Non-Summer)	7.4	2.182	3.258	2.6545
004 (Summer)	19.6	5.4	7.02	6.12
004 (Non-Summer)	15.4	2.653	6.782	5.525

As the total combined flow of all outfalls is effectively controlled by the updated intake flow limits discussed in sections 5.3.6.1. there is no reason to adjust the effluent flow limits for each of the outfalls individually. The Draft Permit continues the maximum daily flow limit for each outfall by season and maintains the average monthly flow monitoring requirement.

5.1.2 pH

The hydrogen-ion concentration in an aqueous solution is represented by the pH using a logarithmic scale of 0 to 14 standard units (S.U.). Solutions with pH 7.0 S.U. are neutral, while those with pH less than 7.0 S.U. are acidic and those with pH greater than 7.0 S.U. are basic. Discharges with pH values markedly different from the receiving water pH can have a detrimental effect on the environment. Not only can sudden pH changes kill aquatic life, but pH can also affect the toxicity of other pollutants in the water.

From August 2020 through July 2025 (Appendix A), pH has ranged from 6.7 to 8.3 S.U. across all four outfalls. A breakdown of the minimum and maximum values by outfall is presented in Table 4.

Table 4: A Summary of pH by Outfall August 2020 - July 2025

Outfall	Minimum pH (S.U.)	Maximum pH (S.U.)
001	6.9	8.3
002	6.7	8.3
003	6.7	8.3
004	6.8	8.3

The Draft Permit requires a pH range of 6.5 to 8.5 S.U. for all outfalls when the Facility is discharging, monitored 5 times a week by grab samples. The pH limitations are based on the State WQS for Coastal and Marine Waters, Class SB at 314 CMR 4.05(4)(b)3, which require that the pH of the receiving water be in the range of 6.5 to 8.5 S.U. These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.3 Temperature/Heat Load

Section 502(6) of the Clean Water Act defines heat as a "pollutant." *See* 33 U.S.C. § 1362(6). Water temperature affects the metabolic and reproductive activities of aquatic organisms and can determine which fish and macroinvertebrate species can survive or thrive in a water body. Certain cold-blooded species cannot regulate their body temperature through physiological means, so their body temperatures reflect the temperatures of the water they inhabit. In addition, rapid changes (increases or decreases) in ambient water temperature can directly affect aquatic life, particularly fish. Changes to a water body's temperature profile could also cause aquatic life to avoid the water body if the new temperatures are outside the organisms' preferred temperature range. Alteration of ambient water temperature can also indirectly affect aquatic life by influencing other water quality parameters. For example, changes in water temperature can affect dissolved oxygen levels because the solubility of oxygen decreases as water temperature increases.

The current permit establishes a daily maximum temperature limit of 83°F at all four outfalls and requires that the facility report the daily maximum, monthly average, and increase in temperature. The maximum daily limit was not exceeded in the previous five years of data. The data is summarized in Tables 5 and 6.

Table 5: A Summary of Daily Maximum Temperature Data by Outfall August 2020 - July 2025

Outfall	Daily Max Limit Temperature (°F)	Minimum Daily Max Temperature (°F)	Maximum Daily Max Temperature (°F)	Median Daily Max Temperature (°F)
001	83	44.2	78.9	65.35
002	83	44.7	77.3	62.85
003	83	41.8	77.3	59.9
004	83	40.8	82.9	74.05

Table 6: A Summary of Daily Maximum Temperature Increase Data by Outfall August 2020 - July 2025

Outfall	Minimum Daily Max Temperature Increase (°F)	Maximum Daily Max Temperature Increase (°F)	Median Daily Max Temperature Increase (°F)
001	5.7	17.3	9.85
002	4.2	12.4	6.25
003	1.1	15.6	3.75
004	2.6	27.0	15.7

Heat is a measure of thermal energy and is related to change in temperature but includes the mass of the material and the capacity of that material to hold heat (heat capacity or specific heat). This measure reflects the amount of additional energy that is being discharged into a waterbody.

The permit requires that the facility report the daily maximum and monthly average heat load for all four outfalls and a combined heat load for all four outfalls. There is a daily maximum heat load limit of 8782 MBTU/day for the combination of all four outfalls. This limit was never exceeded in the previous five years of data. The data is summarized in Tables 7 and 8. The full data set is available upon request. For reference, footnote 11 of the 2012 permit reads:

> *The heat load shall be calculated on a daily basis using the following equation:*
>
> *Q = CpmΔT*
> *where:*
> *Q = Heat load, million British Thermal Units (mBTU)/day*
> *Cp = Heat capacity (specific heat) of water = 1.0 BTU/pound °F*
> *m = mass of water = cooling water flow rate (MGD) x density of intake water = cooling water flow rate x 8.34 pounds/gallon*
> *ΔT = discharge temperature – intake temperature, °F*
>
> *Daily heat load for each outfall shall be calculated using the estimated daily flow rate and observed ΔT. Maximum daily heat load from all outfalls shall be calculated using the single highest ΔT observed among the four outfalls and the total daily cooling water flow measured at the cooling water intake structure.*

2012 Permit, Part I.A.6. n. 11.

Table 7: A Summary of Daily Maximum Heat Load Data by Outfall August 2020 - July 2025

Outfall	Minimum Daily Maximum Heat Load (MBTU/d)	Maximum Daily Maximum Heat Load (MBTU/d)	Median Daily Maximum Heat Load (MBTU/d)
001 (Summer)	470	1248	669
001 (Non-Summer)	463	1272	647
002 (Summer)	347	865	560
002 (Non-Summer)	314	912	396
003 (Summer)	38	295	80
003 (Non-Summer)	23	263	86
004 (Summer)	572	1125	749
004 (Non-Summer)	111	1309	660

Table 8: A Summary of Combined Heat Load Data August 2020 - July 2025

Parameter	Limit (MBTU/d)	Minimum (MBTU/d)	Maximum (MBTU/d)	Median (MBTU/d)
Daily Max Heat (Summer)	8,782	2,592	5,009	3394
Daily Max Heat (Non-Summer)	8,782	1,783	5,932	3023.5
Monthly Average Heat (Summer)	Report	1,628	3,497	2238
Monthly Average Heat (Non-Summer)	Report	940	2,995	1,650.5

The Massachusetts Surface Water Quality Standards (WQS) for Class SB waters require that the in-stream temperature shall not exceed 85°F (29.4°C) or a maximum daily mean of 80°F (26.7°C) and that the rise in temperature due to a discharge shall not exceed 1.5°F (0.8°C) during the summer months (July through September) or 4°F (2.2°C) during the winter months (October through June). Additionally, the WQS state that there shall be no change from background conditions that would impair any use designated to this class [314 CMR 4.05 (4)(b)].

In the 2003 Permit issuance, the EPA-supported CORMIX model was used to predict the increase in temperature in Fort Point Channel because of the four cooling water discharges. In this case, the model predicted a thin (1 to 2 feet thick) surface plume from the point of discharge from the outfalls to roughly midway between the Congress Street and Northern Avenue bridges. This area has been established as a mixing zone for the facility in previous permits. Therefore, the difference in temperature between the Northern Avenue bridge (Moakley Bridge today) and the Congress Street bridge and the measured temperature at the Congress Street bridge will be used to evaluate compliance with the WQS.

The 2012 Fact Sheet, p. 11, included the following discussion of thermal discharge data:

EPA evaluated the results of the permittee's temperature monitoring, quarterly reports, and raw data to determine if the thermal plume under the current operating conditions, as defined by the CORMIX model and supported by additional monitoring, is protective of the balanced, indigenous population (BIP) in Fort Point Channel. The combined thermal discharges from Gillette's outfalls in 2004 did not exceed water quality standards for average daily temperature (80°F) and maximum temperature (85°F) at the Congress Street Bridge. In addition, the monitoring results confirmed that the thermal plume is limited to the surface (between 0 and 1.5 meters below surface). Surface and bottom temperatures at the Northern Avenue Bridge tended to have similar diurnal cycles, while surface and bottom temperatures at Congress Street were generally less similar with little bottom temperature variation, particularly in spring and summer. The comparison between the two locations demonstrates the presence of a thermal plume impacting temperatures at the surface but not deeper waters at the Congress Street Bridge and suggests that the Northern Avenue Bridge is indicative of ambient temperatures (i.e., beyond influence of a surface thermal plume).

The temperature difference from the Congress Street Bridge to the Northern Avenue Bridge was consistently less than 4°F in spring and fall. The temperature difference was less than 4°F in winter approximately 86% of the time at 0.5m and 99.9% of the time at 1.5m (average winter delta T of 1.2°F). The temperature difference was less than 1.5°F in summer approximately 93% of the time at 0.5m and more than 96% of the time at 1.5m (average summer delta T of 0.4°F). Overall, EPA concludes that the thermal plume from the discharge at Gillette does not substantially impact the temperature of the receiving water and ensures that ambient conditions remain protective of the BIP. Although the temperature difference between the two monitoring locations exceeded water quality standards for delta T on a small number of occasions, suggesting that the mixing zone can extend past the Congress Street Bridge at times during the winter and summer, these instances were generally short in duration.

The 2012 Permit required continuous temperature monitoring for one year at the Congress Street and Moakley bridges. Temperatures were measured continuously and reported quarterly from 12/1/2012 to 11/30/2013 (the 2013 Study). For every day in that period, the maximum, minimum, and average temperatures at various depths were reported. The data as reported to EPA is available upon request.

Over the monitoring period the maximum daily temperature never exceeded 80°F at the Congress Street bridge and the difference in mean daily temperature between the Congress Street and Moakley bridges maxed out at 1.14°F. The average difference in temperature for all five depths was between -0.19°F and 0.11°F indicating that the required mixing zone does not reach the Congress Street bridge from the discharge.

This data is plotted in Figures 2 and 3. Figure 3 shows that the facility has no discernible impact on the temperature difference between the Congress St and Moakley bridges at any depth. If the plume was reaching the Congress Street bridge but not the Moakley bridge, we would

expect to see significantly elevated bands at one or more depths. Instead, there is a very small increase in temperature at one depth and decreases in temperature at others.

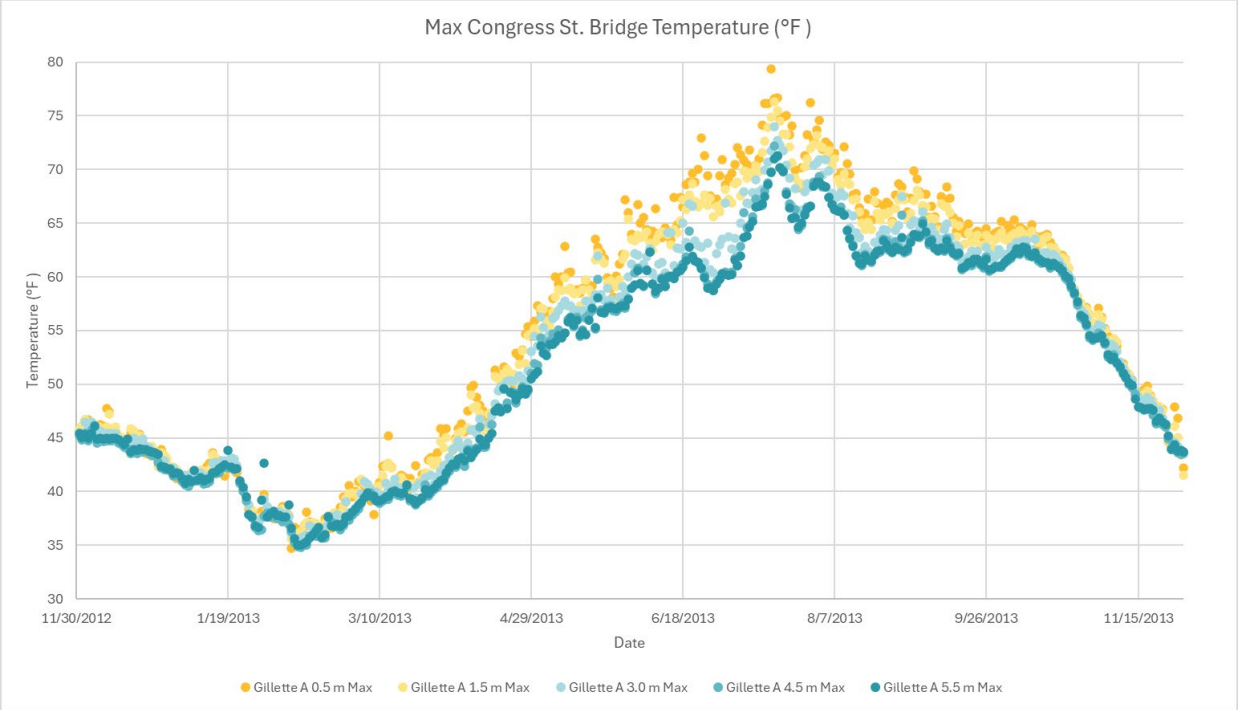


Figure 2: Maximum Daily Congress Street Bridge Temperatures from 12/1/2012 to 11/30/2013

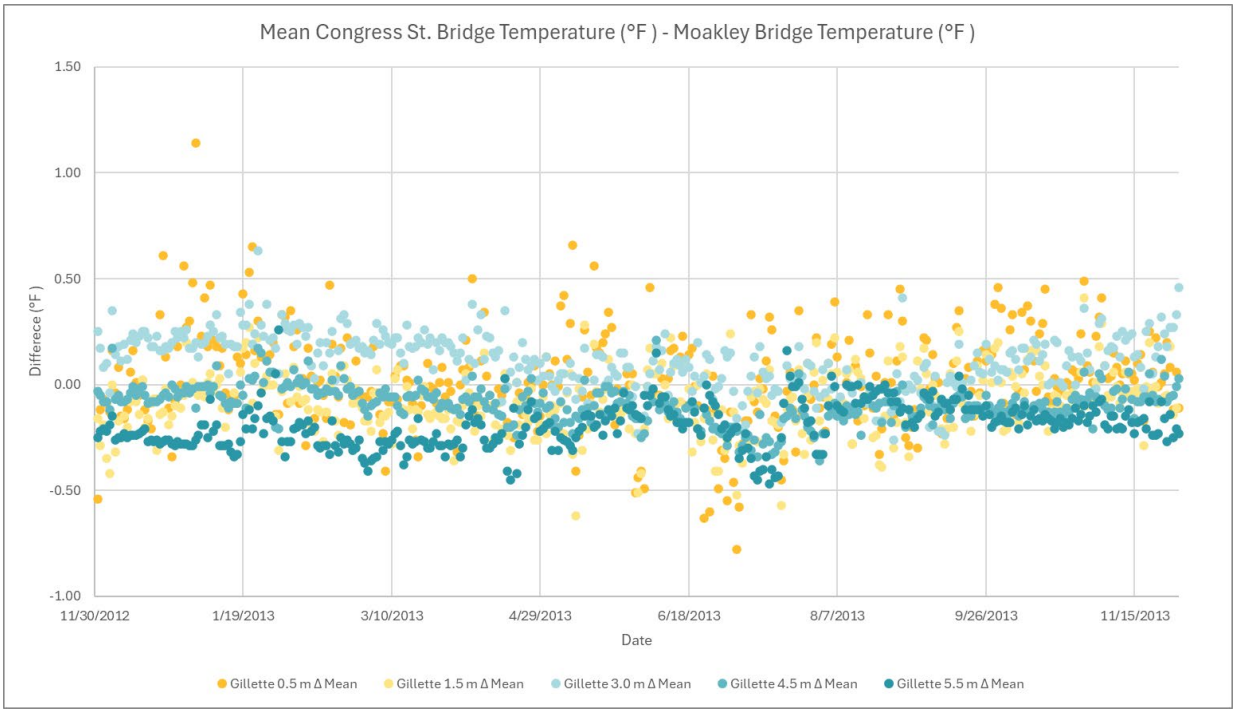


Figure 3: Difference in Congress Street and Moakley Bridge Mean Temperatures from

12/1/2012 to 11/30/2013

Since the 2013 study, the average monthly average combined heat load from the previous five years of data (August 2020 - July 2025) has stayed well below the original CORMIX model estimates of 2386 MBTUs/Day in Summer, 1794 MBTUs/Day outside of Summer, and 5932 MBTU/Day for the highest daily maximum heat load during the five-year span. With the substantial amount of data showing decreased heat loads compared to the original CORMIX model and the 2013 study, EPA finds it unnecessary to require another year of instream monitoring at Congress Street. Instead, the Draft Permit requires one year of temperature monitoring at the Summer Street bridge, located approximately 400 ft upstream of the Congress Street bridge, and the Moakley bridge. The monitoring requirements will be similar to the previous temperature study referenced above and will be used to help further understand the extent of the mixing zone.

The permit's maximum effluent temperature limit of 83°F for all four outfalls is protective of the state water quality criterion calling for a maximum ambient water temperature of 85°F (29.4°C). The permit is also protective of the 80°F (26.7°C) maximum daily mean and the maximum rise in temperature due to a discharge standard of 1.5°F (0.8°C) during the summer months (July through September) or 4°F (2.2°C) during the winter months (October through June) by the time any plume reaches the Congress Street Bridge.

5.1.4 Total Suspended Solids (TSS) and Oil and Grease

Solids could include inorganic (e.g., silt, sand, clay, and insoluble hydrated metal oxides) and organic matter (e.g., flocculated colloids and compounds that contribute to color). Solids can clog fish gills, resulting in an increase in susceptibility to infection or asphyxiation. Suspended solids can increase turbidity in receiving waters, reduce light penetration through the water column, and settle to form bottom deposits in the receiving water. Suspended solids also provide a medium for the transport of other adsorbed pollutants, such as metals, which may accumulate in settled deposits and have a long-term impact on the water column through cycles of re-suspension. As a result, such materials may adversely affect both pelagic and benthic life.

Oil and Grease is not a single chemical constituent but includes a large range of organic compounds that can be either petroleum-based (e.g., hydrocarbons) or non-petroleum-based (e.g., vegetable and animal oils and greases, fats, and waxes). These compounds have varying physical, chemical, and toxicological properties. Generally, oils and greases in surface waters either float on the surface, are solubilized or emulsified in the water column, adsorb onto floating or suspended solids and debris, or settle on the bottom or banks. Oil and grease, or certain compounds within an oil and grease mixture, can be lethal to fish, benthic organisms, and water-dwelling wildlife.

Massachusetts WQS set narrative criteria that are potentially relevant to the regulation discharges of solids and oil and grease to Class SB waters, such as Fort Point Channel. The

narrative criteria for SB waters provide that "[t]hese waters shall have consistently good aesthetic value." 314 CMR 4.05(4)(b). Excessive discharges of solids or oil and grease could cause a waterbody not to meet this criterion. The state's water quality criteria for turbidity and solids state the following:

> 5. Solids. These waters shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to this class, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom.
> 6. Color and Turbidity. These waters shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this class.

314 CMR 4.05(4)(b)(5) and (6). Excessive discharges of TSS could cause a waterbody to fail to satisfy these criteria. The state's criteria for oil and grease and taste and odor provide as follows:

> 7. Oil and Grease. These waters shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.
> 8. Taste and Odor. None in such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to this class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life.

314 CMR 4.05(4)(b)(7) and (8). Excessive discharges of oil and grease could cause a waterbody not to satisfy these criteria, as well as the criterion for color. Finally, the Massachusetts WQS specify that SB waters "… are designated as a habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation." 314 CMR 4.05(4)(b). Excessive discharges of TSS and/or oil and grease could potentially cause a water body to fail to provide one or more of these designated uses.

In order to characterize the Facility's discharges of TSS and oil and grease, the 2012 Permit required the Permittee to monitor and report on these constituents on a quarterly basis for Outfalls 001, 002, and 003. In the 2012 Fact Sheet, EPA explained these monitoring requirements as follows:

> no monitoring of the process water/blowdown/strainer flush wastes was ever conducted to ensure that the effluent from Outfalls 001, 002, and 003 does not contain either oil and grease or TSS prior to comingling with stormwater. Therefore, the Draft Permit requires that Outfalls 001, 002, and 003 be monitored quarterly for oil and

grease and TSS for determining whether the discharge has the reasonable potential to cause or contribute to exceedances narrative state water quality criteria for solids and/or oil and grease.

The 2012 Permit does not, however, require similar monitoring for Outfall 004 because it was determined that there were no sources of wastewater expected to contribute detectable levels of TSS or oil and grease to the effluent discharged through Outfall 004.

The quarterly monitoring results are summarized below in Tables 9 (TSS) and 10 (Oil and Grease).

Table 9: A Summary of Quarterly TSS by Outfall August 2020 – July 2025

Outfall	Minimum TSS (mg/L)	Maximum TSS (mg/L)	Median TSS (mg/L)
001	Non-Detect	6.5	3.2
002	2.1	6.6	3.95
003	Non-Detect	8.9	4.2

Table 10: A Summary of Quarterly Oil and Grease by Outfall August 2020 - July 2025

Outfall	Minimum Oil and Grease (mg/L)	Maximum Oil and Grease (mg/L)	Median Oil and Grease (mg/L)
001	Non-Detect	Non-Detect	Non-Detect
002	Non-Detect	6	Non-Detect
003	Non-Detect	Non-Detect	Non-Detect

These results show consistently low levels of both TSS and oil and grease in the discharges from Outfalls 1, 2, and 3. Indeed, all samples at Outfalls 1, 2, and 3 were below the non-detect threshold from August 2020 – July 2025, except for the sample collected from Outfall 2 on September 30, 2022, which measured at 6 mg/L for oil and grease. Even this is a low level.

Given the very low levels of both TSS and oil and grease in the effluent from Outfalls 1, 2, and 3, EPA finds no reasonable potential that discharges of TSS and oil and grease from these outfalls will cause or contribute to violations of Massachusetts WQS. Therefore, EPA is not proposing water quality-based effluent limits for these parameters in the Draft Permit. The Draft Permit retains the quarterly monitoring requirements for these constituents in order to ensure that any detectable concentrations do not result in reasonable potential to cause or contribute to exceedances of narrative state water quality criteria.

5.1.5 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a), as well as EPA regulations at 40 CFR §§ 122.44 and 122.48, provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives

of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism, and persistence of the pollutants in the discharge do not cause toxicity, even when the individual pollutants are present at low concentrations in the effluent. WET requirements in the Final Permit will generate data to assess whether the Facility discharges combinations of pollutants into the receiving water in amounts that are toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges may be subject to effluent limitations based on WQS. Under CWA §§ 301(b)(1)(C), 303, and 402, EPA and the States may establish toxicity-based limitations to implement narrative water quality criteria calling for "no toxics in toxic amounts." *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQS at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife." In addition, the Massachusetts WQS at 314 CMR 4.03(2)(a) require no lethality to organisms passing through a mixing zone. EPA generally considers WET testing in addition to chemical specific criteria when evaluating whether discharges from a facility meet WQS.

In accordance with current EPA guidance and State policy,[10] whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC_{50}.

The acute WET testing in the 2012 Permit requires reporting for LC_{50} using the Mysid Shrimp (Americamysis bahia). From August 2020 through July 2025 (Appendix A), WET test results indicated LC_{50} readings of 100% except for a 97.5% result in August of 2020.

EPA has determined that ongoing WET testing is required for Outfall 001 due to the variety of chemicals used in processing that are discharged with the facility cooling water. Therefore, in accordance with 40 CFR § 122.44(d), the Draft Permit maintains the annual WET testing requirement from the 2012 Permit. Toxicity testing must be performed in accordance with EPA Region 1's test procedures and protocol specified in **Attachment A,** *Marine Acute Toxicity Test Procedure and Protocol* (July 2012) of the Draft Permit. In addition to Mysid Shrimp (Americamysis bahia), this revised protocol also requires testing for the Inland Silverside (Menidia beryllina). The Permittee shall report the LC_{50} for each test.

5.2 Special Conditions

5.2.1 Discharges of Chemicals and Additives

[10] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

Chemicals and additives include, but are not limited to algaecides/biocides, antifoams, coagulants, corrosion/scale inhibitors/coatings, disinfectants, flocculants, neutralizing agents, oxidants, oxygen scavengers, pH conditioners, and surfactants. The Draft Permit allows the discharge of only those chemicals and additives specifically disclosed by the Permittee to EPA. The following chemicals and additives were disclosed to EPA:

Reverse Osmosis (RO) System Chemicals:

BETZ DEARBORN DCL30: Sodium bisulphite
HYPERSPERSE MDC7041: Disodium phosphonate

Boiler Chemicals:

OPTISPERSE HP2100: Sodium hydroxide
OPTISPERSE AP302: Not hazardous as defined by OSHA
STEAMATE NA715: 2-Diethylaminoethanol, Cyclohexylamine, Morpholine
CORTROL OS5300: N,N-Diethylhydroxylamine, Hydroquinone

However, EPA recognizes that chemicals and additives in use at a Facility may change during the term of the permit. As a result, Part I.C.1 of the Draft Permit requires the Permittee to notify EPA in writing of any planned discharge of a new chemical or additive. Such notification allows for EPA review of the proposed change prior to it commencing. The Draft Permit specifies that for each proposed discharge of a new chemical or additive, the Permittee must submit the following information, at a minimum, in writing to EPA:

- Product name, chemical formula, general description, and manufacturer of the chemical/additive.
- Purpose or use of the chemical/additive.
- Safety Data Sheet (SDS) and Chemical Abstracts Service (CAS) Registry number for each chemical/additive.
- The frequency (e.g., hourly, daily), magnitude (e.g., maximum application concentration), duration (e.g., hours, days), and method of application for the chemical/additive.
- If available, the vendor's reported aquatic toxicity (i.e., NOAEL and/or LC_{50} in percent for aquatic organism(s)) for the chemical/additive.

The Permittee's submission must also demonstrate that the discharge of such chemical or additive: 1) will not add any pollutants in concentrations that exceed any permit effluent limitation; and 2) will not add any pollutants that would justify the application of permit conditions different from, or in addition to, those currently in this permit.

Assuming these requirements are met, discharges of a new chemical or additive are authorized under the permit upon notification to EPA unless otherwise notified by EPA.

5.3 Cooling Water Intake Structure Requirements

When a CWIS withdraws water from a water body, it can cause or contribute to a variety of adverse environmental effects, such as killing or injuring fish and other organisms by impinging them against the CWIS's screens and killing or injuring fish eggs and larvae by entraining them in the water withdrawn from the water body and sent through the facility's cooling system. Impingement and entrainment of aquatic organisms by CWISs are considered to be adverse environmental impacts under CWA § 316(b).[11] As explained in Section 2.4 above, Gillette is a point source discharger of pollutants that operates a CWIS with a design intake flow greater than 2 MGD and uses more than 25% of the water it withdraws exclusively for cooling. As a result, under 40 CFR § 125.91(a), NPDES permit conditions for Gillette's CWIS are subject to the requirements of 40 CFR §§ 125.94 – 125.99. Therefore, EPA has determined the BTA for minimizing the adverse environmental impacts (AEI) of Gillette's CWIS in accordance with those requirements.

5.3.1 Source Waterbody Characterization

The Gillette CWIS withdraws water from the same waterbody that receives wastewater discharges from the Facility's outfalls, Fort Point Channel. Fort Point Channel is a dead-end, heavily industrialized, and tidally influenced channel in Boston's Inner Harbor. The channel itself is 1.1 miles long and about 425 feet wide, and it has a total area of 0.08 square miles (about 51 acres). With bolstered seawalls along its entire length on both sides, the channel has been heavily impacted by urbanization and infill, and it does not resemble the waterbody that used to connect the Inner Harbor to Boston's South Bay in the 19th century. More recently, over the last couple of decades, Fort Point Channel has experienced revitalization along with the rest of Boston Harbor. Still, Fort Point Channel remains heavily impacted by the industrial uses along its waterfront and the historic infill that produced its modern boundaries.

Boston Harbor extends south from the Chelsea River, east from the Charles River Dam, north from Hingham Bay, and east from the confluence of the Neponset River with Dorchester Bay to a line connecting the Boston Lighthouse to Deer Island and Point Allerton. Boston Harbor consists of a variety of marine habitats, including rocky shores, salt marsh, sandy shores and tidal mudflats. The substrate within Fort Point Channel is classified as mud and mud with scattered sand, and, according to the CWA 316(b) Application materials, it supports relatively low densities of several infaunal species.

Boston Harbor supports a diverse biological community of invertebrates and finfish. Common species include, but are not limited to, yellowtail flounder, windowpane flounder, winter flounder, summer flounder, haddock, pollock, hake, striped bass, Atlantic mackerel, and Atlantic silversides. Fort Point Channel is designated Essential Fish Habitat for 25 managed fishery species. *See* Section 6.2 of the Fact Sheet. American lobster and winter flounder are the

[11] 79 Fed. Reg. 48303.

two most commercially important species potentially present in Boston Harbor. The Harbor also supports several anadromous species (alewife, blueback herring, American shad, and rainbow smelt). However, Fort Point Channel is a dead-end channel and does not support migratory habitat for anadromous species.

Over three years of entrainment sampling between 2013 and 2015, Gillette observed early life stages of 31 unique taxa. Peak densities occurred in May and June in all three years, driven by relatively high densities of Pleuronectidae/Labridae eggs. Larval entrainment was dominated by winter flounder (in late April – May) in 2013 and by grubby and rock gunnel (in late February – early April) in 2014 and 2015. Eggs accounted for more than 75% of early life stages entrained in 2013 and 2014. In 2015, however, eggs accounted for only 33% of organisms entrained and larval entrainment dominated, driven by entrainment of relatively high densities of rock gunnel and grubby post yolk-sac larvae in mid-April and winter flounder Stage 2 larvae in May. More detailed entrainment data is discussed in Section 5.3.4.2, below.

5.3.2 Intake Flow

The Facility's 2012 Permit includes a maximum daily and monthly average flow limit for the CWIS that varies by season. From July 2020 through August 2025 (Appendix A), daily maximum intake flow has ranged from 20.587 to 31.825 MGD and never exceeded the limits. A more detailed breakdown of the intake flow rates is presented in Table 11 and Table 12.

Table 11: A Summary of Daily Maximum Intake Flow July 2020 - August 2025

Season	Daily Maximum Flow Limit (MGD)	Minimum Daily Maximum Flow (MGD)	Maximum Daily Maximum Flow (MGD)	Median Daily Maximum Flow (MGD)	95th Percentile Daily Maximum Flow (MGD)
Summer	45.0	24.481	31.825	27.7455	31.50
Non-Summer	35.0	20.587	30.744	25.12	29.68

Table 12: A Summary of Monthly Average Intake Flow July 2020 - August 2025

Season	Monthly Average Flow Limit (MGD)	Minimum Monthly Average Flow (MGD)	Maximum Monthly Average Flow (MGD)	Median Monthly Average Flow (MGD)	95th Percentile Monthly Average Flow (MGD)
Summer	40.0	21.927	29.135	26.0425	28.52
Non-Summer	30.0	11.269	27.089	23.269	26.89

5.3.3 Existing Cooling Water Intake Structure

The Facility withdraws water from the Fort Point Channel to use as once-through, non-contact cooling water (NCCW) for the condensers and heat exchangers. The CWIS is located on the eastern bank of Fort Point Channel, approximately 0.6 miles from where the channel joins

Boston Harbor. At mean lower low water (MLLW) the top of the CWIS is approximately 8.7 feet below the surface. The channel floor was dredged by the U.S. Army Corps of Engineers (ACOE) to a depth of greater than 60 ft with a bottom sloping away from the bulkhead attached to the wedgewire screens down to that depth. The total depth of the water above the top of the intake structure at MLLW is approximately 15.75 ft. The top of the intake structure ranges from 23.34 ft to 8.74 ft below water level between the extremes of highest high tide and lowest low tide. The bottom of the 4.5-ft diameter intake is about 2.25 ft off the floor of the channel. The CWIS is comprised of two wetwells, three variable-frequency drive (VFD) pumps, four intake tunnels, and four cylindrical wedgewire screens. The two concrete wetwells extend 30 feet down from the floor of the pump room. The three seawater pumps are each rated at 15,000 gallons per minute (GPM) or 64.8 million gallons per day (MGD) combined. Under the previous 5 years of operations, only two of the seawater pumps – providing a combined capacity of 43.2 MGD – are required to supply water. System operation is controlled automatically by a Programmable Logic Controller (PLC) system with control stations located in both the power plant control room and the intake structure electrical room. Figure 9, located at the end of this Fact Sheet, presents the side view schematics provided to EPA.

The two wet wells are connected to the Fort Point Channel through four horizontal tunnels located near the bottom of the wet wells. Each tunnel can be isolated from the channel and dewatered for maintenance or repair. The two wet wells also have a manually operated interconnecting sluice gate between them so that any of the four inlet tunnels can provide water to any seawater pump.

Cylindrical wedgewire screens are located at the entrance to each intake tunnel. Each of the four screens has 9.5 mm openings and is 12 feet long and 42 inches in diameter. The rated flow capacity for each of the four screen assemblies is 15,000 GPM. According to design calculations provided by Gillette, the maximum through-screen slot velocity (TSV) is 0.5 feet per second at the rated flow capacity. The entire screen assembly is mounted to the bulkhead on a rail system, which allows the screens to be withdrawn from the channel for cleaning and inspection as required (at least annually). To maintain the CWIS's low TSVs, an airburst system is used with each of the cylindrical wedgewire screens to remove any debris that has accumulated on the screens. The airburst system sequence is manually initiated by the operators (preferably on an outgoing tide) and once started, it automatically clears each of the four intake screens in succession.

According to Gillette's March 25, 2016, permit application, Fort Point Channel has a tidal flow of about 11 million cubic ft over a six-hour period. At maximum capacity, the three variable speed pumps would intake 20% of this tidal flow. While the Facility's permit restricts intake flow to a maximum of 45 MGD or about 70% of maximum capacity, the maximum daily maximum intake flow recorded from January 2020 through February 2025 (Appendix A) peaked at 31.825 MGD or about 50% of the three pumps' capacity.

5.3.4 Impingement and Entrainment by the Existing Cooling Water Intake Structure

5.3.4.1 Impingement

For the 2012 NPDES Permit, the Facility was determined on BPJ basis to meet CWA § 316(b)'s BTA standard as it relates to controlling impingement because of the design features of its CWIS, including maintaining an intake through-screen velocity of 0.5 fps or less. *See* 2012 Fact Sheet, pp. 24, 34 (of 39); 2012 Permit, Part I.C.2. As a result, the Facility neither conducted nor was required to conduct studies on impingement by its CWIS, and the Facility's permit does not require it to monitor for impingement on the CWIS's screens. If the low through-screen intake velocity is maintained, impingement is not expected to be a problem at the Facility and there is no evidence to contradict that expectation.

5.3.4.2 Entrainment

The Facility submitted three entrainment monitoring reports covering data collected from February through July in 2013, 2014 and 2015. Table 13 shows the estimated total number of eggs and larvae entrained at the Gillette facility between February 15 and July 31 over the three years based on weekly flows during the same time periods. The primary species entrained during the monitoring periods were eggs and larvae of Pleuronectidae/Labridae, Winter Flounder, Cunner, Grubby, and Rock Gunnel. The proportion of taxa entrained relative to the total in a year varied widely and often showed large swings. Table 14 shows the total number of eggs and larvae entrained for each species between February 15 and July 31 for the three years of sampling. For Winter Flounder, most entrainment occurred in May, along with sizable numbers in April and June of some years. Table 15 provides a breakdown of the Winter Flounder entrainment numbers by monitoring year and life stage.

Table 13: Yearly entrainment estimates of total ichthyoplankton from the Gillette South Boston Manufacturing Facility during February-July, 2013-2015.

Year	Total Entrainment (# of Larvae and Eggs)	Flow During Period (m^3)	Density (no./100m^3)	Flow During Period (MGD)
2013	62,798,835	19,815,112	316.9	31.2
2014	32,899,009	18,228,803	180.5	29.9
2015	31,841,174	18,494,428	172.2	29.1
Average	42,513,006	18,846,114	225.6	30.1

Table 14: Detailed entrainment estimates of ichthyoplankton from the Gillette South Boston Manufacturing Facility during February-July, 2013-2015.

Common Name	2013	2014	2015	Total
American Plaice	17,031	86,324	20,617	123,972
American Sand Lance	70,017	66,746	110,931	247,694
Atlantic Cod	12,151	2,588	93,726	108,465
Cod/Haddock	-	-	25,204	25,204
Cod/Haddock/Witch Flounder	-	7,641	4,941	12,582
Atlantic Herring	-	15,185	-	15,185
Atlantic Mackerel	20,203	5,650	16,446	42,299
Atlantic Menhaden	17,595	-	-	17,595
Seasnail	122,455	34,133	130,735	287,323
Atlantic Silverside	26,708	2,970	-	29,678
Atlantic Tomcod	9,582	46,259	-	55,841
Bay Anchovy	61,192	8,557	-	69,749
Black Sea Bass	14,391	-	-	14,391
Butterfish	27,195	-	-	27,195
Cunner	422,293	852,231	9,974,595	11,249,119
Fourbeard Rockling	10,797	96,925	-	107,722
Fourbeard Rockling/ Hake	239,223	251,601	55,821	546,645
Grubby	1,541,119	3,218,973	5,396,724	10,156,816
Haddock	-	2,588	-	2,588
Labridae/Limanda	49,308,547	22,175,110	49,775	71,533,431
Northern Pipefish	33,761	2,938	21,646	58,345
Osteichthyes	355,187	418,960	60,153	834,300
Pollock	-	-	5,001	5,001
Radiated Shanny	17,860	11,025	38,945	67,830
Rainbow Smelt	-	5,061	2,468	7,529
Rock Gunnel	1,393,521	1,803,753	6,620,881	9,818,155
Sculpin Species	46,863	207,629	2,529,136	2,783,628
Longhorn Sculpin	-	-	35,299	35,299
Shorthorn Sculpin	9,320	7,700	282,910	299,930
Searobin Species	10,364	-	-	10,364
Snailfish Species	36,667	-	-	36,667
Snake Blenny	-	-	7,480	7,480
Tautog	168,564	2,094,679	128,625	2,391,868
Windowpane Flounder	145,800	19,303	48,267	213,370
Windowpane/Fourspot/Summer Flounder	-	2,595	8,640	11,235
Winter Flounder	7,954,368	1,446,009	6,172,208	15,572,585
Wrasses	706,061	-	-	706,061
Missing Species Name	-	5,876	-	5,876
Total	**62,798,835**	**32,899,009**	**31,841,174**	**127,533,142**

Table 15: Entrainment estimates of Winter Flounder from the Gillette South Boston Manufacturing Facility during February-July, 2013-2015 by life stage.

Winter Flounder Life Stage	2013	2014	2015	Total
Egg	-	5,052	-	5,052
Stage 1 Larvae	59,640	19,742	-	79,382
Stage 2 Larvae	5,146,433	974,742	5,234,993	11,356,168
Stage 3 Larvae	1,088,357	446,473	924,331	2,459,161
Stage 4 Larvae	3,525	-	2,703	6,228
Unidentifiable Larva	1,656,413	-	10,181	1,666,594
Total	**7,954,368**	**1,446,009**	**6,172,208**	**15,572,585**

The AEI of the facility's CWIS is clear with an average of 42,500,000 entrained larvae and eggs per year during the monitoring period at an average density of 225.6/100m^3. Winter Flounder, a commercially important fish, has the highest entrainment numbers for a single species over the three years of monitoring, with an average of 5,200,000 entrained every year and consistently make up a large portion of a monitoring period's total entrainment. Other commercially important species represented in the entrainment figures (at lower numbers) include tautog and Atlantic cod. While many of the other species entrained do not have significant fisheries associated with them, these species, including their eggs and larvae, may still play a biologically important and economically valuable role in the supporting the food web and the larger ecosystem. Furthermore, the reproductive strategy of many fish species has evolved to rely on producing millions of eggs because there is naturally an extremely low chance for any one egg to yield a mature fish. This does not, however, necessarily account for large numbers of eggs and larvae to be removed from the ecosystem by an anthropogenic "predator" like a CWIS. One way of evaluating the import of the number of eggs and larvae lost to entrainment is to convert those losses to an estimate of the number of adult fish lost using the expected survival rates for the eggs and larvae of various species (i.e., by converting the number of eggs and larvae lost to a number of "adult equivalents"). Focusing only on adult equivalents, however, would ignore the different roles that eggs, larvae, and adult fish play in an ecosystem and the food web.

The average density of 225.6/100m^3 entrained organisms at the Gillette facility is similar to that of the University of Massachusetts Boston (UMB) facility (NPDES Permit No. MA0040304), which is also located on the shores of Boston Harbor (specifically, the shores of Dorchester Bay). At this facility, a density of 216.6/100m^3 entrained organisms can be calculated from the data available in the Fact Sheet for the period of 2015 through 2017. The sampling period, February through July, was the same for both locations. Like the Gillette data, the UMB data had significant variation between years. Nevertheless, in the single year that the monitoring overlapped, Gillette and UMB entrained organisms at rates of 172.17/100m^3 and 138.9/100m^3, respectively, showing roughly similar densities of organisms entrained. This, along with the similar average density mentioned above, suggests that the density of organisms entrained by the Gillette intake is not a result of random entrainment sampling variation and may instead

reflect general levels of spawning around Boston Harbor, or at least in the Harbor's near-shore waters. Additionally, as both facilities have experienced significant density variation in different years, there may be larger cycles or impacts affecting the density of organisms in the harbor from year to year, but this is uncertain.

Due to these uncertainties, EPA concludes that additional entrainment monitoring is needed to help EPA, Gillette, and any other interested parties better understand any variability in the Facility's entrainment rates and in the primary species entrained. Therefore, the Draft Permit requires entrainment monitoring every other year from February to July, with the same protocol as in the previous permit.

5.3.5 BTA Requirements for Controlling Impingement Mortality

As explained in section 2.4.2, there are 7 options for meeting impingement mortality requirements in 40 CFR 125.94(c). In its 2016 Permit application, p. 24, Gillette selected the compliance alternative at 40 CFR 125.94(c)(2) ("0.5 Feet Per Second Through-Screen Design Velocity") as its chosen method of compliance with the impingement mortality BTA standard of EPA's CWA § 316(b) regulations. The regulation reads as follows:

> [a] facility must operate a cooling water intake structure that has a maximum design through-screen intake velocity of 0.5 feet per second. The owner or operator of the facility must submit information to the Director that demonstrates that the maximum design intake velocity as water passes through the structural components of a screen measured perpendicular to the screen mesh does not exceed 0.5 feet per second. The maximum velocity must be achieved under all conditions, including during minimum ambient source water surface elevations (based on BPJ using hydrological data) and during periods of maximum head loss across the screens or other devices during normal operation of the intake structure.

40 CFR 125.94(c)(2). Gillette's engineering calculations for the design through-screen velocity in its permit application show that, at a design flow of 15,000 GPM, the through-screen velocity of each screen is estimated to be 0.43 feet per second.

The four screen assemblies at the intake structure were sized for four variable speed pumps at 15,000 GPM each, but only three pumps are installed on site. This configuration, in combination with an actual maximum daily flow equal to approximately half the design flow over the previous five years and the daily airburst cleaning system, indicates that the design velocity should never be exceeded, including due to head loss from clogged screens. Furthermore, it can safely be assumed that the 8.74 ft of depth of water over the top of the intake structure during the lowest low tide is sufficient to keep the structure fully submerged under all scenarios. Therefore, EPA concludes that Gillette will comply with the BTA standard for impingement mortality at 40 CFR § 125.94(c)(2) (a through-screen design velocity no greater than 0.5 fps) under all conditions, including during minimum ambient source water surface elevations and

during periods of maximum head loss across the screens, based on the engineering calculations and considering additional operational factors.

EPA's CWA § 316(b) regulations at 40 CFR § 125.96(e) state that the Facility:

> … must either conduct visual inspections or employ remote monitoring devices during the period the cooling water intake structure is in operation. You must conduct such inspections at least weekly to ensure that any technologies operated to comply with § 125.94 are maintained and operated to function as designed including those installed to protect Federally listed threatened or endangered species or designated critical habitat. The Director may establish alternative procedures if this requirement is not feasible (e.g., an offshore intake, velocity cap, or during periods of inclement weather).

To comply with this regulation, the Draft Permit proposes for the Facility to remotely monitor through-screen velocity. Through-screen velocity must be estimated for the intake structure at a location representative of the point of entry through the screen or other exclusionary device. Through-screen velocity must be estimated based on pump pressure and flow rate and must be achieved under all conditions including during periods of maximum head loss across the screens during operation of the cooling water intake structure. EPA is seeking comment from the Facility regarding whether this is feasible or not. If the Facility demonstrates that such velocity monitoring is infeasible, then alternatives procedures, such as weekly visual inspections of the CWIS weekly while in operation may be required.

5.3.6 BTA Requirements for Controlling Entrainment

When writing a permit for an existing facility like Gillette, EPA's Existing Facilities Rule requires the Agency to**:**

> establish BTA standards for entrainment for each intake on a site-specific basis. These standards must reflect the Director's determination of the maximum reduction in entrainment warranted after consideration of the relevant factors as specified in § 125.98. The Director may also require periodic reporting on your progress towards installation and operation of site-specific entrainment controls. These reports may include updates on planning, design, and construction or other appropriate topics as required by the Director. If the Director determines that the site-specific BTA standard for entrainment under this paragraph requires performance equivalent to a closed-cycle recirculating system as defined at § 125.92(c), then under § 125.94(c)(1) your facility will comply with the impingement mortality standard for that intake.

40 CFR § 125.94(d) (emphasis added). In addition, as discussed in Section 2.4.2 of this Fact Sheet, the Rule also mandates the following:

> [t]he Director must establish site-specific requirements for entrainment after reviewing the information submitted under 40 CFR 122.21(r) and § 125.95. *These entrainment*

> *requirements must reflect the Director's determination of the maximum reduction in entrainment warranted after consideration of factors relevant for determining the best technology available for minimizing adverse environmental impact at each facility*.

40 CFR § 125.98(f) (emphasis added). **The relevant factors specified in 40 CFR § 125.98(f) are specifically discussed farther below. The Rule also specifies that:**

> [t]he Director must provide a written explanation of the proposed entrainment determination in the fact sheet or statement of basis for the proposed permit under 40 CFR 124.7 or 124.8. The written explanation must describe why the Director has rejected any entrainment control technologies or measures that perform better than the selected technologies or measures and must reflect consideration of all reasonable attempts to mitigate any adverse impacts of otherwise available better performing entrainment technologies.

40 CFR **§ 125.98(f)(1).**

5.3.6.1 Evaluation of Entrainment Reduction Technologies

Consistent with the above-quoted requirements of the Existing Facilities Rule, EPA has evaluated a variety of technological approaches to reducing entrainment at Gillette, including the alternative of retrofitting closed-cycle cooling at the Facility. **This evaluation is discussed below.**

5.3.6.1.1 Closed-Cycle Cooling

Under CWA § 316(b), a CWIS's "capacity," as well as its location, construction, and design, must reflect the BTA for minimizing adverse environmental impacts from entrainment and impingement mortality. Capacity in this sense refers to the volume of water being withdrawn by a CWIS. Intake capacity reductions are generally considered the most effective means of reducing entrainment, especially for facilities located in biologically productive environments. Reduced CWIS capacity typically reduces entrainment by the same proportion that the intake flow volume is reduced. In other words, a 95 percent reduction in the volume of water withdrawn equated to a 95 percent reduction in entrainment. (Impingement mortality can also be reduced by flow reductions, as well as by reductions in through-screen velocity and improvements to a CWIS's screen and fish return systems).

One of the most effective technological measures for reducing a facility's intake capacity (or water withdrawal volumes) is to use closed-cycle cooling. Closed-cycle cooling reduces the amount of cooling water withdrawn by using a cooling device – typically, cooling towers or cooling ponds – to remove most of the waste heat from the cooling water so that the water can be reused for additional cooling. (Cooling towers and cooling ponds dissipate waste heat to the atmosphere.) Since closed-cycle cooling allows for reuse of the cooling water, less water needs

to be withdrawn from the source water body. This, in turn, reduces entrainment of organisms in the source water.

Gillette currently uses an *open-cycle* (or once-through) cooling system. This system continuously withdraws water from Fort Point Channel, uses the water to absorb heat from the Facility's industrial processes, and then directly discharges the heated water back to the Channel. While the Facility controls impingement by maintaining a through-screen intake velocity of 0.5 fps or less, it has no technologies in place to limit entrainment. (The 9.5 mm openings in the CWIS's wedgewire screens are too large to prevent entrainment of fish eggs or larvae or other similarly tiny organisms.)

In 2010, Gillette submitted a technological assessment to EPA in response to an information request. This information was used in the development of the 2012 Permit and much of it is still applicable. As EPA explained in the 2012 Fact Sheet, p. 31:

> [t]he permittee submitted an analysis of the availability of closed-cycle cooling (performed by Environmental Resources Management) on May 21, 2010 in response to additional questions from EPA in February 2010. According to ERM's analysis, natural draft towers (180-250 ft) are not available due to height restrictions imposed by FAA regulations (for Logan Airport flyspace) and the Fort Point District 100 Acres Master Plan (September 2006). However, mechanical draft towers (estimated at 35 ft high and 129 by 129 feet square or 0.4 acres) would meet height restrictions at the facility, the strictest of which is the 55 foot maximum height limitation at the edge of the open space zone under the Master Plan. This height is for the towers only and does not include any visible vapor plumes resulting from their operation. The analysis comments that "rise and dispersion of a vapor plume would effectively increase the height of the visual impacts associated with a cooling tower over those impacts originating from the physical height of the tower," but does not provide additional analysis of any potential vapor plume. Operation of plume abatement technology, while increasing capital costs, would likely be sufficient to minimize impacts from the vapor plume.
>
> The property currently has 12 acres of undeveloped land, as well as rooftops of existing buildings, available for construction of mechanical draft towers. The permittee did not estimate the total height of a cooling tower situated on an existing rooftop, so it is unknown if the overall structure (building plus cooling tower) would exceed height restrictions. Regarding the undeveloped land, the Central Artery tunnel, which runs beneath the 12 acres, is designed to support "limited development" with buildings no more than 85 to 100 feet in height. This limitation should not prohibit installation of mechanical draft cooling towers, which would be only 35 feet high. ERM estimated the capital cost of mechanical draft towers at $4,036,915. They did not include any potential shutdown time for

the power plant (during which they would have to purchase all power) or annual operation and maintenance costs.

Since 2010, based on inflation data from the U.S. Bureau of Labor Statistics CPI Inflation Calculator for May 2010 to July 2025, the estimated capital cost for mechanical draft towers increases to $5,977,309. This increase does not, however, account for any changes in the construction industry – such as supply chain disruptions precipitated by the Covid-19 pandemic starting in 2020 – that could have caused prices for a cooling tower retrofit to rise at a different rate than the Consumer Price Index (CPI). Nor does it account for any changes to the Facility that may have occurred that would affect the cost of construction. Additionally, since 2010, Boston's Seaport district, which comprises the area on the northern and eastern boundaries of the Facility, has continued to experience significant commercial and residential development that has transformed this formerly industrial part of the city. A proposal to construct mechanical draft cooling towers at the site could raise significant issues with respect to the impacts on the community, which could increase costs and create permitting difficulties.

The available information suggests that closed-cycle cooling may be technologically feasible for Gillette to construct and use. However, the cost estimates from 2010 for retrofitting closed-cycle cooling at Gillette are likely incomplete and do not consider all potential costs of retrofitting the facility with mechanical draft cooling towers. Furthermore, while EPA can develop a reasonable estimate of the reduction in water withdrawal volumes and associated entrainment reductions that would accompany a shift to closed-cycle cooling,[12] no analysis has been provided to put these reductions into a broader biological, ecological, or social context.[13] In other words, EPA could develop a numeric estimate of the entrainment reductions that closed-cycle cooling would achieve and these reductions would represent an environmental benefit, but significant additional analysis would be needed to characterize the "social benefit" of these reductions. *See* 40 CFR § 125.98(f)(2)(v) (in determining the site-specific BTA for reducing entrainment at a CWIS, the permitting agency must consider "[q]uantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision").

The facility will submit a new cost estimate and feasibility assessment for closed cycle cooling with their next permit application to EPA for the purposes of evaluating the technology. This analysis should include full lifecycle cost estimates for the technologies available and estimates of any remaining required intake flows.

[12] An estimate of entrainment reduction could be calculated by multiplying the entrainment figures discussed in section 5.3.3 of this Fact Sheet by the estimated flow reduction (e.g., a 95% reduction) that closed-cycle cooling would achieve. This would yield an estimate of the number of eggs and larvae that would be saved by using closed-cycle cooling.

[13] Because Gillette's actual intake flow is less than 125 MGD, the permittee was not required to submit detailed a Comprehensive Technical Feasibility and Cost Evaluation Study or Benefits Valuation Study in accordance with 40 CFR §§ 122.21(r)(10) and (11).

5.3.6.1.2 Wedgewire Screens and Aquatic Filter Barriers

The cooling water intake structure at the facility has cylindrical wedgewire screens with .375-inch (9.5 mm) screen openings. These screen openings are too large to prevent entrainment of fish eggs and larvae, which would require much smaller openings. In a 2009 technology assessment, the facility evaluated costs associated with fine mesh wedgewire screens with openings small enough (0.76mm) to prevent most organisms from being entrained. (EPA notes, however, that if the organisms are not entrained but instead become impinged on the screens, they will still most likely be killed). Wedgewire screens are assumed to be most effective as an entrainment BTA in locations with strong and steady flows perpendicular to the intake. Without these flows to sweep the eggs and larvae safely away from the intake, they may be impinged. As Gillette 's CWIS is located in a dead-end tidal channel, it is unlikely that the ideal flow conditions exist for wedgewire screens to be an effective BTA for entrainment.

Aquatic filter barriers were also assessed in the same 2009 technology assessment but function in a similar manner to wedgewire screens for entrainment purposes. Therefore, again, without a constant flow to sweep away the eggs and larvae they may be killed upon being impinged on the barrier.

For these reasons, EPA has concluded that although 0.76-mm cylindrical wedgewire screens and aquatic filter barriers may be reconsidered for this site in the future, these technologies are not the BTA to reduce entrainment at this time.

5.3.6.1.3 Variable Frequency Drives

Gillette uses three pumps with variable frequency drives (VFDs) at the CWIS to withdraw seawater from Fort Point Channel for use as cooling water. The pumps are rated at a maximum capacity of 15,000 gallons per minute (GPM) or 21.6 MGD each. The CWIS was designed with room for a potential fourth pump that would have brought the total capacity up to a combined 86.4 MGD if it had been installed. The 2012 permit limits intake capacity to a monthly average of 40 MGD in the summer and 30 MGD in non-summer.

Since the issuance of the 2012 permit, a slow, long term downward trend in intake flow (i.e., water withdrawal volume) has been observed at the facility. This data and trend can be observed in Figure 4 and is made possible by the use of VFDs as they allow the facility to use only as much water as is required for production instead of a fixed amount that can only be throttled by turning a pump on or off. With this longer-term trend, the previous three years of data were analysed to get a better understanding of the actual intake flows required for operation. Table 16 show the minimum, maximum, and several percentiles for each of the intake flow parameter during the previous three years of data compared to the monthly average flow limits.

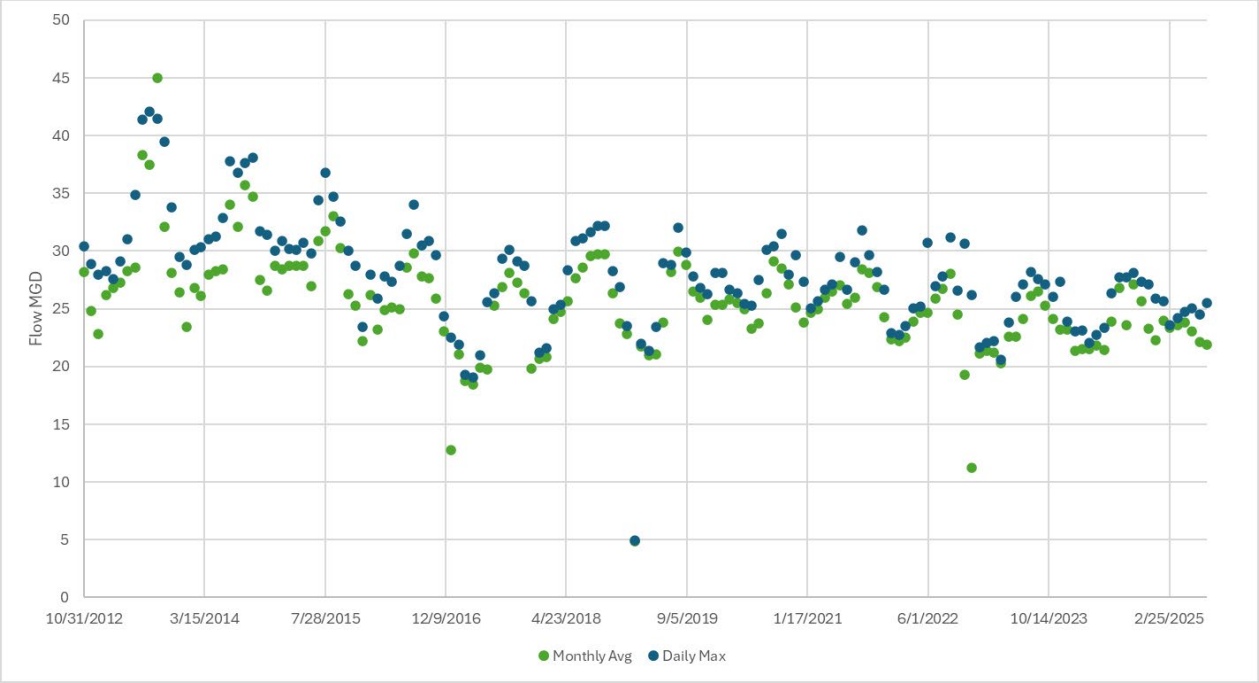


Figure 4: Monthly Average and Daily Maximum Intake Flow from October 2012 - August 2025

Table 16: A Summary Intake Flows and Percentiles July 2022 - August 2025

	Flow rate non-summer	Flow rate summer	Flow rate non-summer	Flow rate summer
Units	**MGD**	**MGD**	**MGD**	**MGD**
Withdrawal Limit	**30**	**40**	**35**	**45**
Percentile	**Monthly Avg**	**Monthly Avg**	**Daily Max**	**Daily Max**
Max	25.6	28.0	30.6	31.2
95%	24.1	27.5	27.4	29.5
90%	23.9	27.1	27.3	28.2
85%	23.7	26.9	26.7	28.1
80%	23.5	26.8	26.1	28.0
Min	11.3	21.9	20.6	24.5

Over the past three years, monthly average intake flows were less than 27.5 MGD (summer) and 24.1 MGD (non-summer) 95% of the time.

As explained in section 5.3.5.1 the “capacity” of a CWIS is effectively the volume of water withdrawn by the facility. Reducing the capacity of a CWIS is considered to reduce entrainment proportionally to the reduction in capacity, or volume of water.

Reducing the monthly average flow rate limits to 28 MGD in the summer and 25 MGD in non-summer would reduce the permitted flows and therefore estimated maximum entrainment by 30% and 16.7% respectively while not impacting production. These flow limits were chosen to match the actual intake flows as closely as possible using the previous three years of data. During these three years, the summer and non-summer monthly average flow would have exceeded the new limit only once each and, if they were implemented and followed for this period, would have reduced the cumulative intake volumes by 0.01% and 0.12% respectively. Due to the new intake flow limits matching actual intake flows, EPA does not expect any significant actual entrainment reductions. However, as the facility currently has the right to increase intakes to the 2012 limits, The new limits will prevent the facility increasing intake flows and therefore entrainment. Adjusting monthly average limits as opposed to daily maximum limits will protect potentially entrained organisms while allowing the facility to temporarily increase water withdrawals over short periods if production requires. Since the previous three-year flows would rarely have exceeded the proposed new flow limits and only by small amounts, the facility should be able to meet the new flow limits through optimization of the facility and immediately upon the effective date of the permit.

The weekly entrainment data from 2013-2015 may be used to estimate total entrainment under various intake flow scenarios. Table 17 presents two such scenarios to demonstrate the effectiveness of VFDs and different monthly flow limits. Under the first scenario, the Facility always uses flows at the level of current monthly average permit limit. In the second scenario, the Facility uses flows at the level of the proposed draft permit limits. The average total entrainment estimates were calculated by taking the original weekly entrainment data and multiplying a weekly entrainment density by the estimated flow for that scenario. This is not a perfect comparison as the permit sets monthly average limits, but it is possible for the Facility to use more water during a week with high densities of entrainable organisms and less when the density is lower skewing real world entrainment numbers higher as a result. As the density of organisms is difficult to predict for any given week and the Facility is entraining organisms as a byproduct of production, it is reasonable to assume that a consistent weekly flow will give a roughly accurate estimate of entrained organisms. EPA considered the seasonal change of flow limits on 06/01, towards the end of the monitoring period (02/15 – 07/30) in these calculations.

Table 17: Entrainment Estimates Based on Weekly Data from 2013 – 2015 Entrainment Reports under Different Flow Scenarios (Studies Conducted 02/15 – 07/31)

Flow Scenarios	Weekly Flow (m^3)	Average Daily Flow (MGD)	Average Total Entrainment (# of Larva and Eggs)	% Reduction from Current Permit
Current Permit	794,937 (1,059,916 Summer)	30 (40 Summer)	47,868,805	--
Actual (2013 – 2015 Average)	Varied	30.1 (Three Year Average)	42,513,006	11.2%
Draft Permit	662,447 (741,941 Summer)	25 (28 Summer)	37,011,842	22.7%

As demonstrated in the table, changes in flow that are made possible with VFDs can allow for significant reductions in entrained organisms. Furthermore, as the design flow of the CWIS (64.8 MGD) is significantly greater than the water withdrawal volume allowed by the permit, the estimated entrainment reduction as compared to the design flow would be 59.7%. Again, the projected reductions estimated by the table are likely already occuring, as the facility's previous three years of flow data was used to set the draft permit limits. These are estimated maximum entrainment reductions that the facility may have based on permit limits and entrainment data.

One of the downsides of reducing flow volumes is that if the same amount of heat is being discharged then the temperature of the cooling water discharged will increase. Figure 5 below, shows the monthly average and daily maximum heat load for the combined outfalls. As the data is relatively scattered, a one year rolling average was included to help illustrate any longer-term trends that might exist within the variability.

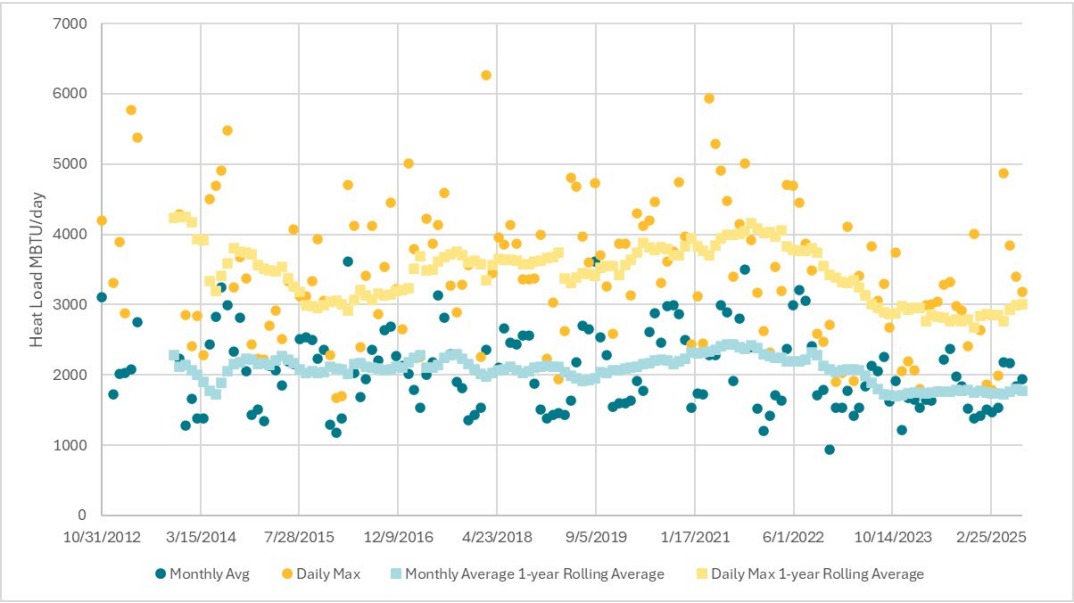


Figure 5: Heat Load Data from October 2012 - August 2025

This data shows an either very modest long-term decline in combined effluent heat load or an essentially constant heat load discharge with significant variability month to month. This, along with the reductions in flow, suggests that while the change in temperature of the cooling water may have increased, the facility has not exceeded its temperature limits and the instream temperatures are indistinguishable from ambient conditions by the time any plume reaches the Congress Street bridge, as outlined in Section 5.1.3. Therefore, EPA does not expect any problems to result from effluent temperature increases associated with the proposed intake flow limitations.

5.3.6.1.4 Scheduled Outages

The 2012 Permit requires the Facility to schedule annual maintenance outages between May 15th and June 1st. According to the Facility, operations are shut down twice a year for inspections and regular maintenance of the CWIS during Thanksgiving and, in line with the 2012 Permit requirements, Memorial Day. While the Thanksgiving outage does not impact the species entrained during the studies, the Memorial Day outage does consistently occur around the time of the highest densities of eggs and larvae during the monitoring period. Per the 2012 Factsheet, p. 32:

> In terms of the BAT factors, scheduled outages are not associated with any costs or engineering and non-water quality impacts. No process changes or implementation issues would result because the permittee is granted flexibility if, for operational reasons to be provided to EPA, they cannot comply within the specified time period. Thus, scheduling outages to coincide with periods of high abundance of life stages/species is one component of the BTA to minimize entrainment at Gillette.

Three years of entrainment data in Figure 6A and 6B show the weekly entrainment numbers over the course of the monitoring period for all taxa and winter flounder respectively. Figure 6 is the same but only shows data for winter flounder. Based on these figures, total entrainment volumes peak between mid-May and mid-June while winter flounder volumes peak in May. Therefore, EPA again concludes that leaving the requirement for scheduled maintenance to occur between May 15th and June 1st is a component of the BTA for minimizing entrainment of all taxa as a group, and of winter flounder, specifically. As such, this BTA requirement is maintained in the Draft Permit.

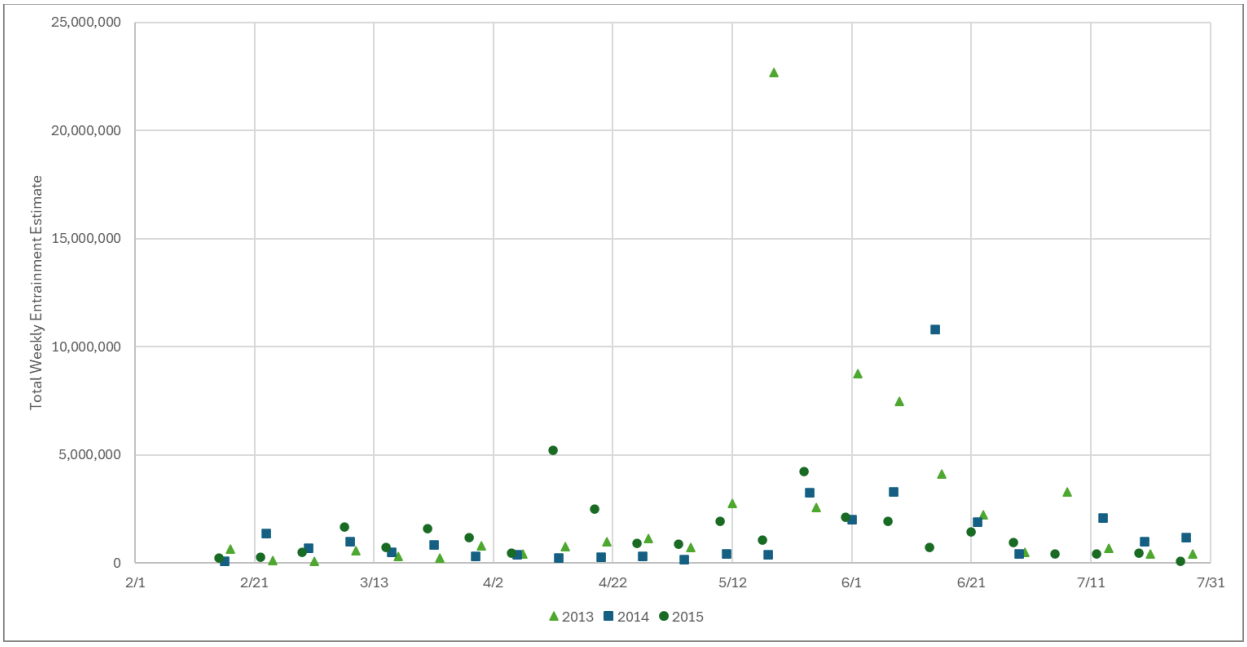


Figure 6A: Weekly Entrainment 2013-2015 For All Taxa

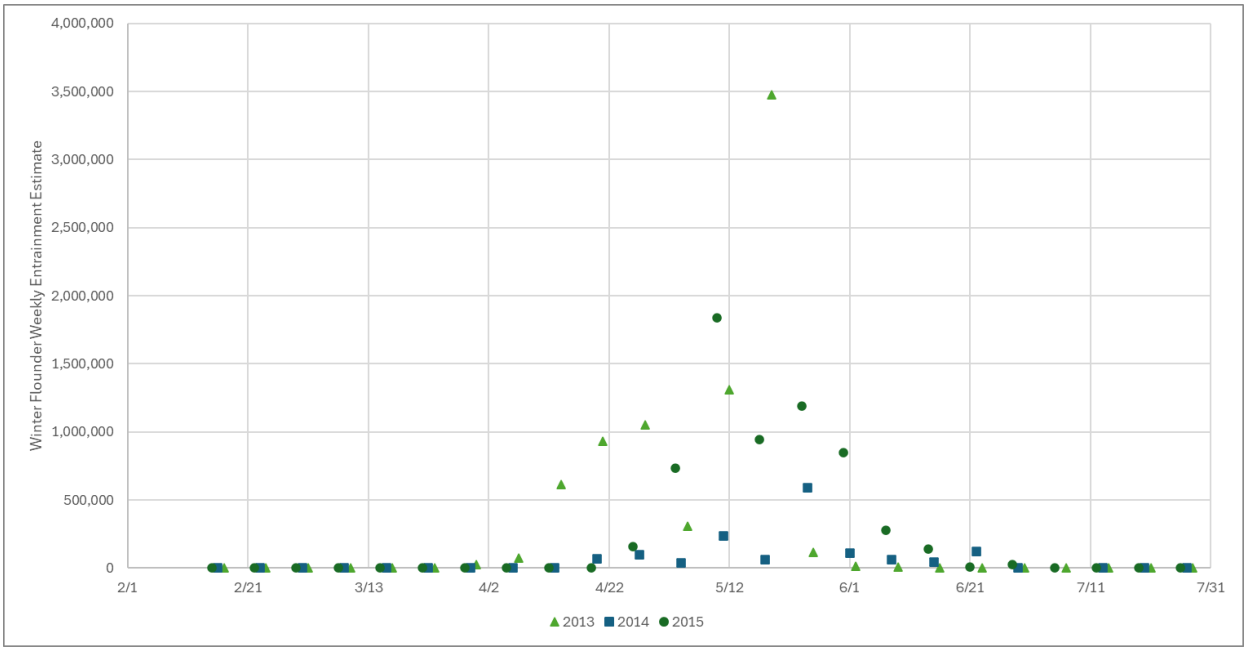


Figure 6B: Weekly Entrainment 2013-2015 For Winter Flounder

5.3.6.2 Consideration of BTA Factors from 40 CFR § 125.98(f)

As described in section 2.4.2 of this fact sheet as laid out in 40 CFR §§ 125.98(f)(2)(i) – (v), there are five factors that EPA *must* consider when deciding on the BTA for minimizing AEI from entrainment by the Facility. In addition, 40 CFR §§ 125.98(f)(3)(i) – (vi) proposes six additional factors that *may* be considered if relevant information on them is available. These factors are identified and discussed below.

(i) **40 CFR § 125.98(f)(2)(i):** *Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of Federally-listed, threatened and endangered species, and designated critical habitat (e.g., prey base);*

As outline in 5.3.3.2, a substantial number of fish eggs and larvae are entrained at the facility on average every year (42.5 million/year), with a significant proportion of the total entrainment being winter flounder, a commercially important species (5.2 million/year). The organisms entrained do not, however, include Federally listed threatened or endangered species, or their designated critical habitat.

(ii) **40 CFR § 125.98(f)(2)(ii):** *Impact of changes in particulate emissions or other pollutants associated with entrainment technologies;*

Closed-cycle cooling is the only technology considered that is associated with additional particulate emissions or other pollutants. Any adverse effects from the mostly water vapor plume could likely be able to be mitigated with additional technologies (i.e., plume abatement equipment), albeit at greater cost. *See* 5.3.5.1 for more information. Other technologies considered would not result in changes in emissions of particulates or other pollutants.

(iii) **40 CFR § 125.98(f)(2)(iii):** *Land availability inasmuch as it relates to the feasibility of entrainment technology.*

Closed-cycle cooling would require additional structures (i.e., mechanical draft cooling towers) to be constructed on the site. There may be adequate space at Gillette to accommodate a cooling tower installation if some part of the existing parking lots could be used for this purpose. Additionally, local building height restrictions should not prevent installation of cooling towers. These issues are discussed in section 5.3.5.1 of this Fact Sheet. That said, more information would be needed to definitively confirm whether there is land available at the site to accommodate cooling towers. The other technologies evaluated do not have significant space requirements.

(iv) **40 CFR § 125.98(f)(2)(iv):** *Remaining useful plant life.*

EPA has received no clear information defining the plant's remaining useful life or identifying a date for possible closure of the plant. Therefore, EPA must assume that the Facility will continue to operate for the foreseeable future.

(v) **40 CFR § 125.98(f)(2)(v):** *Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.*

EPA does not have "quantified and qualitative social benefits and costs of available entrainment technologies … of sufficient rigor to make a decision." As a result, EPA has not used a comparative cost/benefit analysis to support its decision on the BTA for minimizing entrainment.

That said, EPA has considered costs and benefits of different options based on the information that is available. Regarding changing the Facility's cooling system to closed-cycle cooling, EPA finds that this approach could reduce entrainment substantially (perhaps by as much as 95%), but the available 7-figure cost estimate for constructing a closed-cycle cooling system at Gillette is from 2010 is undoubtedly outdated (even when the costs are scaled for inflation). Furthermore, this 2010 cost estimate is incomplete as it does not factor in key elements, such as the cost of lost production or replacement power during construction. Therefore, EPA has decided that based on current information, the cost of converting to closed-cycle cooling is not warranted by the benefits of such a conversion. This conclusion could change in the future based on new information. EPA also rejects technologies like fine-mesh wedgewire screens and aquatic organism barriers as meeting the BTA standard at Gillette because they would not provide meaningful entrainment reduction benefits at the Facility. Conversely, EPA finds that continuing to use the previously installed VFDs is an effective and warranted BTA measure for reducing cooling water withdrawals and associated entrainment while also meeting the plant's cooling needs. EPA is also proposing to tighten the permit's intake flow limits because the previous three years of data establish that new, tighter monthly average intake flow limits of 28 MGD (Summer) and 25 MGD (non-Summer) will not significantly impact production, Facility costs, or cause thermal discharge problems for the receiving water. These tighter flow limits also will prevent the Facility from unnecessarily increasing water withdrawals and associated entrainment to the levels allowed by the current permit. Finally, EPA finds that requiring plant outages to be scheduled to coincide with the period of peak density for entrainable organisms is another component of the BTA for entrainment as it will result in modest reductions in entrainment at effectively no cost to the Facility. Sections 5.3.5.1 and 5.3.5.2 present more comprehensive information on the above issues.

EPA has also considered the factors that "may" be considered under 40 CFR §§ 125.98(f)(3)(i) – (vi), but none materially change EPA's analysis of conclusions about the BTA for minimizing entrainment effects. For example, 40 CFR § 125.98(f)(3)(i) addresses "entrainment impacts on the water body" but EPA has already discussed entrainment effects in substantial detail and factored that consideration into its analysis. Similarly, 40 CFR § 125.98(f)(3)(ii) addresses "thermal discharge impacts" but EPA has already discussed thermal discharge effects and factored them into its analysis. As discussed above, tightening the intake flow limits could possibly result in increased maximum discharge temperatures at times, but it will neither increase the thermal load discharged to Fort Point Channel nor cause violations of the permit's thermal discharge limits.

The additional factors detailed in 40 CFR 125.98(f)(3)(iii) – (vi) are not relevant to the BTA determination for this permit. Specifically, (1) the factor concerning giving credit for flow reductions from unit retirements is not relevant because no such retirements have occurred at

the Facility, (2) the factor concerning effects on energy reliability in the area is not relevant because the BTA determination for Gillette's CWIS will not affect the reliability of the area's energy supply, (3) the factor concerning effects on water consumption is not relevant because the BTA determination for Gillette's CWIS will not materially affect water consumption in the area, and (4) the factor concerning the availability of alternative water sources is not relevant because the record does not show that any such alternatives water sources are available to Gillette.

In summary, EPA has determined the BTA for minimizing the adverse environmental effects of entrainment by the Facility is made up of the following components:

1. Continue using intake water pumps with variable frequency drives;
2. reduce the permit's monthly average intake flow limits to 28 MGD (Summer) and 25 MGD (non-Summer); and
3. maintain the requirement to schedule annual maintenance outages between May 15th and June 1st of each year.

These BTA requirements reflect the maximum reduction in entrainment warranted after consideration of the factors relevant for determining the BTA for minimizing AEI at Gillette.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding species of fish, wildlife, or plants that have been federally listed as endangered or threatened (listed species) and regarding habitat of such species that has been designated as critical (critical habitat).

Section 7(a)(2) of the ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior and the Secretary of Commerce, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for federally protected bird, terrestrial and freshwater species, while the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) administers Section 7 consultations for listed species of marine organisms (including marine mammals and reptiles), as well as for anadromous fish species.

The federal action being considered in this case is EPA's proposed reissuance of an NPDES permit for the Gillette Facility. The Draft Permit is intended to replace the Facility's 2012 NPDES Permit. As the federal agency charged with authorizing the Facility's pollutant discharges and water withdrawals, EPA assesses potential impacts to federally listed species and critical habitat and initiates consultation to the extent required under Section 7(a)(2) of the ESA.

EPA has researched whether federal endangered or threatened species of fish, wildlife, and plants are expected in the action area of the outfall(s) to determine if EPA's proposed NPDES permit could potentially impact any such listed species in Fort Point Channel.

6.1.1 Terrestrial and Avian Species (US Fish and Wildlife Service)

For protected species under the jurisdiction of the USFWS, one listed endangered species, the roseate tern (*Sterna dougallii dougallii*), was identified as potentially occurring in the action area of the Facility's discharge(s). According to the USFWS, the endangered roseate tern nests on sandy beaches and barrier islands. Because the Facility's projected action area overlaps with the general statewide range of the roseate tern, EPA completed a Determination Key for the Draft Permit and received a Technical Assistance Letter. In that letter, dated September 11, 2025, the USFWS documented its determination that the permitted activity will have "No Effect" on the roseate tern. The USFWS determination letter concluded EPA's consultation responsibilities for this permitting action under ESA Section 7(a)(2) with respect to the roseate tern. No further ESA Section 7 consultation is required with USFWS.

6.1.2 Marine and Anadromous Species (National Marine Fisheries Service/NOAA Fisheries)

The Facility discharges into the Fort Point Channel, which drains into Inner Boston Harbor. The outfall and action area overlap with coastal waters where several protected marine species are found. Two species of anadromous fish, the shortnose sturgeon (*Acipenser brevirostrom*) and the Atlantic sturgeon (*Acipenser oxyrhynchus*), are potentially present in the vicinity of the discharge. In general, adult shortnose sturgeon and adult Atlantic sturgeon are present in coastal waters. Boston Harbor is possibly home for multiple lifestages, including adult and juvenile sturgeon that are expected to migrate and forage in the area.

Also, potentially present in the action area are four species of sea turtle and two species of whale. The turtle species include the leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia mydas*), kemp's ridley sea turtle (*Lepidochelys kempii*), and the loggerhead sea turtle (Caretta caretta). The two whale species potentially in the action area are the North Atlantic right whale (*Eubalaena glacialis*) and the fin whale (*Balaenoptera physalus*).

According to NOAA Fisheries, adult and juvenile life stages of leatherback, loggerhead, Kemp's ridley and green sea turtles are expected in coastal Massachusetts waters from June 1 through November 30 while migrating and foraging. Also, adult shortnose sturgeon and adult and subadult Atlantic sturgeon are likely present in the action area. The two whale species could be present any time of year.

Because these species may be affected by the discharges authorized by the proposed permit, EPA has thoroughly evaluated the potential impacts of the permit action on these anadromous species. Based on that evaluation, EPA's preliminary determination is that this action may affect, but is not likely to adversely affect, the protected species that are expected in the

vicinity of the action area of the discharge. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NOAA Fisheries regarding this determination during the Draft Permit's public comment period.

Initiation of consultation is required and shall be requested by EPA or by USFWS/NOAA Fisheries where discretionary federal involvement or control over the action has been retained or is authorized by law and if: 1) new information reveals that the action may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; 2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the previous analysis; 3) a new species is listed or critical habitat designated that may be affected by the identified action; or 4) there is any incidental taking of a listed species that is not covered by an incidental take statement.

At the beginning of the public comment period, EPA notified USFWS and NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801, *et seq*., EPA is required to consult with NOAA Fisheries if proposed actions that EPA funds, permits, or undertakes, "may adversely impact any essential fish habitat." *See* 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." *See* 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

The Federal action being considered in this case is EPA's proposed reissuance of the NPDES permit for the Gillette facility, which withdraws seawater through a cooling water intake structure and discharges non-contact cooling water, process wastewater, filter backwash, strainer flush, and boiler blowdown though four outfalls to the Fort Point Channel as discussed in Section 4.1 of this document. Based on available EFH information, including the NOAA Fisheries EFH Mapper,[14] EPA has determined that the receiving water in the vicinity of the discharge is designated as EFH for the species shown in Table 18.

[14] https://www.habitat.noaa.gov/apps/efhmapper/

Table 18. EFH Designated Species

Species/Management Unit	Lifestage(s) Found at Location
American Plaice	Adult, Eggs, Juvenile, Larvae
Atlantic Butterfish	Adults, Eggs, Larvae
Atlantic Cod	Adult, Eggs, Juvenile, Larvae
Atlantic Herring	Eggs, Juvenile, Larvae
Atlantic Mackerel	Adult, Eggs, Juvenile, Larvae
Atlantic Surfclam	Adult, Juvenile
Atlantic Wolffish	All
Black Sea Bass	Adult
Bluefish	Adult, Juvenile
Little Skate	Adult, Juvenile
Longfin Inshore Squid	Adult, Juvenile
Northern Shortfin Squid	Adult
Ocean Pout	Adult, Juvenile
Pollock	Eggs, Juvenile, Larvae
Red Hake	Adult, Eggs/Larvae/Juvenile
Scup	Juvenile
Silver Hake	Adult, Eggs/Larvae
Summer Flounder	Adult
Thorny Skate	Juvenile
White Hake	Adult, Eggs, Juvenile, Larvae
Windowpane Flounder	Adult, Eggs, Juvenile, Larvae
Winter Flounder	Eggs, Juvenile, Larvae/Adult
Winter Skate	Adult, Juvenile
Yellowtail Flounder	Adult, Eggs, Juvenile, Larvae
Habitat Area of Particular Concern	
Summer Flounder submerged aquatic vegetation	

Therefore, consultation with NOAA Fisheries under the Magnuson-Stevens Fishery Conservation and Management Act is required. EPA has determined that actions regulated by the Draft Permit may adversely affect EFH. The Draft Permit has been conditioned in the following ways to minimize any impacts that reduce the quality and/or quantity of EFH for Atlantic salmon:

- This Draft Permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit;
- The Draft Permit adds a new maximum daily intake velocity limit of 0.5 feet per second;
- Acute toxicity tests will be conducted at Outfall 001 once a year to ensure that the discharge does not exhibit toxicity;
- Intake velocity, heat load, effluent temperature, and receiving water temperature rise are regulated by the Draft Permit to meet water quality standards; and
- The effluent limitations and conditions in the Draft Permit were developed to be

protective of all aquatic life.

EPA has determined that the conditions and limitations contained in the Draft Permit adequately protect all aquatic life. Further mitigation is not warranted. Should adverse impacts to EFH be detected as a result of this permit action, or if new information is received that changes EPA's conclusions, NOAA Fisheries Habitat Division will be contacted and an EFH consultation will be re-initiated.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents. In addition to this Fact Sheet and the Draft Permit, information to support EPA's finding was included in a letter under separate cover that will be sent to the NOAA Fisheries Habitat and Ecosystem Services Division during the public comment period.

7.0 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), 16 U.S.C. 1451 et seq., and its implementing regulations (15 CFR Part 930) require a determination that any federally licensed or permitted activity affecting the coastal zone with an approved Coastal Zone Management Program (CZMP) is consistent with the enforceable policies of the CZMP. EPA is prohibited from issuing a NPDES permit for any activity affecting any land or water use or natural resource of the coastal zone until the applicant certifies that the proposed activity complies with the State Coastal Zone Management program, and the State or its designated agency concurs with the certification, or the Secretary of Commerce overrides the State's nonconcurrence. *See* 40 CFR § 122.49(d).

The Permittee is required to contact the Coastal Zone Management Program in Massachusetts for consistency review.

8.0 Public Comments, Hearing Requests, and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the permit writer, Matthew Stamas at the following email address: Stamas.Matthew@epa.gov.

Prior to the close of the public comment period, any person may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

If for any reason, comments on the Draft Permit and/or a request for a public hearing cannot be emailed to the permit writer specified above, please contact them at telephone number: (617) 918-1573.

9.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed by contacting Matthew Stamas at 617-918-1573 or via email to Stamas.Matthew@epa.gov.

_____

Date

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figure 7: Location Map

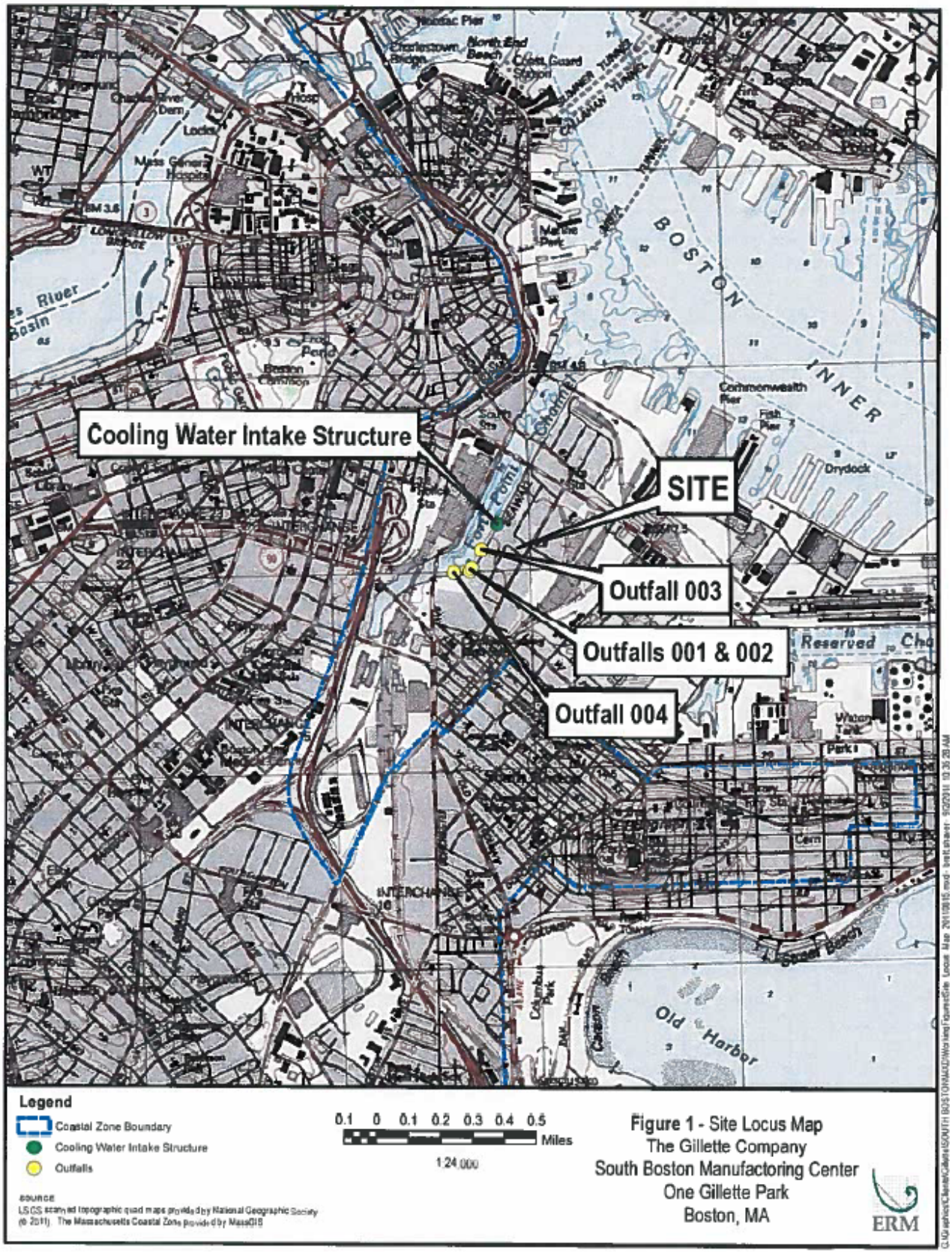


Figure 8: Site Plan

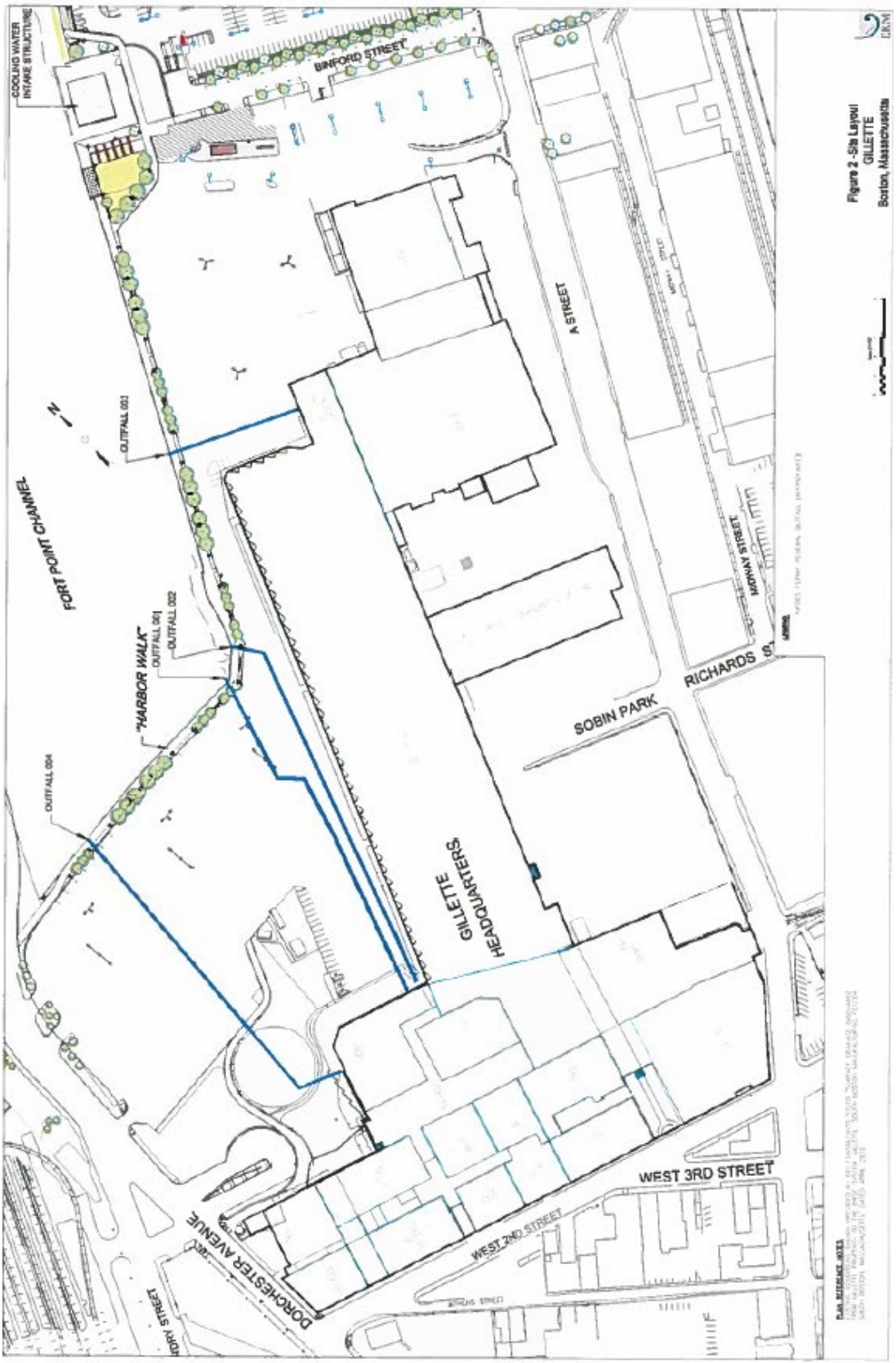
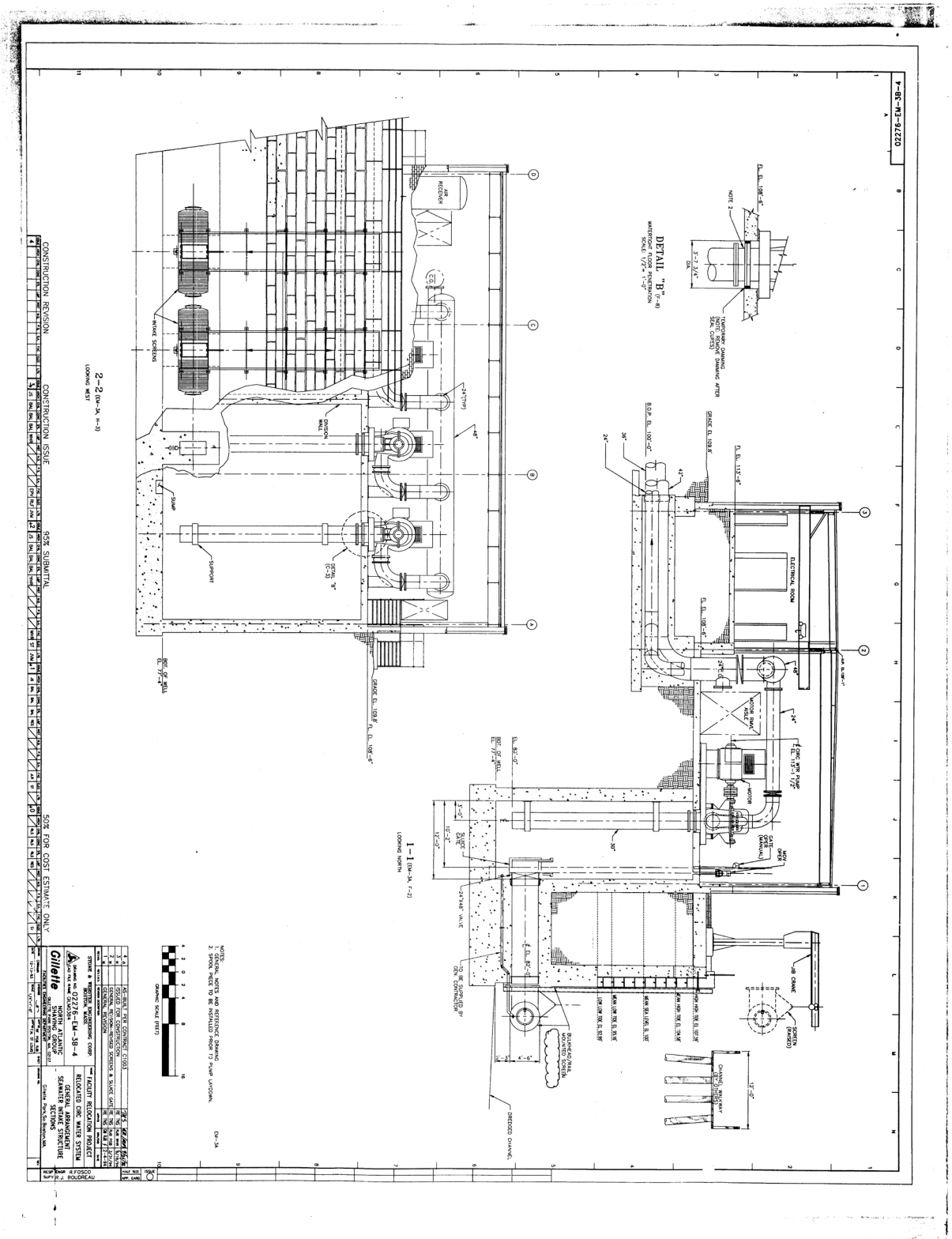


Figure 9: Seawater Intake Structure Side Schematic



Outfall - Monitoring Location - Limit Set: 001 - 1 - A

Parameter	pH	pH	Flow rate	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit	Flow rate	Flow rate	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit
	Minimum	Maximum	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	**SU**	**SU**	**MGD**	**MBTU/d**	**deg F**	**deg F**	**MGD**	**MGD**	**MBTU/d**	**deg F**	**deg F**
Effluent Limit	**6.5**	**8.5**	**Report**	**Report**	**Report**	**Report**	**23.5**	**26**	**Report**	**Report**	**83**
Minimum	**6.9**	**7.7**	**5.883**	**304**	**2.5**	**43.2**	**6.931**	**8.242**	**463**	**5.7**	**44.2**
Maximum	**7.7**	**8.3**	**9.81**	**592**	**9.7**	**74.1**	**10.351**	**10.715**	**1272**	**17.3**	**78.9**
Median	**7.4**	**7.9**	**8.093**	**496**	**7.3**	**61.05**	**8.433**	**9.3415**	**647**	**9.85**	**65.35**
No. of Violations	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**0**	**0**	**N/A**	**N/A**	**0**
Monitoring Period End Date											
8/31/2020	7.7	7.8	9.81		3.9	72.9		10.23		5.7	75.2
9/30/2020	7.5	7.8	9.592		5	71.4		10.601		6.9	74.6
10/31/2020	7.7	7.9	9.121	425	5.6	66.1	9.422		557	7.6	70.8
11/30/2020	7.4	7.8	8.47	424	5.7	58.3	9.977		708	9.7	62.6
12/31/2020	7.4	7.9	8.012	478	7.2	51.7	9.202		785	11.8	57.1
1/31/2021	7.4	7.9	8.317	581	8.3	48.1	8.428		1051	15.1	54.6
2/28/2021	6.9	8	8.415	571	8.1	44.6	8.641		690	9.9	46.2
3/31/2021	7.3	8	8.737	592	8.1	48.2	8.968		1272	17.3	55.1
4/30/2021	7.6	8	8.933	533	7.1	55.8	9.119		698	9.2	59.2
5/31/2021	7.6	8	9.102	587	7.3	62.2	9.921		811	9.9	68.9
6/30/2021	7.6	7.9	8.557		6	67.5		8.964		8.3	71.4
7/31/2021	7.4	7.8	8.742		6.2	72.6		9.787		8.2	76.7
8/31/2021	7.6	7.8	9.58		6.1	72.5		10.715		10.3	76.7
9/30/2021	7.5	7.8	9.463		8	71.3		9.977		10.1	75.3
10/31/2021	7.5	8	9.051	485	6.4	66.5	9.505		737	9.6	69.8
11/30/2021	7.3	7.8	8.184	426	6	59	8.971		640	8.9	63.3
12/31/2021	7.7	8	7.526	304	4.9	49.6	7.711		698	11.2	51.7
1/31/2022	7.5	8	7.484	461	7.5	46.7	7.658		783	12.7	53.2
2/28/2022	7.5	7.9	7.583	538	8.5	45.6	7.914		1022	15.9	56.8
3/31/2022	7.6	7.9	8.039	493	7.3	49.4	8.429		597	8.5	52.7
4/30/2022	7.3	8.1	8.299	530	7.7	55.8	8.478		738	10.5	59.2
5/31/2022	7.3	8.1	8.31	534	7.6	61.8	10.351		828	11.6	66.8
6/30/2022	7.6	8.2	8.714		7.1	68.9		9.088		14.6	72.5
7/31/2022	7.6	7.9	8.997		6.9	72.1		9.373		16.9	77.4
8/31/2022	7.5	7.9	9.442		5.9	74.1		10.502		10.9	78.9
9/30/2022	7.4	7.7	8.246		6	73.5		8.945		9.7	77.5
10/31/2022	7.4	7.7	6.501	495	9.1	68.8	6.949		600	10.7	71.6
11/30/2022	7.3	7.7	5.883	470	9.7	64	8.822		629	10.9	68.4
12/31/2022	7.5	8.1	7.12	511	8.6	51.9	7.308		642	10.6	56.8
1/31/2023	7.1	8	7.203	538	9	50.5	7.42		685	11.5	51.7
2/28/2023	7.5	7.8	7.15	546	9.2	49	7.472		660	10.9	51.5
3/31/2023	7.5	7.8	6.82	478	8.4	50	6.931		644	11.3	53.4
4/30/2023	7.6	8	7.614	404	6.4	54.7	8.009		512	9	58.4
5/31/2023	7.5	8	7.606	379	5.8	61.4	8.769		463	7	67
6/30/2023	7.5	7.9	8.122		7.4	69.2		9.132		9.7	73.6
7/31/2023	7.4	7.8	8.794		5.6	72		9.481		8.2	75.6
8/31/2023	7.4	7.7	8.925		6.7	69.3		9.298		7.9	71.1
9/30/2023	7.2	7.7	8.515		6.9	72.1		9.122		12.2	77.5
10/31/2023	7.5	7.8	8.132	439	6.5	67.3	8.776		584	8.9	71
11/30/2023	7.4	8	7.825	369	5.6	57.4	9.212		619	9.6	63.6
12/31/2023	7.4	7.9	7.803	553	8.5	54.2	8.033		741	11.3	56.1
1/31/2024	7.3	7.9	7.188	555	9.3	50.8	7.757		696	11.7	53.6
2/29/2024	7.4	8	7.253	528	8.7	48.8	7.775		606	10	50
3/31/2024	7.3	7.9	7.25	538	8.9	51.5	7.419		615	10.2	52.3
4/30/2024	7.4	8	7.341	497	8.1	54	7.66		613	9.8	56.8
5/31/2024	7.5	7.9	7.21	470	7.6	61.9	7.869		624	9.5	67.2
6/30/2024	7.4	7.9	8.055		7.9	68.4		8.864		10.5	70.8
7/31/2024	7.3	7.9	9.027		7	68.4		9.34		9.1	70.5
8/31/2024	7.3	7.8	8.841		7.3	72.6		9.343		11.2	74.4
9/30/2024	7.1	7.9	9.127		7	72.7		9.462		9.8	76.3
10/31/2024	7.3	7.9	8.632	414	5.7	67	9.208		543	7.2	71
11/30/2024	7.6	7.8	7.843	391	5.7	59.2	9.133		541	7.8	63.3
12/31/2024	7.2	8.3	7.503	463	7.4	51.3	8.714		821	13.1	57.1
1/31/2025	7.1	7.9	8.064	505	7.5	45.4	8.632		626	9.1	48.4

2/28/2025	7.5	7.9	7.868	485	7.4	43.2	7.952		600	9.1	44.2
3/31/2025	7.2	8.1	7.937	500	7.6	48.3	8.145		610	9.1	51.4
4/30/2025	7.3	8	8.008	505	7.6	53.7	8.332		650	9.7	58
5/31/2025	7.3	7.8	7.774	516	7.8	61.4	8.437		736	10.7	67.7
6/30/2025	7.3	7.8	7.451		2.5	60.7		8.242		8.2	63.9
7/31/2025	7.4	7.8	7.382		6.8	69.7		8.245		9.3	74.4

Outfall - Monitoring Location - Limit Set: 001 - 1 - Q

Parameter	TSS	Oil & Grease
	Daily Max	Daily Max
Units	mg/L	mg/L
Effluent Limit	Report	Report
Minimum	0	No Data
Maximum	6.5	No Data
Median	3.2	No Data
No. of Violations	N/A	N/A
Monitoring Period End Date		
9/30/2020	6.2	< 5.7
12/31/2020	2.5	< 4.6
3/31/2021	1.5	< 4
6/30/2021	1.8	< 3.6
9/30/2021	4.7	< 5
12/31/2021	2.5	< 2.5
3/31/2022	2.8	< 5
6/30/2022	3.4	< 5
9/30/2022	5.7	< 5
12/31/2022	4.3	< 5
3/31/2023	5.3	< 5
6/30/2023	< 2.5	< 5
9/30/2023	4.5	< 5
12/31/2023	2.5	< 5
3/31/2024	6.5	< 5
6/30/2024	3	< 5
9/30/2024	5.2	< 5
12/31/2024	2.9	< 5
3/31/2025	6.2	< 5
6/30/2025	2.3	< 5

Outfall - Monitoring Location - Limit Set: 001 - 1 - T

Parameter	Total Solids	Salinity	Aluminum, total [as Al]	Ammonia [as N] + unionized ammonia	Cadmium, total [as Cd]	Carbon, tot organic [TOC]	Chromium, total [as Cr]	Copper, total [as Cu]	Lead, total [as Pb]	Nickel, total [as Ni]	Oxidants, total residual	Zinc, total [as Zn]	LC50 Static Renewal 48Hr Acute Americamysis bahia (formerly Mysidopsis bahia)
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Min
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%
Effluent Limit	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report	Report
Minimum	3.2	0	0	0	No Data	0	0	0	0	0	No Data	0	97.5
Maximum	36000	0	0.1	0.18	No Data	1.8	0.000741	0.0033	0.0013	0.000723	No Data	0.0073	100
Median	5.8	0	Non-Detect	Non-Detect	No Data	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	No Data	Non-Detect	100
No. of Violations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Monitoring Period End Date													
8/31/2020	5.8	0	0.081	< .1	< .0005	1.8	< .002	0.0033	0.0013	< .002	< .02	0.0073	97.5
8/31/2021	3.2	0	0.1	0.18	< .0001	< 1	0.000741	0.00165	0.000805	0.000723	< .02	0.00617	100
8/31/2022	5.7	0	< .5	< .5	< .01	< 1	< .1	< .1	< .005	< .1	< .1	< .1	100
8/31/2023	35000	0	< .3	< .5	< .006	< 1	< .06	< .06	< .003	< .06	< .001	< .06	100
8/31/2024	36000	0	< .5	< .5	< .01	< 1	< .5	< .1	< .005	< .5	< .01	< .1	100

Outfall - Monitoring Location - Limit Set: 001 - O - A

Parameter	Heat [summer] [per day]	Heat [summer] [per day]
	Monthly Avg	Daily Max
Units	**MBTU/d**	**MBTU/d**
Effluent Limit	**Report**	**Report**
Minimum	**159**	**470**
Maximum	**628**	**1248**
Median	**489**	**669**
No. of Violations	**N/A**	**N/A**
Monitoring Period End Date		
8/31/2020	320	470
9/30/2020	398	524
6/30/2021	430	596
7/31/2021	450	587
8/31/2021	491	865
9/30/2021	628	826
6/30/2022	515	1052
7/31/2022	515	1248
8/31/2022	468	954
9/30/2022	412	595
6/30/2023	499	652
7/31/2023	419	607
8/31/2023	498	590
9/30/2023	487	901
6/30/2024	535	746
7/31/2024	529	686
8/31/2024	546	1013
9/30/2024	531	748
6/30/2025	159	530
7/31/2025	417	590

Outfall - Monitoring Location - Limit Set: 002 - 1 - A

Parameter	pH	pH	Flow rate	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit	Flow rate	Flow rate	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit
	Minimum	Maximum	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	**SU**	**SU**	**MGD**	**MBTU/d**	**deg F**	**deg F**	**MGD**	**MGD**	**MBTU/d**	**deg F**	**deg F**
Effluent Limit	**6.5**	**8.5**	**Report**	**Report**	**Report**	**Report**	**23.5**	**26**	**Report**	**Report**	**83**
Minimum	**6.7**	**7.6**	**5.883**	**179**	**2.4**	**39.5**	**6.931**	**8.242**	**314**	**4.2**	**44.7**
Maximum	**7.8**	**8.3**	**9.81**	**360**	**6.6**	**72.9**	**10.351**	**10.715**	**912**	**12.4**	**77.3**
Median	**7.5**	**7.9**	**8.093**	**245**	**3.95**	**57.8**	**8.433**	**9.3415**	**396**	**6.25**	**62.85**
No. of Violations	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**0**	**0**	**N/A**	**N/A**	**0**
Monitoring Period End Date											
8/31/2020	7.7	7.8	9.81		2.6	71.1		10.23		5.4	74.8
9/30/2020	7.6	7.8	9.592		2.7	69.1		10.601		4.8	73.1
10/31/2020	7.7	7.8	9.121	179	2.4	62.8	9.422		359	4.9	68
11/30/2020	7.4	7.9	8.47	193	2.7	55.2	9.977		438	6	58.9
12/31/2020	7.4	7.9	8.012	246	3.7	48.2	9.202		666	10.3	57.4
1/31/2021	7.3	7.9	8.317	262	3.8	43.6	8.428		675	9.6	47.7
2/28/2021	6.8	8	8.415	244	3.5	40	8.641		449	6.3	45.1
3/31/2021	7.3	8	8.737	241	3.3	43.4	8.968		838	11.4	49
4/30/2021	7.8	8	8.933	187	2.5	51.1	9.119		314	4.2	54.5
5/31/2021	7.7	8	9.102	214	2.6	57.5	9.921		387	4.7	66
6/30/2021	7.5	7.9	8.557		2.6	64.1		8.964		5.8	68.5
7/31/2021	7.5	7.8	8.742		3.4	69.8		9.787		6.9	74.1
8/31/2021	6.7	7.8	9.58		6.1	72.6		10.715		10.3	75.9
9/30/2021	7.4	7.8	9.463		6.6	70		9.977		9.5	74.2
10/31/2021	7.5	8	9.051	360	4.8	64.8	9.505		591	7.7	68.3
11/30/2021	7.5	7.8	8.184	233	3.4	56.4	8.871		445	6.2	60.3
12/31/2021	7.6	8	7.526	273	4.3	49.1	7.711		543	8.7	51.8
1/31/2022	7.7	7.9	7.484	225	3.6	42.7	7.658		377	6.1	47.7
2/28/2022	7.7	7.9	7.583	236	3.7	40.8	7.914		356	5.8	44.7
3/31/2022	7.6	7.9	8.039	203	3	45.1	8.429		434	6.4	47.9
4/30/2022	7.7	8.1	8.299	220	3.2	51.3	8.478		495	7	54
5/31/2022	7.7	8.1	8.31	256	3.6	57.8	10.351		564	7.9	63.2
6/30/2022	7.6	8.1	8.714		4.3	66.1		9.088		11	70.4
7/31/2022	7.6	7.9	8.997		4.6	69.8		9.373		10	71.1
8/31/2022	7.5	7.9	9.442		4.7	72.9		10.502		9.1	77.3
9/30/2022	7.4	7.8	8.246		4.4	71.8		8.945		6.2	76.3
10/31/2022	7.5	7.7	6.501	245	4.5	64.2	6.949		333	6.1	67
11/30/2022	7.5	7.7	5.883	250	4.9	59.3	8.822		912	12.4	63.3
12/31/2022	7.1	8.1	7.12	259	4.4	47.7	7.308		384	6.4	52.6
1/31/2023	7.4	8	7.203	258	4.3	45.9	7.42		404	6.8	48.1
2/28/2023	7.5	7.9	7.15	264	4.4	44.3	7.472		334	5.8	46.3
3/31/2023	7.6	7.8	6.82	196	3.5	45.3	6.931		314	5.5	48.1
4/30/2023	7.6	8.1	7.614	244	3.9	52.1	8.009		555	8.8	58.4
5/31/2023	7.6	8.1	7.606	252	3.9	59.5	8.769		368	5.7	62.8
6/30/2023	7.5	7.9	8.122		4	65.9		9.132		6.2	70.7
7/31/2023	7.5	7.8	8.794		4.3	70.7		9.481		7.6	74.9
8/31/2023	7.4	7.7	8.925		4.3	66.9		9.298		5.7	69.4
9/30/2023	7.3	7.6	8.515		5.9	71.7		9.122		8.2	73.7
10/31/2023	7.5	7.8	8.132	294	4.3	65.2	8.776		436	6.2	69.9
11/30/2023	7.6	8	7.825	244	3.7	55.4	9.212		387	6	60.8
12/31/2023	7.5	8	7.803	263	4	49.5	8.033		380	5.8	51.1
1/31/2024	7.4	7.9	7.188	266	4.4	46	7.757		340	5.7	49.1
2/29/2024	7.4	7.9	7.253	191	3.2	43.3	7.775		334	5.5	45
3/31/2024	7.5	7.9	7.25	205	3.4	45.6	7.419		356	5.9	47.1
4/30/2024	7.5	8	7.341	227	3.7	49.5	7.66		331	5.3	53
5/31/2024	7.5	7.9	7.21	268	4.3	58.6	7.89		377	5.9	64.6
6/30/2024	7.5	7.9	8.055		4.9	65.4		8.864		9.2	69.4
7/31/2024	7.3	7.9	9.027		4.4	65.7		9.34		7.2	68.8
8/31/2024	7.4	7.9	8.841		5.4	70.8		9.343		8.5	73.7
9/30/2024	7.3	7.9	9.127		5.3	71		9.462		7.6	74.8
10/31/2024	7.2	7.9	8.632	336	4.7	66	9.208		597	8.4	69.8
11/30/2024	7.6	7.8	7.843	293	4.3	57.8	9.133		444	6.2	62.9
12/31/2024	7.4	8.3	7.503	239	3.8	47.7	8.714		386	6.2	50.8
1/31/2025	7.1	7.9	8.064	264	4	41.8	8.632		385	5.6	45.1

2/28/2025	7.7	7.9	7.868	243	3.7	39.5	7.952		521	8.1	47.7
3/31/2025	7.4	8	7.937	260	3.9	44.6	8.145		376	5.6	47.5
4/30/2025	7.6	8	8.008	245	3.7	49.8	8.332		516	7.7	55.7
5/31/2025	7.4	7.9	7.774	275	4.1	57.8	8.437		536	7.9	60.6
6/30/2025	7.4	7.8	7.451		3.2	61.4		8.242		5.6	65.9
7/31/2025	7.6	7.8	7.382		5.2	68.2		8.245		8	73.1

Outfall - Monitoring Location - Limit Set: 002 - 1 - Q

Parameter	TSS	Oil and grease [soxhlet extr.] tot.
	Daily Max	Daily Max
Units	mg/L	mg/L
Effluent Limit	Report	Report
Minimum	2.1	0
Maximum	6.6	6
Median	3.95	Non-Detect
No. of Violations	N/A	N/A
Monitoring Period End Date		
9/30/2020	6.6	< 4.8
12/31/2020	3.7	< 4.7
3/31/2021	2.1	< 4
6/30/2021	3.4	< 4
9/30/2021	5.6	< 5
12/31/2021	4	< 2.5
3/31/2022	2.6	< 5
6/30/2022	4.1	< 5
9/30/2022	5	6
12/31/2022	4	< 5
3/31/2023	4.4	< 5
6/30/2023	2.8	< 5
9/30/2023	5.6	< 5
12/31/2023	2.4	< 5
3/31/2024	3	< 5
6/30/2024	3.2	< 5
9/30/2024	4.5	< 5
12/31/2024	4.7	< 5
3/31/2025	3.9	< 5
6/30/2025	3.9	< 5

Outfall - Monitoring Location - Limit Set: 002 - O - A

Parameter	Heat [summer] [per day]	Heat [summer] [per day]
	Monthly Avg	Daily Max
Units	**MBTU/d**	**MBTU/d**
Effluent Limit	**Report**	**Report**
Minimum	**190**	**347**
Maximum	**523**	**865**
Median	**324**	**560**
No. of Violations	**N/A**	**N/A**
Monitoring Period End Date		
8/31/2020	210	440
9/30/2020	215	376
6/30/2021	190	423
7/31/2021	247	465
8/31/2021	489	865
9/30/2021	523	776
6/30/2022	310	792
7/31/2022	346	738
8/31/2022	368	796
9/30/2022	299	455
6/30/2023	274	400
7/31/2023	325	575
8/31/2023	324	433
9/30/2023	419	612
6/30/2024	332	605
7/31/2024	331	545
8/31/2024	402	643
9/30/2024	404	585
6/30/2025	197	347
7/31/2025	322	503

Outfall - Monitoring Location - Limit Set: 003 - 1 - A

Parameter	pH	pH	Flow rate	Heat [summer] [per day]	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit	Flow rate	Flow rate	Heat [summer] [per day]	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit
	Minimum	Maximum	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	**SU**	**SU**	**MGD**	**MBTU/d**	**MBTU/d**	**deg F**	**deg F**	**MGD**	**MGD**	**MBTU/d**	**MBTU/d**	**deg F**	**deg F**
Effluent Limit	**6.5**	**8.5**	**Report**	**Report**	**Report**	**Report**	**Report**	**7.4**	**8.1**	**Report**	**Report**	**Report**	**83**
Minimum	**6.7**	**7**	**0.68**	**13**	**13**	**0.6**	**36.9**	**2.182**	**2.594**	**38**	**23**	**1.1**	**41.8**
Maximum	**7.7**	**8.3**	**3.088**	**102**	**138**	**8.1**	**72.3**	**3.258**	**3.373**	**295**	**263**	**15.6**	**77.3**
Median	**7.5**	**7.9**	**2.5365**	**24**	**29**	**1.3**	**55.3**	**2.6545**	**2.9405**	**80**	**86**	**3.75**	**59.9**
No. of Violations	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**0**	**0**	**N/A**	**N/A**	**N/A**	**0**
Monitoring Period End Date													
8/31/2020	7.6	7.8	3.088	27		1	70		3.22	91		3.5	71.4
9/30/2020	7.6	7.9	3.019	28		1.1	67.5		3.337	60		2.5	71.4
10/31/2020	7.6	7.8	2.871		27	1.1	61.6	2.966			55	2.3	65.4
11/30/2020	7.6	7.8	2.666		25	1.1	53.7	3.141			57	2.5	57.2
12/31/2020	7.5	7.8	2.522		37	1.8	46.3	2.896			113	5.4	51.1
1/31/2021	7.1	7.8	2.618		51	2.4	42.2	2.653			122	5.5	43.6
2/28/2021	6.7	7.9	2.649		75	3.4	39.9	2.72			124	5.6	43.8
3/31/2021	7.3	8	2.75		90	3.9	44	2.823			222	9.6	51.1
4/30/2021	7.7	7.9	2.812		38	1.6	50.2	2.871			89	3.8	52.9
5/31/2021	7.6	8	2.865		48	1.9	56.8	3.123			93	3.7	67.7
6/30/2021	7.5	7.8	2.694	39		1.8	63.2		2.822	295		13.6	74.5
7/31/2021	7.5	7.7	2.752	33		1.4	67.9		3.081	68		2.9	73
8/31/2021	7.5	7.8	3.016	49		2	68.4		3.373	106		4.5	72.6
9/30/2021	7.3	7.8	2.979	76		3.1	66.4		3.141	170		7	72.5
10/31/2021	7.5	7.8	2.849		59	2.5	62.6	2.992			108	4.5	64.9
11/30/2021	7.5	7.8	2.576		63	2.9	55.9	2.824			108	5.2	59.7
12/31/2021	7.5	8	2.369		56	2.8	47.5	2.427			157	8	50.9
1/31/2022	7.6	7.9	2.356		59	3	42.1	2.411			133	6.7	47.5
2/28/2022	7.3	7.9	2.387		56	2.8	39.9	2.491			96	4.8	41.8
3/31/2022	7.3	7.9	2.53		76	3	45.6	2.653			160	6.4	50.3
4/30/2022	7.4	8.1	2.612		48	2.2	50.3	2.669			195	9	54.2
5/31/2022	7.4	8	2.616		31	1.4	55.6	3.258			78	3.5	60.1
6/30/2022	7	8.3	2.743	30		1.3	63.1		2.861	132		5.8	66.7
7/31/2022	7.3	7.9	2.832	33		1.4	66.6		2.95	107		4.5	69.1
8/31/2022	7.2	7.9	2.972	66		2.6	70.8		3.306	264		10.1	77.3
9/30/2022	7.2	7.5	2.596	102		4.8	72.3		2.816	243		12.1	74.7
10/31/2022	7.2	7.7	2.046		138	8.1	67.8	2.187			263	15.6	76.9
11/30/2022	7.3	7.8	1.852		77	4.8	59.1	2.777			186	13	70.5
12/31/2022	7.4	8.1	2.241		73	3.9	47.2	2.3			176	9.5	56.4
1/31/2023	7.6	8	2.267		53	2.8	44.4	2.336			118	6.2	46.4
2/28/2023	7.5	7.8	2.251		51	2.7	42.6	2.352			99	5.6	44.8
3/31/2023	7.5	8	2.147		26	1.5	43.3	2.182			70	3.9	46.4
4/30/2023	7.7	8.1	2.397		18	0.9	49.2	2.521			45	2.5	53
5/31/2023	7.7	8.1	2.394		14	0.7	56.3	2.76			40	1.8	61.1
6/30/2023	7.5	7.9	2.557	14		0.7	62.5		2.875	40		1.9	66.4
7/31/2023	7.6	7.8	2.768	15		0.7	67		2.985	57		2.4	69.4
8/31/2023	7.5	7.8	2.809	17		0.7	63.3		2.927	102		4.5	68
9/30/2023	7.3	7.7	0.68	21		0.9	66.2		2.871	57		2.4	69.9
10/31/2023	7.3	7.8	2.56		25	1.2	62	2.762			57	2.7	65.9
11/30/2023	7.5	7.9	2.463		21	1	52.7	2.9			42	2	56.8
12/31/2023	7.6	7.9	2.456		24	1.2	46.6	2.529			74	3.6	49
1/31/2024	7.4	7.9	2.263		24	1.3	42.8	2.442			42	2.2	46.5
2/29/2024	7.5	7.9	2.283		25	1.3	41.4	2.447			55	2.9	42
3/31/2024	7.6	7	2.282		15	0.8	43	2.335			36	1.9	44.2
4/30/2024	7.5	8	2.311		14	0.7	46.6	2.411			48	2.5	50.9
5/31/2024	7.7	7.9	2.269		13	0.6	54.9	2.477			23	1.1	59.6
6/30/2024	7.6	7.9	2.535	20		0.9	61.5		2.79	47		2.2	63.6
7/31/2024	7.5	7.8	2.842	19		0.8	62.1		2.94	52		2.2	64
8/31/2024	7.5	7.9	2.783	20		0.8	66.2		2.941	45		1.9	71.4
9/30/2024	7.5	7.9	2.873	18		0.8	66.5		2.979	133		5.5	69.6
10/31/2024	7.3	7.8	2.717		24	1.1	62.4	2.899			65	2.8	66.3
11/30/2024	7.5	7.8	2.469		33	1.5	55	2.875			122	5.4	61.4
12/31/2024	7.5	8.3	2.362		26	1.3	45.2	2.743			48	2.4	48.8
1/31/2025	7.5	8	2.538		19	0.9	38.8	2.717			33	1.6	43.7
2/28/2025	7.7	7.9	2.477		22	1.1	36.9	2.503			150	7.4	47
3/31/2025	7.6	8	2.498		18	0.8	41.5	2.564			29	1.4	45.5
4/30/2025	7.7	7.9	2.521		23	1.1	47.3	2.623			83	3.9	50.4
5/31/2025	7.5	7.9	2.447		14	0.7	54.3	2.656			30	1.4	57.7
6/30/2025	7.6	7.8	2.345	17		0.8	59.1		2.594	46		2.4	63.8
7/31/2025	7.6	7.9	2.324	13		0.7	63.7		2.595	38		2	65.7

Outfall - Monitoring Location - Limit Set: 003 - 1 - Q

Parameter	TSS	Oil & Grease
	Daily Max	Daily Max
Units	mg/L	mg/L
Effluent Limit	Report	Report
Minimum	0	No Data
Maximum	8.9	No Data
Median	4.2	No Data
No. of Violations	N/A	N/A
Monitoring Period End Date		
9/30/2020	5.7	< 4.8
12/31/2020	5.6	< 4.6
3/31/2021	2.5	< 4
6/30/2021	8.5	< 4
9/30/2021	8.9	< 5
12/31/2021	2.3	< 2.5
3/31/2022	6.4	< 5
6/30/2022	3.4	< 5
9/30/2022	4.4	< 5
12/31/2022	4.5	< 5
3/31/2023	4.7	< 5
6/30/2023	< 2.5	< 5
9/30/2023	6.6	< 5
12/31/2023	2.9	< 5
3/31/2024	< 2.5	< 5
6/30/2024	3.5	< 5
9/30/2024	3.8	< 5
12/31/2024	3.2	< 5
3/31/2025	4.2	< 5
6/30/2025	4.2	< 5

Outfall - Monitoring Location - Limit Set: 004 - 1 - A

Parameter	pH	pH	Flow rate	Heat [summer] [per day]	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit	Flow rate	Flow rate	Heat [summer] [per day]	Heat [winter] [per day]	Temperature Increase Deg. F	Temperature, water deg. fahrenheit
	Minimum	Maximum	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Monthly Avg	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	**SU**	**SU**	**MGD**	**MBTU/d**	**MBTU/d**	**deg F**	**deg F**	**MGD**	**MGD**	**MBTU/d**	**MBTU/d**	**deg F**	**deg F**
Effluent Limit	**6.5**	**8.5**	**Report**	**Report**	**Report**	**Report**	**Report**	**15.4**	**19.6**	**Report**	**Report**	**Report**	**83**
Minimum	**6.8**	**7.5**	**2.53**	**269**	**65**	**1.6**	**38.8**	**2.653**	**5.4**	**572**	**111**	**2.6**	**40.8**
Maximum	**7.6**	**8.3**	**6.427**	**754**	**631**	**14.8**	**81.3**	**6.782**	**7.02**	**1125**	**1309**	**27**	**82.9**
Median	**7.2**	**7.9**	**5.302**	**467**	**194**	**7.5**	**62.3**	**5.525**	**6.12**	**749**	**660**	**15.7**	**74.05**
No. of Violations	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**0**	**0**	**N/A**	**N/A**	**N/A**	**0**
Monitoring Period End Date													
8/31/2020	7.6	7.7	6.427	658		12.3	81.3		6.702	797		15.1	82.9
9/30/2020	7.4	7.7	6.284	660		12.6	79		6.946	829		16	81.8
10/31/2020	7.4	7.8	5.976		631	12.7	73.1	6.173			1047	21.8	79.7
11/30/2020	7.5	7.9	5.549		543	11	63.5	6.537			876	18.3	71.2
12/31/2020	7.4	7.8	5.249		156	3.5	48	6.028			538	10.7	60.9
1/31/2021	7.2	7.8	5.449		142	3.1	42.9	5.522			269	5.9	45.4
2/28/2021	6.8	8.1	5.513		252	5.5	42	5.661			539	11.7	47.4
3/31/2021	7.3	8	5.724		358	7.5	47.5	5.875			1309	27	68.7
4/30/2021	7.6	8	5.853		385	7.8	56.5	5.974			1166	23.6	74
5/31/2021	7.5	8	5.963		617	11.7	66.6	6.5			1083	21.3	81.7
6/30/2021	7.4	8	5.606	634		13.5	75		5.873	988		20.7	80.1
7/31/2021	7.1	7.7	5.727	405		8.4	74.9		6.412	749		15.6	81.8
8/31/2021	7.3	8.1	6.276	617		11.8	78.3		7.02	913		19.7	82.2
9/30/2021	7	7.7	6.2	754		14.6	78		6.537	1125		22	81.7
10/31/2021	7	7.9	5.93		512	10.3	70.4	6.227			863	16.9	76.8
11/30/2021	6.9	7.7	5.362		232	4.9	57.9	5.878			698	14.7	73
12/31/2021	7.3	8	4.931		160	3.9	48.6	5.052			578	13.9	60.8
1/31/2022	7.2	8	4.903		139	3.4	42.5	5.017			268	6.6	49.7
2/28/2022	7.3	7.8	4.968		206	5	42.1	5.185			780	19.4	58.3
3/31/2022	7.5	7.8	2.53		209	4.8	46.9	2.653			705	18.1	63.4
4/30/2022	7.3	8	5.437		426	9.3	57.4	5.554			1037	22.4	70.1
5/31/2022	7.3	8.1	5.444		620	13.6	67.7	6.782			1034	22.3	77.5
6/30/2022	7.4	8.1	5.709	706		14.8	76.7		5.954	982		20.8	80.7
7/31/2022	7.3	7.8	5.895	651		13.2	78.4		6.141	853		17.4	82.8
8/31/2022	7.3	7.6	6.186	531		10.3	78.5		6.881	769		13.6	82.5
9/30/2022	7	7.6	5.402	358		8	75.4		5.86	572		13	80
10/31/2022	7.2	7.7	4.259		232	6.4	66.1	4.553			530	14.7	73.3
11/30/2022	6.9	7.7	3.854		166	5.2	59.6	5.78			504	13.8	71.2
12/31/2022	7.2	8.2	4.665		113	2.9	46.2	4.788			205	5.3	50.6
1/31/2023	7.2	8.3	4.719		96	2.4	44	4.861			179	4.6	46.5
2/28/2023	7.2	7.9	4.684		143	3.6	43.5	4.895			907	22.5	63.3
3/31/2023	7.1	7.7	4.468		79	2.1	44	4.541			138	3.7	47.1
4/30/2023	7.2	7.9	4.988		206	4.9	53.2	5.247			751	17.7	66.8
5/31/2023	7.1	7.9	4.983		352	8.2	63.8	5.745			691	16.7	74.2
6/30/2023	7.1	7.8	5.321	410		9.1	71		5.983	846		19.3	82.4
7/31/2023	7.2	7.6	5.762	436		9	75.3		6.212	674		13.1	80.3
8/31/2023	7.1	7.5	5.847	486		9.9	72.5		6.092	726		15.1	78.1
9/30/2023	7	7.5	5.579	269		5.7	70.9		5.976	575		11.6	76.1
10/31/2023	7.3	7.8	5.328		387	8.7	69.5	5.749			826	18.5	77.5
11/30/2023	7.2	8	5.127		123	2.9	54.6	6.035			455	10.4	66.2
12/31/2023	7.2	8	5.112		71	1.7	47.1	5.263			111	2.6	50.7
1/31/2024	7	8	4.709		71	1.8	43.4	5.082			158	4.1	46.2
2/29/2024	7.1	7.9	4.752		65	1.6	41.8	5.094			153	3.6	44.7
3/31/2024	7.2	7.9	4.75		106	2.7	44.9	4.86			661	16.3	60.1
4/30/2024	7.3	8	4.81		180	4.4	50.3	5.019			659	16.2	62.2
5/31/2024	7.2	8	4.724		307	7.5	61.8	5.155			671	15.9	74.6
6/30/2024	7.2	7.9	5.277	447		10	70.5		5.807	723		16.8	77.2
7/31/2024	7.1	7.9	5.914	506		10.3	71.6		6.119	734		14.6	76.6
8/31/2024	7.1	7.9	5.793	409		8.5	73.8		6.121	657		14	80.1
9/30/2024	7.2	8	5.98	349		7	72.7		6.199	642		12.5	79.2
10/31/2024	7.2	7.9	5.655		297	6.2	67.5	6.033			530	10.9	74.1
11/30/2024	7.2	7.7	5.138		182	4	57.4	5.984			883	19.2	74.4
12/31/2024	7.3	8.2	4.916		126	3	47	5.709			581	14.1	58.9
1/31/2025	7.1	7.9	5.283		154	3.5	41.3	5.655			370	7.9	49.1
2/28/2025	7.5	8	5.155		131	3	38.8	5.21			238	5.5	40.8
3/31/2025	7.1	8	5.2		142	3.3	44	5.336			438	10	51.1
4/30/2025	7.1	7.9	5.246		376	8.5	54.7	5.459			1074	23.6	73
5/31/2025	7.2	7.9	5.093		403	9.1	62.8	5.528			847	19	74.2
6/30/2025	7.1	7.8	4.882	393		9.6	67.9		5.4	749		18	76.8
7/31/2025	7.3	7.9	4.837	406		10	72.9		5.402	703		15.8	79.8

Outfall - Monitoring Location - Limit Set: 005 - 0 - A

Parameter	Flow rate	Flow rate	Flow rate	Flow rate
	Monthly Avg	Monthly Avg	Daily Max	Daily Max
Units	**MGD**	**MGD**	**MGD**	**MGD**
Effluent Limit	**30**	**40**	**35**	**45**
Minimum	**11.269**	**21.927**	**20.587**	**24.481**
Maximum	**27.089**	**29.135**	**30.744**	**31.825**
Median	**23.269**	**26.0425**	**25.12**	**27.7455**
No. of Violations	**0**	**0**	**0**	**0**
Monitoring Period End Date				
8/31/2020		29.135		30.385
9/30/2020		28.489		31.487
10/31/2020	27.089		27.984	
11/30/2020	25.156		29.633	
12/31/2020	23.798		27.33	
1/31/2021	24.703		25.034	
2/28/2021	24.995		25.666	
3/31/2021	25.949		26.636	
4/30/2021	26.533		27.085	
5/31/2021	27.033		29.466	
6/30/2021		25.415		26.624
7/31/2021		25.964		29.069
8/31/2021		28.453		31.825
9/30/2021		28.105		29.634
10/31/2021	26.882		28.231	
11/30/2021	24.309		26.646	
12/31/2021	22.353		22.904	
1/31/2022	22.228		22.746	
2/28/2022	22.524		23.507	
3/31/2022	23.875		25.035	
4/30/2022	24.649		25.181	
5/31/2022	24.682		30.744	
6/30/2022		25.882		26.992
7/31/2022		26.723		27.839
8/31/2022		28.043		31.193
9/30/2022		24.492		26.567
10/31/2022	19.308		30.64	
11/30/2022	11.269		26.203	
12/31/2022	21.147		21.706	
1/31/2023	21.394		22.039	
2/28/2023	21.237		22.192	
3/31/2023	20.256		20.587	
4/30/2023	22.613		23.787	
5/31/2023	22.589		26.046	
6/30/2023		24.123		27.125

7/31/2023		26.121		28.161
8/31/2023		26.508		27.618
9/30/2023		25.291		27.094
10/31/2023	24.154		26.065	
11/30/2023	23.243		27.361	
12/31/2023	23.176		23.861	
1/31/2024	21.35		23.039	
2/29/2024	21.543		23.093	
3/31/2024	21.533		22.035	
4/30/2024	21.805		22.752	
5/31/2024	21.414		23.371	
6/30/2024		23.923		26.327
7/31/2024		26.811		27.742
8/31/2024		23.614		27.749
9/30/2024		27.107		28.104
10/31/2024	25.637		27.35	
11/30/2024	23.295		27.128	
12/31/2024	22.286		25.881	
1/31/2025	23.95		25.639	
2/28/2025	23.368		23.619	
3/31/2025	23.574		24.193	
4/30/2025	23.785		24.748	
5/31/2025	23.088		25.059	
6/30/2025		22.13		24.481
7/31/2025		21.927		25.488

Outfall - Monitoring Location - Limit Set: SUM - 1 - A

Parameter	Heat [summer] [per day]	Heat [winter] [per day]	Heat [summer] [per day]	Heat [winter] [per day]
	Monthly Avg	Monthly Avg	Daily Max	Daily Max
Units	**MBTU/d**	**MBTU/d**	**MBTU/d**	**MBTU/d**
Effluent Limit	**Report**	**Report**	**8782**	**8782**
Minimum	**1628**	**940**	**2592**	**1783**
Maximum	**3497**	**2995**	**5009**	**5932**
Median	**2238**	**1650.5**	**3394**	**3023.5**
No. of Violations	**N/A**	**N/A**	**0**	**0**
Monitoring Period End Date				
8/31/2020	2984		3613	
9/30/2020	2990		3756	
10/31/2020		2864		4745
11/30/2020		2493		3970
12/31/2020		1538		2439
1/31/2021		1739		3120
2/28/2021		1724		2443
3/31/2021		2277		5932
4/30/2021		2280		5284
5/31/2021		2995		4909
6/30/2021	2889		4482	
7/31/2021	1916		3395	
8/31/2021	2803		4141	
9/30/2021	3497		5009	
10/31/2021		2398		3914
11/30/2021		1519		3166
12/31/2021		1202		2621
1/31/2022		1422		2326
2/28/2022		1714		3535
3/31/2022		1639		3195
4/30/2022		2369		4704
5/31/2022		2987		4690
6/30/2022	3203		4450	
7/31/2022	3051		3869	
8/31/2022	2414		3485	
9/30/2022	1712		2592	
10/31/2022		1790		2475
11/30/2022		940		2710
12/31/2022		1530		1907
1/31/2023		1539		2033
2/28/2023		1772		4113
3/31/2023		1420		1913
4/30/2023		1531		3406

5/31/2023		1833		3132
6/30/2023	2133		3833	
7/31/2023	2050		3053	
8/31/2023	2256		3292	
9/30/2023	1628		2676	
10/31/2023		1916		3744
11/30/2023		1211		2059
12/31/2023		1668		2199
1/31/2024		1650		2069
2/29/2024		1533		1801
3/31/2024		1651		2995
4/30/2024		1641		3008
5/31/2024		1764		3039
6/30/2024	2220		3278	
7/31/2024	2375		3325	
8/31/2024	1974		2978	
9/30/2024	1844		2912	
10/31/2024		1515		2405
11/30/2024		1387		4004
12/31/2024		1425		2634
1/31/2025		1512		1858
2/28/2025		1471		1783
3/31/2025		1530		1986
4/30/2025		2187		4871
5/31/2025		2167		3837
6/30/2025	1838		3393	
7/31/2025	1936		3186	

Congress St. Bridge Temperature (°F)

Date	Gillette A 0.5 m			Gillette A 1.5 m			Gillette A 3.0 m			Gillette A 4.5 m			Gillette A 5.5 m		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
12/1/2012	43.53	42.2	45.71	45.16	44.4	45.76	45.15	44.81	45.53	45.01	44.76	45.22	45.27	45.04	45.44
12/2/2012	44.68	42.53	46.12	45.14	44.36	46.08	44.78	44.4	45.13	44.56	44.26	44.81	44.85	44.58	45.08
12/3/2012	45.42	44.67	46.66	45.45	44.26	46.66	45.16	44.4	46.44	44.5	44.17	45.44	44.72	44.49	45.31
12/4/2012	45.85	44.45	46.71	45.61	44.54	46.48	44.89	44.45	45.9	44.39	44.17	44.76	44.65	44.49	44.99
12/5/2012	45.79	44.72	46.48	45.8	44.31	46.48	45.48	44.26	46.44	44.64	44.04	45.71	44.74	44.36	45.44
12/6/2012	44.5	43.17	45.85	44.55	43.21	45.58	44.82	44.04	46.17	45.05	44.13	46.17	45.25	44.76	46.12
12/7/2012	45.33	44.54	45.81	45.01	44.31	46.08	44.63	44.45	45.26	44.37	44.31	44.54	44.68	44.58	44.9
12/8/2012	45.18	44.17	46.21	45.19	44.4	45.94	44.77	44.45	45.62	44.43	44.31	44.9	44.71	44.58	44.95
12/9/2012	44.92	44.04	46.12	45.04	44.22	45.9	44.74	44.45	45.4	44.38	44.26	44.67	44.67	44.58	44.86
12/10/2012	45.79	44.45	47.74	44.93	44.17	45.99	44.58	44.36	45.4	44.36	44.22	44.76	44.72	44.58	44.95
12/11/2012	46.2	45.13	47.42	45.86	44.81	47.2	44.69	44.45	45.44	44.41	44.26	44.72	44.72	44.58	44.86
12/12/2012	44.72	43.58	45.85	44.75	43.58	45.85	44.65	44.26	45.44	44.47	44.31	44.72	44.78	44.67	44.99
12/13/2012	44.19	42.16	45.58	44.77	43.72	46.03	44.7	44.36	45.44	44.49	44.31	44.86	44.78	44.63	44.99
12/14/2012	44.46	43.26	45.13	44.48	43.62	45.17	44.52	44.22	44.9	44.31	44.08	44.54	44.6	44.4	44.81
12/15/2012	43.67	42.29	44.81	44.07	43.03	45.04	44.29	43.62	44.76	44.14	43.58	44.36	44.41	44.17	44.58
12/16/2012	42.96	42.02	44.4	43.8	42.66	44.86	43.77	43.26	44.31	43.74	43.31	44.13	44.11	43.67	44.4
12/17/2012	43.12	42.29	44.86	43.36	42.66	44.86	43.57	42.94	44.49	43.41	43.12	43.99	43.74	43.44	44.86
12/18/2012	44.47	43.31	45.4	44.24	43.35	45.85	43.54	43.4	44.45	43.25	43.17	43.58	43.53	43.44	43.67
12/19/2012	43.87	42.8	45.08	43.9	43.21	45.67	43.76	43.31	44.95	43.32	43.08	43.85	43.53	43.35	43.95
12/20/2012	43.68	42.71	45.13	44.62	43.35	45.22	43.74	43.53	44.76	43.45	43.31	43.58	43.76	43.58	43.85
12/21/2012	44.14	42.71	45.35	43.76	43.03	45.22	43.67	43.44	44.13	43.46	43.31	43.67	43.78	43.67	43.99
12/22/2012	43.22	40.81	44.31	43.96	43.4	44.58	43.86	43.58	44.9	43.51	43.4	43.67	43.8	43.76	43.9
12/23/2012	42.36	40.81	43.58	43.36	41.93	43.99	43.78	43.53	44.22	43.54	43.4	43.76	43.81	43.62	43.95
12/24/2012	42.46	40.35	43.67	43.14	42.06	43.95	43.57	43.21	44.08	43.38	43.21	43.58	43.65	43.49	43.81
12/25/2012	42.09	40.2	43.31	43.78	42.57	44.26	43.41	43.21	43.81	43.21	43.03	43.4	43.51	43.31	43.67
12/26/2012	41.25	39.69	43.49	42.61	41.14	43.76	43.08	41.69	43.58	43.01	41.93	43.35	43.3	42.66	43.62
12/27/2012	41.82	41.09	43.58	41.65	41.18	42.34	42.08	41.46	43.44	42.12	41.6	42.76	42.61	42.06	43.49
12/28/2012	42.36	40.02	43.95	42.33	41.28	43.62	42.25	41.88	42.62	41.96	41.74	42.2	42.19	42.02	42.39
12/29/2012	40.61	38.8	43.17	42.34	39.64	43.4	42.09	41.55	42.89	41.84	41.55	42.02	42.12	41.97	42.29
12/30/2012	40.71	38.84	42.48	41.63	39.78	43.03	41.94	41.65	42.2	41.76	41.6	42.02	42.01	41.93	42.16
12/31/2012	40.48	38.37	41.93	41.17	39.78	42.29	41.48	40.91	42.11	41.42	41	41.97	41.72	41.37	42.11
1/1/2013	40.24	38.37	41.93	41.41	40.2	42.29	41.52	41.18	42.2	41.21	41.09	41.46	41.51	41.37	41.65
1/2/2013	39.23	37.27	41.23	41.12	39.36	42.02	41.47	41.04	41.83	41.29	41.09	41.42	41.59	41.42	41.74
1/3/2013	38.79	35.01	41.28	40.05	34.22	41.55	41	34.27	41.65	40.97	33.93	41.51	41.4	39.45	41.69
1/4/2013	40.61	39.36	41.23	40.66	39.6	41.32	40.68	40.16	41.32	40.48	40.39	40.91	40.81	40.67	41.23
1/5/2013	39.83	38.51	41.09	40.75	40.11	41.46	40.85	40.49	41.51	40.34	40.25	40.63	40.64	40.49	40.81
1/6/2013	39.97	37.99	41.32	41.1	40.53	41.55	40.36	39.97	41.23	40.12	39.83	40.49	40.48	40.2	41.18
1/7/2013	40.19	39.12	41.55	40.91	39.92	41.83	40.65	40.11	41.6	40.22	39.92	40.95	40.46	40.25	40.91
1/8/2013	40.19	38.84	41.28	40.66	39.6	41.69	40.78	40.2	41.46	40.37	40.11	41	40.8	40.44	41.97
1/9/2013	39.99	38.37	41.37	40.88	39.97	41.74	40.83	40.35	41.65	40.44	40.25	41.04	40.76	40.63	41.09
1/10/2013	40.25	39.03	41.97	40.68	39.31	41.97	40.98	39.92	41.79	40.58	40.2	41.28	40.85	40.63	41.32
1/11/2013	40.42	38.42	41.55	41.1	40.3	41.93	40.85	40.53	41.32	40.62	40.53	40.72	40.94	40.81	41.04
1/12/2013	41.29	39.78	42.39	41.18	40.25	41.93	40.86	40.72	41.32	40.67	40.53	40.76	41.01	40.91	41.14
1/13/2013	41.93	41	42.66	41.3	40.72	42.02	40.96	40.76	41.51	40.72	40.63	40.91	41.08	41	41.23
1/14/2013	42.28	41.32	43.62	42.25	41.23	43.44	41.55	40.95	42.62	40.98	40.76	41.74	41.29	41.09	41.74
1/15/2013	41.54	40.81	42.2	42.26	41.23	43.08	41.88	41.6	42.76	41.39	41.18	41.65	41.67	41.46	41.83
1/16/2013	40.91	39.78	42.02	41.98	41.42	42.48	41.84	41.74	41.93	41.7	41.55	41.79	42.02	41.83	42.16
1/17/2013	41.75	39.78	42.66	42.07	41.46	42.89	42.09	41.83	42.89	41.87	41.74	42.11	42.19	42.02	42.29
1/18/2013	39.97	38.56	41.46	41.18	40.39	42.16	42.27	41.69	42.89	42.08	41.88	42.29	42.33	42.2	42.48
1/19/2013	41.46	40.06	42.16	41.69	40.95	42.34	41.95	41.46	42.39	41.67	41.42	42.2	42.01	41.74	43.85
1/20/2013	40.89	39.41	42.48	41.91	40.49	42.8	42.4	41.46	43.17	41.75	41.42	42.25	41.98	41.79	42.29
1/21/2013	40.31	38.51	41.97	41.44	40.44	42.53	42.03	40.63	43.03	41.48	40.81	42.06	41.77	41.37	42.11
1/22/2013	39.85	36.46	41.74	41.16	39.83	42.02	41.19	40.53	42.43	40.88	40.53	42.16	41.11	40.81	42.16
1/23/2013	39.66	38.42	40.86	39.85	38.7	40.86	40.24	39.5	40.95	40.29	39.6	40.76	40.65	39.88	41
1/24/2013	38.77	36.84	40.06	38.86	37.23	40.11	39	37.66	40.2	39.22	38.13	40.06	39.63	38.56	40.44
1/25/2013	38.2	36.84	39.41	38.25	37.18	39.31	38.19	37.37	39.55	37.94	37.37	39.17	38.31	37.56	39.5
1/26/2013	36.78	35.78	38.37	37.41	36.07	38.7	37.93	37.18	38.8	37.41	37.13	37.85	37.56	37.32	37.89
1/27/2013	37.02	35.83	38.23	37.05	35.88	38.27	36.99	35.98	37.75	36.92	36.17	37.56	37.23	36.46	37.61
1/28/2013	36.8	35.4	37.7	36.85	36.17	37.66	36.41	35.88	37.18	36.15	35.83	36.7	36.43	36.12	36.84
1/29/2013	36.93	35.44	37.61	36.78	35.83	37.51	36.23	35.88	36.89	35.94	35.73	36.36	36.24	36.07	36.65
1/30/2013	37.44	36.27	38.18	36.98	36.07	37.61	36.44	35.88	37.47	35.76	35.44	36.46	36.33	35.83	39.22
1/31/2013	38.42	37.42	39.74	38.18	37.13	39.36	37.85	36.6	39.27	36.79	35.59	37.75	37.41	36.07	42.62
2/1/2013	37.42	36.36	38.23	37.77	36.8	38.42	38.07	37.27	38.65	37.23	36.75	38.04	37.35	37.04	37.61
2/2/2013	37.09	35.73	38.04	37.31	36.22	38.08	37.71	37.32	38.23	37.49	37.37	37.61	37.8	37.61	37.94
2/3/2013	35.83	35.06	37.51	37.25	36.6	37.8	37.64	37.18	38.18	37.47	37.23	38.04	37.76	37.61	38.13
2/4/2013	36.57	34.12	37.8	37.32	36.65	37.8	37.42	37.23	37.75	37.26	37.18	37.47	37.59	37.47	37.8
2/5/2013	36.87	36.07	38.13	37.08	36.27	38.18	37.36	36.8	38.18	37.14	36.89	37.51	37.43	37.23	37.8
2/6/2013	37.46	35.49	38.61	37.8	37.18	38.37	37.15	36.94	37.7	36.92	36.75	37.23	37.23	37.04	37.61
2/7/2013	36.32	35.2	38.18	37.42	36.65	38.04	37.35	36.94	37.94	36.89	36.6	37.37	37.17	36.89	37.61
2/8/2013	36.01	33.39	37.8	36.25	33.53	37.7	36.44	34.08	37.61	36.45	35.35	36.99	36.92	35.98	38.75
2/9/2013	33.15	32.09	34.76	34.25	32.89	35.59	35.21	34.03	36.17	35.42	34.76	36.31	35.76	35.1	36.6
2/10/2013	34.94	32.34	36.65	35.05	34.22	36.12	34.92	34.37	35.59	34.73	34.32	35.25	35.05	34.66	35.64
2/11/2013	35.43	34.57	36.46	35.08	34.52	35.93	34.77	34.62	35.35	34.49	34.32	34.86	34.8	34.62	35.01
2/12/2013	35.84	35.1	36.41	35.47	34.71	36.27	34.92	34.71	35.73	34.51	34.32	34.81	34.82	34.66	35.06
2/13/2013	35.75	35.1	36.75	35.67	34.91	36.89	35.16	34.81	35.83	34.7	34.52	35.01	34.98	34.86	35.2
2/14/2013	36.24	35.01	38.08	35.96	35.3	37.13	35.39	35.15	35.93	34.93	34.81	35.06	35.23	35.1	35.35
2/15/2013	36.32	35.35	37.23	36	35.2	36.99	35.59	35.3	36.8	35.16	35.01	35.88	35.45	35.35	35.73
2/16/2013	36.01	35.69	36.65	36.62	35.83	37.13	36.05	35.69	36.65	35.53	35.4	35.93	35.76	35.59	35.98
2/17/2013	35.44	33.73	36.46	36.19	35.4	37.08	35.8	35.59	36.07	35.71	35.59	35.83	36.05	35.88	36.36

2/18/2013	35.3	33.83	36.31	35.44	34.47	36.31	35.56	34.96	36.22	35.55	35.25	35.93	36.07	35.54	36.7
2/19/2013	36.05	35.01	36.8	36.04	35.15	36.75	35.45	35.1	36.55	35.14	34.96	35.69	35.45	35.3	35.69
2/20/2013	36.6	35.49	37.51	36.52	35.54	37.08	35.92	35.44	36.65	35.45	35.25	35.69	35.76	35.54	35.98
2/21/2013	35.75	34.81	37.51	36	35.1	37.42	36.3	35.78	37.51	36.05	35.54	37.75	36.27	35.88	37.66
2/22/2013	35.44	33.73	36.6	36.5	35.06	37.18	36.86	36.22	37.66	36.23	35.93	37.23	36.5	36.31	36.8
2/23/2013	36.86	35.83	37.85	37.1	36.22	38.04	36.7	36.27	37.66	36.24	36.07	36.84	36.57	36.41	36.75
2/24/2013	36.36	35.88	37.04	37.38	36.31	37.89	36.87	36.36	37.89	36.37	36.17	36.89	36.64	36.46	36.94
2/25/2013	37.38	35.64	38.56	37.19	36.55	38.04	36.55	36.46	36.94	36.33	36.22	36.46	36.66	36.55	36.75
2/26/2013	38	35.59	39.5	37.83	36.89	38.61	36.89	36.65	37.66	36.55	36.41	36.8	36.84	36.7	37.04
2/27/2013	38.06	37.61	39.03	38.41	37.7	39.36	37.8	37.08	39.03	37.12	36.7	37.47	37.3	36.99	37.61
2/28/2013	38.76	37.42	40.53	38.28	37.23	39.83	37.43	37.23	38.04	37.13	36.99	37.37	37.44	37.27	37.7
3/1/2013	38.78	37.71	39.54	38.74	37.94	39.92	37.7	37.51	37.94	37.48	37.27	37.8	37.8	37.62	38.08
3/2/2013	39.05	37.62	40.01	38.86	38.14	39.74	38.15	37.94	38.46	37.91	37.71	38.08	38.23	37.94	38.41
3/3/2013	39.59	38.28	40.91	39.12	38.61	39.92	38.46	38.28	38.61	38.25	38.08	38.37	38.56	38.37	38.75
3/4/2013	39.3	37.71	41.04	39.51	38.66	41.14	38.92	38.55	39.83	38.57	38.37	38.89	38.87	38.7	38.98
3/5/2013	39.37	38.14	40.59	39.98	38.41	40.82	39.47	39.04	40.95	38.95	38.79	39.42	39.22	39.04	39.42
3/6/2013	39.3	38.98	39.88	39.68	39.13	40.53	39.97	39.22	40.68	39.22	38.98	39.83	39.47	39.27	39.92
3/7/2013	38.34	37.71	39.13	38.88	38.28	39.69	39.6	39.04	40.21	39.18	39.04	39.88	39.43	39.27	39.6
3/8/2013	36.99	35.64	37.89	38.5	37.27	39.92	39.07	37.85	39.65	38.91	38.52	39.31	39.19	38.84	39.6
3/9/2013	38.71	36.99	40.44	39.13	37.62	40.39	39.1	38.61	39.97	38.71	38.41	39.22	38.96	38.79	39.13
3/10/2013	39.64	38.23	40.86	39.87	39.31	40.59	39.09	38.89	39.54	38.73	38.61	38.93	39.02	38.93	39.16
3/11/2013	40.76	39.31	42.33	39.97	39.13	41.47	39.18	38.93	39.65	38.78	38.61	39.13	39.08	38.93	39.31
3/12/2013	41.22	39.88	42.48	41.22	39.88	42.39	39.51	39.13	40.82	38.9	38.66	39.27	39.17	38.98	39.51
3/13/2013	42.27	40.53	45.21	41.35	39.78	42.66	39.49	39.16	40.15	38.99	38.84	39.27	39.28	39.13	39.6
3/14/2013	40.97	38.89	42.3	40.74	39.22	42.21	39.79	39.36	40.44	39.41	39.13	39.74	39.69	39.45	39.97
3/15/2013	39.27	37.47	40.82	40.12	38.08	40.86	40.14	39.6	41.14	39.72	39.51	40.12	40.01	39.88	40.06
3/16/2013	40.08	38.98	41.23	40.52	39.88	41.09	39.77	39.6	40.44	39.43	39.31	39.65	39.69	39.6	39.88
3/17/2013	40.33	39.13	41.56	40.64	39.92	41.32	39.77	39.51	40.24	39.37	39.27	39.6	39.63	39.51	39.78
3/18/2013	40.01	38.41	41.38	40.14	39.69	40.95	39.81	39.51	40.24	39.42	39.22	39.74	39.66	39.51	39.92
3/19/2013	37.83	36.93	39.97	38.77	37.62	40.24	39.44	37.85	40.62	39.48	38.75	40.44	39.8	39.22	40.62
3/20/2013	39.55	37.99	41.23	39.61	38.55	40.68	39.09	38.93	39.36	38.84	38.66	39.13	39.13	38.89	39.36
3/21/2013	39.6	38.46	40.62	40.22	39.6	40.68	39.27	38.89	40.3	38.73	38.55	39.04	38.95	38.84	39.22
3/22/2013	40.34	38.55	42.44	40.19	39.45	40.71	39.03	38.79	39.42	38.63	38.52	38.75	38.87	38.84	38.93
3/23/2013	39.42	36.79	40.86	40.11	39.6	40.62	39.38	38.79	40.71	38.7	38.55	39.16	38.95	38.84	39.16
3/24/2013	39.54	37.47	41.59	40.45	39.6	41.18	39.59	39.07	40.82	38.91	38.75	39.31	39.18	39.04	39.42
3/25/2013	40.73	39.22	41.59	41.03	40.39	41.74	40.13	39.27	41.32	39.33	38.93	40.62	39.5	39.22	40.21
3/26/2013	41.25	39.69	42.94	40.85	40.15	41.7	39.7	39.45	40.15	39.31	39.13	39.6	39.57	39.36	39.78
3/27/2013	41.33	39.78	43.21	40.93	39.88	42.89	40.21	39.69	41.56	39.57	39.42	39.88	39.84	39.65	40.12
3/28/2013	41.63	40.82	42.48	41.46	40.53	42.53	40.27	39.97	40.68	39.89	39.69	40.15	40.16	39.97	40.35
3/29/2013	42.07	40.91	43.66	41.59	40.48	42.85	40.61	40.21	41.38	40.12	39.97	40.44	40.39	40.24	40.68
3/30/2013	43.51	41.92	45.84	42.49	41.09	44.67	40.96	40.59	41.92	40.41	40.24	40.86	40.68	40.48	41
3/31/2013	43.68	42.48	45.21	42.51	41.38	44.08	41.22	40.86	42.44	40.68	40.48	41.04	40.96	40.82	41.14
4/1/2013	43.52	42.33	45.84	43.21	42.21	45.03	41.87	41.47	42.53	41.24	40.82	41.56	41.45	41.14	41.74
4/2/2013	42.32	41.04	43.16	42.47	41.04	43.21	42.32	41.74	43.16	41.68	41.38	41.92	41.94	41.65	42.21
4/3/2013	42.46	40.06	43.86	42.59	41.18	43.99	42.59	41.74	43.9	42.02	41.83	42.44	42.28	42.06	42.57
4/4/2013	43.41	41.38	44.94	43.42	41.88	44.73	42.68	41.97	44.13	41.86	41.56	42.3	42.13	41.83	42.48
4/5/2013	43.63	42.3	45.84	43.36	42.3	45.39	43.01	41.88	44.73	41.99	41.56	42.94	42.18	41.83	43.03
4/6/2013	45.11	42.94	46.31	43.93	42.12	45.54	42.97	42.24	44.08	42.2	41.83	43.12	42.33	42.03	43.16
4/7/2013	43.71	42.75	45.57	43.26	42.53	44.31	42.72	42.21	43.57	42.02	41.74	42.33	42.3	42.03	42.85
4/8/2013	44.21	42.57	47.55	43.85	42.62	45.93	43.4	42.48	44.49	42.66	41.79	43.9	42.72	42.15	43.75
4/9/2013	46.68	44.13	49.69	45.51	43.86	49.03	43.63	42.89	45.75	42.67	42.3	43.66	42.84	42.57	43.21
4/10/2013	47.21	45.21	49.91	46.93	45.3	47.79	44.16	43.07	45.81	42.98	42.53	43.95	43.12	42.75	43.57
4/11/2013	47.53	45.66	48.81	46.74	45.39	47.97	44.27	43.57	45.45	43.42	43.07	44.04	43.55	43.27	43.95
4/12/2013	46.16	44.91	48	45.87	45.03	47.28	44.95	43.75	46.8	44.07	43.3	45.99	44.08	43.39	44.91
4/13/2013	46.04	45.03	47.52	45.04	44.17	46.26	44.32	44.13	44.67	44.01	43.9	44.13	44.29	44.13	44.4
4/14/2013	46.19	45.3	46.89	45.07	44.4	45.66	44.35	44.22	44.76	44.05	43.99	44.17	44.34	44.26	44.4
4/15/2013	45.88	44.58	46.92	45.64	44.76	47.19	44.96	44.31	46.31	44.32	43.99	45.03	44.51	44.31	44.94
4/16/2013	46.58	45.57	47.37	46.46	45.39	47.37	45.87	45	47.07	44.78	44.4	46.22	44.97	44.67	45.39
4/17/2013	48.54	45.93	51.33	48.15	45.75	50.7	47.27	45.84	48.18	46.25	44.94	47.55	45.85	45.12	47.55
4/18/2013	49.37	47.73	50.79	49.55	48.27	50.54	47.04	45.84	49.42	46.09	45.12	47.61	46.02	45.3	47.79
4/19/2013	49.44	48.72	50.36	49.23	47.82	50.14	48.35	47.07	49.73	46.96	45.93	47.73	46.77	45.9	47.46
4/20/2013	50.46	49.12	51.64	49.82	48.67	50.97	49.18	47.25	49.91	47.65	46.31	49.51	47.27	46.49	49.57
4/21/2013	49.65	47.91	51.15	50.21	49.48	51.37	48.27	46.98	50.27	47.2	46.53	48.27	47.36	46.83	47.73
4/22/2013	49.81	47.55	50.97	50.25	48.58	50.94	49.29	47.82	50.36	48.14	47.28	49.33	48.15	47.55	49.24
4/23/2013	48.56	47.97	50.09	49.34	48.15	50.97	49.11	48.31	50.31	48.34	47.82	49.24	48.37	47.97	49.06
4/24/2013	49.93	48.15	52.86	49.13	48.06	50.18	48.34	48	49.12	47.94	47.79	48.27	48.19	48	48.54
4/25/2013	50.29	49.06	52.59	50.07	48.72	51.85	49.1	48.18	50.79	48.28	47.82	49.24	48.42	48	48.99
4/26/2013	51.04	48.99	53.2	50.94	49.24	53.11	49.7	48.85	50.49	48.68	48.09	49.73	48.67	48	49.6
4/27/2013	52.07	50.09	54.7	50.62	49.15	51.89	49.19	48.58	49.96	48.52	47.97	49.21	48.66	48.27	49.06
4/28/2013	52.44	50.36	55.38	51.16	49.69	54.52	49.87	48.99	51.28	48.97	48.49	49.42	49.09	48.72	49.51
4/29/2013	52.55	51.06	54.43	52.05	50.45	54.7	50.39	49.33	53.08	49.35	48.81	51.06	49.41	49.06	50.49
4/30/2013	53.58	51.76	55.9	53.3	51.42	55.22	51.48	49.96	54.43	49.94	49.33	51.89	49.87	49.6	50.85
5/1/2013	55.1	53.04	57.33	54.09	52.65	54.95	51.67	50.27	53.56	50.34	49.69	51.8	50.33	49.96	51.19
5/2/2013	55.5	54.12	56.68	54.75	53.11	57.07	52.48	50.7	56.25	51.09	50.05	54.3	50.93	50.27	53.6
5/3/2013	55.17	53.29	56.61	55.65	54.09	57.04	53.05	51.55	55.26	51.52	50.31	53.65	51.41	50.58	52.9
5/4/2013	55.6	53.17	56.68	54.72	53.65	55.9	52.91	51.64	54.34	51.96	50.94	53.38	51.96	51.19	52.68
5/5/2013	55.02	52.34	56.77	54.88	54.25	55.47	53.61	52.47	54.7	52.75	51.55	54.03	52.65	51.73	53.73
5/6/2013	55.8	54.18	57.97	55.24	53.73	56.68	54.11	53.08	56.08	53.11	52.07	54.7	52.96	52.2	53.73
5/7/2013	57.56	55.04	60.01	56.31	54.52	58.15	54.36	53.26	56.3	53.2	52.43	54.34	53.24	52.65	53.91
5/8/2013	57.98	56.08	59.36	57.23	55.72	58.8	55.08	53.65	56.86	53.7	52.9	55.04	53.69	53.17	54.52
5/9/2013	58.82	56.73	60.01	57.55	56.12	58.75	54.9	54.12	57.29	53.81	53.26	54.43	53.9	53.42	54.34
5/10/2013	60.27	58.19	62.87	57.52	55.17	59.95	54.99	54.18	57.76	54.18	53.73	54.73	54.37	53.94	54.73

5/11/2013	58.12	56.43	60.39	57.31	55.9	58.8	55.56	54.7	57.33	54.69	54.21	56.03	54.82	54.43	55.78
5/12/2013	58.22	57.04	60.48	57.46	56.34	58.96	56.29	55.13	57.29	55.15	54.48	56.25	55.19	54.7	56.17
5/13/2013	57.03	55.99	58.53	57.05	55.9	58.46	55.7	55.29	56.86	55.07	54.77	55.35	55.25	54.91	55.51
5/14/2013	57.12	55.47	58.84	56.88	55.44	58.53	55.86	54.61	56.89	54.99	54.25	56.25	54.93	54.34	55.99
5/15/2013	56.7	55.38	58.5	56.4	55.51	57.29	54.91	54.43	56.08	54.15	53.73	54.43	54.33	54	54.64
5/16/2013	57.05	55.22	58.93	56.86	55.22	58.84	55.53	54.86	56.89	54.42	54.03	55.08	54.53	53.94	54.95
5/17/2013	57.84	55.87	59.7	57.89	56.52	59.67	56.19	54.52	57.72	54.04	53.04	56.21	53.76	53.04	54.61
5/18/2013	58.03	57.11	59.11	57.22	55.47	58.8	55.37	54.34	56.98	54.43	53.6	56.52	54.27	53.35	55.96
5/19/2013	57.91	56.77	59.18	57.31	56.12	58.28	55.88	54.7	57.72	55	53.87	56.86	54.89	53.78	57.11
5/20/2013	59.86	58.15	63.55	58.58	55.96	61.56	55.88	55.04	58.37	54.8	53.91	55.17	54.83	54.21	55.29
5/21/2013	61	60.01	62.8	60.54	58.84	62.24	57.16	54.95	61.93	55.68	54.3	59.74	55.4	54.48	58.06
5/22/2013	60.84	59.11	62.28	59.48	56.95	61.68	56.74	55.65	58.37	55.74	54.64	56.95	55.68	54.73	56.68
5/23/2013	60.22	58.5	61.75	58.83	56.68	61.25	56.73	55.81	57.85	55.88	55.22	56.77	55.93	54.55	56.61
5/24/2013	58.83	57.94	59.95	58.43	57.47	59.49	57.42	56.3	58.93	56.39	55.65	57.2	56.46	55.9	57.11
5/25/2013	58.08	56.73	58.93	58.04	56.64	59.61	57.14	56.82	57.9	56.66	56.25	57.29	56.83	56.39	57.16
5/26/2013	56.94	55.72	58.12	56.94	56.39	57.63	56.95	56.55	57.25	56.69	56.39	56.89	56.94	56.68	57.07
5/27/2013	57.5	55.87	60.04	57.32	55.99	59.14	56.82	56.46	57.29	56.43	56.08	56.77	56.69	56.34	56.98
5/28/2013	58.86	57.38	61.16	58.36	57.2	59.7	57.27	56.52	58.12	56.49	56.03	57.11	56.65	56.34	57.2
5/29/2013	59.96	58.89	62.1	59.13	57.9	61.63	57.67	57.04	59.14	56.86	56.39	57.54	56.94	56.61	57.33
5/30/2013	62.99	60.48	67.15	60.24	58.5	62.1	57.47	56.89	58.46	56.75	56.43	57.11	56.98	56.73	57.33
5/31/2013	63.25	60.57	65.97	61.73	58.96	65.35	58.35	57.47	60.01	57.26	56.68	57.97	57.39	56.95	57.94
6/1/2013	62.52	61.29	63.95	61.97	60.17	63.52	59.1	58.28	61.16	57.94	57.11	58.93	58.03	57.25	58.93
6/2/2013	62.34	61	63.82	62.08	61.03	63.36	60.49	58.93	62.19	58.62	57.85	60.39	58.62	57.47	59.27
6/3/2013	64.03	60.94	66.72	62.84	60.85	63.9	60.96	60.13	62.02	59.63	58.75	60.82	59.43	58.68	60.6
6/4/2013	63.28	61.84	64.98	62.35	60.39	63.64	59.78	59.14	60.78	58.7	58.15	59.36	58.78	58.28	59.4
6/5/2013	63.1	61.34	65.53	62.6	61.12	63.73	59.66	58.84	61.16	58.47	57.97	59.14	58.51	58.06	59.18
6/6/2013	62.56	60.57	64.42	62.01	60.26	64.17	60.17	58.71	61.84	58.97	58.03	60.64	58.93	58.03	60.57
6/7/2013	61.72	60.39	63.55	61.85	60.48	63.14	61.36	59.79	62.65	59.89	58.62	62.31	59.35	58.53	62.31
6/8/2013	61.82	59.92	64.24	61.04	59.67	62.46	59.39	58.89	60.39	58.6	58.19	59.36	58.73	58.37	59.31
6/9/2013	63.28	61.63	66.34	61.6	59.58	63.27	58.89	58.41	59.88	58.05	57.54	58.41	58.19	57.72	58.62
6/10/2013	63.04	61.38	64.04	62.78	60.64	63.99	59.47	58.53	61.16	58.24	57.69	58.93	58.32	57.9	58.93
6/11/2013	62.4	61.47	63.7	62.19	60.04	64.17	60.07	59.45	61.38	59	58.46	59.95	58.98	58.53	59.74
6/12/2013	62.61	61.5	64.58	61.86	59.74	64.11	59.41	59.11	60.35	58.77	58.59	59.18	58.92	58.68	59.11
6/13/2013	62.87	61.25	64.08	62.48	59.79	63.95	59.98	59.05	64.08	59.07	58.59	60.08	59.2	58.84	59.92
6/14/2013	61.68	59.83	63.43	61.4	60.3	63	60.78	60.01	64.08	59.61	59.18	60.01	59.7	59.31	60.04
6/15/2013	63.4	61	67.37	62.04	60.26	64.38	60.03	59.67	61.03	59.45	59.27	59.83	59.66	59.49	59.88
6/16/2013	63.59	61.56	64.85	62.69	61.38	64.08	60.33	59.88	62.71	59.66	59.4	60.48	59.87	59.58	60.48
6/17/2013	64.33	62.06	67.41	63.48	61.72	65.23	60.89	60.35	62.65	60.05	59.79	60.85	60.21	59.95	60.57
6/18/2013	65.03	63.09	66.47	65.31	63.05	67.15	61.89	60.3	65.01	60.46	59.92	61.2	60.52	60.13	60.91
6/19/2013	65.82	63.48	68.58	65.28	62.74	66.25	61.79	60.82	63.21	60.69	60.26	61.9	60.67	60.26	61.47
6/20/2013	66.3	64.38	68.79	65.47	62.58	67.62	62.82	61.16	66.78	61.23	60.17	64.24	60.97	60.22	62.74
6/21/2013	66.65	64.51	69.64	65.88	64.24	68.65	62.48	61.5	66.6	61.11	60.48	61.93	61.13	60.6	61.84
6/22/2013	66.41	65.23	68.79	65.34	63.09	67.03	61.87	61.25	63.39	61.07	60.64	61.5	61.26	60.94	61.47
6/23/2013	65.7	63.82	70.03	64.9	63	66.51	61.69	61	62.92	60.87	60.35	61.38	61.02	60.48	61.38
6/24/2013	66.64	63.77	72.95	65.22	62.96	66.9	61.27	60.35	62.74	60.05	58.89	60.78	60.11	59.23	60.85
6/25/2013	66.31	64.29	71.28	64.13	61.68	67.62	60.22	59.36	61.38	59.01	57.97	60.17	58.97	58.19	59.92
6/26/2013	66.21	64.08	69.39	64.32	62.49	66.69	60.2	59.11	63.14	58.61	57.97	59.36	58.52	58.03	58.96
6/27/2013	66.41	64.98	67.55	64.25	62.02	67.33	59.57	58.8	60.64	58.45	57.97	58.96	58.49	58.12	59.02
6/28/2013	65.01	63.14	67.03	63	61.12	65.62	59.34	58.53	60.35	58.34	57.69	58.75	58.41	57.81	58.75
6/29/2013	64.74	63.09	67.24	63.85	62.62	66.56	60.24	59.02	62.19	58.78	58.12	59.58	58.72	58.28	59.31
6/30/2013	66.6	63.9	69.39	64.34	63.21	66.04	61.23	59.88	63	59.32	58.71	59.88	59.31	58.68	59.79
7/1/2013	67.69	65.14	70.88	65.05	63.05	66.81	60.96	60.04	63.52	59.65	58.93	60.3	59.72	59.14	60.3
7/2/2013	67.14	65.97	68.61	66.04	63.64	68.14	61.93	60.13	66.87	59.83	59.36	60.48	59.89	59.58	60.26
7/3/2013	67.4	64.67	69.21	65.29	62.02	67.24	60.91	60.08	63.73	59.68	59.23	60.3	59.76	59.45	60.13
7/4/2013	66.52	63.73	69.64	64.16	62.06	66.87	60.71	60.08	62.58	59.68	59.27	60.48	59.8	59.45	60.22
7/5/2013	66.78	63.61	70.47	64.9	62.87	68.65	61.13	60.08	63.61	60.16	59.4	61.72	60.19	59.61	61.59
7/6/2013	68.33	64.24	72.05	65.14	63.21	68.86	61.67	60.85	62.28	60.58	59.83	61.07	60.64	60.17	61.07
7/7/2013	68.64	66.04	71.37	64.81	62.65	67.55	61.95	60.69	65.01	60.83	60.22	62.87	60.93	60.51	61.93
7/8/2013	68.54	66.16	70.84	67.12	64.98	69.85	64.32	61.47	67.89	62.03	60.44	65.97	61.53	60.69	63.64
7/9/2013	69.5	68.36	70.5	68.21	67.15	69.21	64.79	62.83	66.9	62.81	61	64.58	62.4	61.12	63.82
7/10/2013	68.84	67.37	71.83	67.65	65.32	69.73	65.03	63.9	66.78	63.64	61.84	64.8	63.36	61.68	64.63
7/11/2013	68.44	67.06	70.07	67.67	66.25	69.55	66.09	65.32	67.84	64.74	63.9	65.62	64.32	62.53	65.14
7/12/2013	69.24	68.36	70.41	69.1	68.14	70.32	67.95	66.65	69.04	65.8	64.08	67.24	65.25	63.7	66.47
7/13/2013	69.8	68.95	71.02	68.75	67.89	69.76	66.9	66	67.93	65.88	64.33	66.72	65.72	64.24	66.6
7/14/2013	70.91	69.01	74.16	69.26	67.75	71.62	66.98	66.16	68.14	66.11	65.35	66.65	66.02	64.76	66.78
7/15/2013	73.09	70.97	76.15	71.38	69.64	72.64	67.95	66.87	69.98	66.84	66.09	68.02	66.66	65.28	67.46
7/16/2013	74.27	72.39	76.15	72.21	70.32	73.94	68.96	67.8	70.72	67.72	66.72	68.74	67.58	66.16	68.61
7/17/2013	75.5	72.86	79.39	73.35	72.23	74.89	69.95	68.7	71.74	68.73	67.24	69.82	68.45	66.31	69.73
7/18/2013	74.13	71.96	76.59	73.64	72.01	76.28	71.41	69.21	73.99	69.83	67.46	72.18	69.38	67.03	71.02
7/19/2013	74.83	72.82	76.64	74.08	72.64	75.51	71.43	70.29	72.7	70.2	69.08	71.19	69.97	68.02	71.28
7/20/2013	73.53	72.14	74.68	73.26	71.96	74.52	70.88	69.91	72.3	69.42	68.7	70.2	69.29	68.58	70.16
7/21/2013	72.96	71.58	74.86	72.41	70.68	73.29	70.05	68.7	71.71	68.05	66.51	69.98	67.72	66.31	69.76
7/22/2013	72.66	70.11	75.04	71.55	69.82	73.26	68.73	66.9	70.41	66.71	65.53	67.96	66.43	65.53	67.71
7/23/2013	71.99	69.94	73.26	70.17	67.89	72.14	67.08	65.44	69.21	65.56	64.42	66.78	65.4	64.38	66.43
7/24/2013	71.03	68.31	74.03	68.08	66.72	70.59	65.9	65.1	66.6	64.99	64.24	65.44	65.02	64.42	65.48
7/25/2013	67.86	66.25	69.91	67.85	66.31	69.21	66.38	64.63	68.23	64.83	63.64	66.31	64.59	63.9	65.53
7/26/2013	67.28	66.56	68.31	66.79	64.45	68.49	64.58	64.2	65.35	64.07	63.77	64.42	64.24	63.9	64.63
7/27/2013	67.8	65.75	70.16	66.29	64.67	68.65	64.87	64.2	66.22	64.19	63.9	64.8	64.41	64.17	64.98
7/28/2013	68.71	66.51	71.28	68.24	65.79	70.25	66.53	65.19	67.89	65.34	64.29	65.97	65.21	64.38	65.79
7/29/2013	70.74	69.64	73.22	69.36	67.71	70.97	66.69	65.82	68.65	65.64	64.94	66.51	65.63	64.85	66.38
7/30/2013	71.49	70.16	76.21	69.88	67.89	71.96	66.78	66.16	68.4	65.89	65.07	66.6	65.95	65.1	66.56
7/31/2013	71.74	70.72	72.79	70.68	69.55	72.36	68.09	66.43	70.41	67.01	65.66	68.86	66.84	65.79	68.45

8/1/2013	71.88	70.54	73.65	71.2	70.07	73.13	69.52	68.52	70.59	68.14	66.22	68.86	67.83	66.09	68.86
8/2/2013	71.77	70.25	74.55	71.13	70.25	72.3	69.88	69.13	70.93	68.39	67.59	69.35	68.18	66.72	68.86
8/3/2013	70.82	69.91	71.92	70.72	69.94	72.01	68.72	68.4	69.48	68.07	67.55	68.36	68.23	67.71	68.52
8/4/2013	70.05	68.61	72.57	69.91	68.83	71.15	68.8	68.18	70.88	67.82	67.24	68.36	67.95	67.41	68.4
8/5/2013	70.7	69.04	72.27	69.44	67.75	71.74	67.1	66.09	69.85	65.84	64.51	67.41	65.71	64.42	67.41
8/6/2013	69.13	67.68	71.24	68.75	67.71	70.38	66.54	65.7	67.8	65.06	63.99	66.72	64.92	64.04	66.72
8/7/2013	69.45	68.27	71.49	68.89	67.71	70.97	66.52	65.48	67.28	65.37	64.11	66.31	65.27	64.33	66.31
8/8/2013	68.33	67.75	69.3	68.16	67.5	69.04	66.56	65.82	67.5	65.51	64.58	66.31	65.46	64.8	66.13
8/9/2013	68.37	67.46	69.73	67.87	67.33	68.52	66.72	65.82	67.84	65.46	64.85	66.51	65.43	64.85	66.09
8/10/2013	70.01	68.14	72.09	68	66.16	69.6	65.56	64.85	67.55	64.75	64.17	65.79	64.92	64.24	65.79
8/11/2013	68.8	67.21	70.54	67.45	66.16	68.79	64.81	64.04	65.88	63.76	62.65	64.24	63.73	62.74	64.33
8/12/2013	67.57	66.25	69.6	66.78	65.88	68.61	63.97	62.87	64.58	62.99	61.9	63.55	62.98	61.97	63.61
8/13/2013	66.25	65.41	67.59	66.34	65.82	67.15	64.01	62.71	65.7	62.28	61.47	63	62.19	61.47	62.83
8/14/2013	66.56	64.67	67.8	65.79	64.33	67.28	62.65	61.93	64.08	61.49	60.04	62.02	61.48	60.17	61.93
8/15/2013	64.86	63.55	66.43	64.31	62.87	66.04	61.89	60.82	63.64	60.65	59.95	61.63	60.66	60.08	61.29
8/16/2013	64.22	63.21	65.57	63.74	62.4	64.98	61.44	60.85	62.28	60.61	60.26	61.07	60.74	60.35	61.16
8/17/2013	63.78	62.24	65.88	63.2	61.84	64.38	61.73	60.64	62.83	60.78	60.01	62.06	60.8	60.22	61.97
8/18/2013	65.2	63.48	67.24	63.93	62.8	65.07	61.82	61.03	62.37	60.82	60.26	61.56	60.88	60.3	61.59
8/19/2013	64.09	62.28	65.32	63.31	61.84	64.42	61.5	61	62.15	60.77	60.3	61.34	60.94	60.44	61.5
8/20/2013	64.32	62.74	67.89	63.62	62.06	67.06	62.05	61.12	63.18	61.21	60.48	62.06	61.32	60.6	62.02
8/21/2013	64.74	63.3	66.87	63.97	62.71	65.88	62.42	61.68	63.21	61.58	60.73	62.15	61.7	60.94	62.37
8/22/2013	64.17	63.3	65.62	63.83	62.62	65.32	62.76	62.15	63.9	61.91	61.29	62.31	62.07	61.59	62.46
8/23/2013	64.68	63.64	66.69	64.25	63.14	65.91	63.26	62.37	64.38	62.37	61.5	63.48	62.34	61.75	63.36
8/24/2013	65.17	63.86	66.99	64.7	63.48	65.82	63.32	62.46	64.33	62.3	61.16	63.36	62.24	61.38	62.96
8/25/2013	64.72	63.73	66.72	64.24	63.43	66.04	62.73	62.15	63.48	61.92	61.29	62.46	62.03	61.5	62.62
8/26/2013	64.02	63.43	65.19	63.75	62.8	64.98	62.43	62.06	63.14	61.72	61.25	62.24	61.86	61.38	62.31
8/27/2013	65.16	63.82	67.59	64.53	63.14	66.38	63.06	62.02	64.33	61.96	61.38	63.3	61.93	61.47	62.74
8/28/2013	67.3	65.57	68.7	66.34	65.48	67.21	63.43	62.31	64.76	62	61.38	62.8	62	61.5	62.53
8/29/2013	66.44	65.53	68.4	66.43	65.7	67.68	66.1	63.18	67.5	63.1	61.72	65.75	62.35	61.72	63.7
8/30/2013	66.48	64.85	67.46	65.33	63.86	67.15	62.72	62.24	63.21	61.93	61.41	62.28	62.02	61.56	62.4
8/31/2013	64.99	64.51	66.04	64.44	62.8	65.35	62.63	62.28	63.36	62	61.63	62.4	62.17	61.75	62.58
9/1/2013	65.31	64.5	67.33	64.9	64.38	65.92	63.79	62.75	64.89	62.62	61.98	63.69	62.59	62.11	63.22
9/2/2013	67.55	66	69.9	65.78	64.97	67.11	64.21	63.3	65.27	63.07	62.19	63.9	63.06	62.36	63.95
9/3/2013	67.75	65.7	69.13	66.66	65.27	68.06	64.14	63.48	65.06	63.2	62.53	63.99	63.28	62.75	63.73
9/4/2013	66.37	65.4	67.93	66.14	64.8	67.63	63.98	63.39	64.59	63.19	62.7	63.69	63.3	62.88	63.82
9/5/2013	65.18	63.69	66.47	65.33	63.99	66.69	64.48	63.56	66.09	63.63	62.79	65.27	63.69	63.01	64.93
9/6/2013	65.26	63.39	67.67	65.05	63.6	66.47	63.77	63.26	64.38	63.23	62.79	63.86	63.42	62.96	64.16
9/7/2013	64.28	63.48	65.53	64.17	63.35	65.36	63.41	63.01	64.25	62.74	62.28	62.96	62.91	62.41	63.22
9/8/2013	64.65	63.39	66.56	64.35	63.39	65.44	63.57	62.88	64.63	62.63	62.11	63.52	62.72	62.19	63.35
9/9/2013	64.18	62.7	65.62	63.99	62.58	65.4	63.17	62.41	63.95	62.21	61.68	62.62	62.35	61.98	62.66
9/10/2013	63.54	62.58	64.67	63.35	62.45	64.38	62.49	62.19	63.39	61.94	61.72	62.41	62.15	61.85	62.45
9/11/2013	65.17	63.73	67.46	64.57	63.13	66.77	62.67	62.28	63.48	61.98	61.59	62.66	62.17	61.8	62.66
9/12/2013	65.52	64.25	67.11	65.15	64.07	66.56	63.11	62.41	64.38	62	61.51	62.41	62.14	61.59	62.53
9/13/2013	67.07	65.15	68.36	65.56	64.33	66.52	64.08	63.35	64.97	62.9	61.85	63.56	62.75	61.98	63.39
9/14/2013	66.12	64.93	67.33	64.59	63.39	66	62.95	62.53	63.69	62.23	61.93	62.88	62.31	62.06	62.7
9/15/2013	64.4	62.45	65.53	63.76	62.75	65.02	62.38	62.19	62.83	61.77	61.46	62.15	61.95	61.63	62.28
9/16/2013	63.02	62.11	64.29	62.9	62.02	63.73	62.17	61.8	62.88	61.56	61.21	61.93	61.72	61.33	62.11
9/17/2013	63	60.73	65.15	62.56	60.78	64.76	61.72	60.86	62.66	61.12	60.56	62.28	61.3	60.69	62.19
9/18/2013	62.51	60.99	64.46	62	60.82	62.92	60.85	60.47	61.38	60.29	60	60.65	60.48	60.22	60.86
9/19/2013	62.15	60.56	64.07	61.64	60.56	63.05	60.89	60.39	61.68	60.28	59.7	60.9	60.42	59.92	60.95
9/20/2013	62.97	61.42	64.97	62.25	61.08	64.03	61.2	60.65	61.85	60.51	59.92	61.21	60.61	60.05	61.33
9/21/2013	62.45	61.68	63.26	62.19	61.55	63.18	61.39	60.86	62.41	60.51	59.92	61.03	60.65	60.22	61.25
9/22/2013	62.58	61.55	64.07	62.24	61.68	63.3	61.69	61.29	62.06	61.09	60.65	61.42	61.23	60.78	61.63
9/23/2013	62.55	60.6	64.29	62.4	61.29	63.9	61.72	61.29	62.41	61.16	60.86	61.55	61.32	61.08	61.68
9/24/2013	62.37	60.99	63.9	62.08	61.46	62.83	61.22	61.03	61.51	60.76	60.56	61.12	60.95	60.69	61.29
9/25/2013	62.53	61.76	63.48	62.16	61.33	63.01	60.96	60.6	61.38	60.29	59.87	60.82	60.43	60.09	61.03
9/26/2013	62.56	61.42	64.46	62.4	61.25	63.9	61.48	60.52	62.79	60.61	59.87	61.85	60.65	60.05	61.68
9/27/2013	62.36	60.9	63.73	62.9	62.23	63.56	60.96	60.56	62.19	60.24	59.96	60.56	60.38	60.13	60.65
9/28/2013	63.13	62.15	63.9	61.87	60.65	62.79	60.78	60.3	61.55	60.22	59.96	60.73	60.39	60.09	60.73
9/29/2013	63.34	62.79	64.12	62.58	61.42	63.52	61.26	60.73	61.93	60.53	60.13	60.99	60.65	60.3	60.99
9/30/2013	63.4	61.25	64.29	63.15	62.23	63.82	61.32	60.69	62.53	60.56	60.22	60.9	60.7	60.39	60.95
10/1/2013	63.87	62.23	65.19	63.19	62.36	64.12	61.23	60.86	62.15	60.61	60.47	60.9	60.79	60.56	61.03
10/2/2013	63.27	62.75	63.99	62.64	61.16	63.48	61.21	60.82	61.89	60.71	60.47	61.25	60.94	60.65	61.38
10/3/2013	62.95	61.85	64.76	62.64	61.72	63.35	61.65	61.21	62.15	61.11	60.73	61.46	61.33	60.9	61.68
10/4/2013	62.91	61.72	64.5	62.73	61.68	63.78	61.98	61.59	62.75	61.41	61.12	61.72	61.62	61.33	61.89
10/5/2013	63.89	62.36	65.32	63.13	61.93	64.07	62.09	61.68	62.75	61.57	61.33	62.06	61.78	61.59	62.19
10/6/2013	62.73	61.63	64.2	62.87	61.72	63.9	62.28	61.68	63.22	61.84	61.38	62.41	62.02	61.68	62.62
10/7/2013	63.5	62.62	64.67	62.8	61.89	64.33	62.1	61.63	63.01	61.58	61.46	62.06	61.86	61.72	62.23
10/8/2013	63.08	61.59	64.38	62.95	61.8	64.07	62.75	62.11	63.39	62.18	61.8	62.79	62.33	62.06	62.79
10/9/2013	61.99	60.56	63.73	62.28	61.42	63.3	62.35	61.76	63.39	62.07	61.68	62.75	62.28	62.02	62.62
10/10/2013	63.01	61.72	64.2	62.62	61.63	63.73	62.02	61.85	62.32	61.78	61.63	61.93	62.05	61.89	62.15
10/11/2013	63.44	62.11	64.85	63.25	61.98	64.25	62.11	61.85	62.53	61.63	61.33	61.85	61.84	61.51	61.98
10/12/2013	62.45	60.95	63.78	62.53	61.38	63.65	61.94	61.42	63.48	61.54	61.21	62.06	61.83	61.59	62.23
10/13/2013	61.59	59.53	62.96	62.51	61.38	63.22	61.68	61.38	62.19	61.27	61.12	61.51	61.48	61.38	61.72
10/14/2013	62.07	60.35	63.73	61.99	61.16	63.13	61.31	61.08	61.63	61.05	60.99	61.25	61.3	61.25	61.46
10/15/2013	62.36	61.16	63.78	62.07	61.03	63.56	61.31	60.9	62.23	60.91	60.73	61.33	61.17	61.03	61.38
10/16/2013	62.69	61.21	63.95	62.25	60.95	63.73	61.22	60.9	62.23	60.84	60.6	61.25	61.08	60.86	61.33
10/17/2013	62.26	61.38	63.18	61.93	60.9	62.79	60.96	60.73	61.51	60.58	60.35	60.86	60.83	60.6	61.08
10/18/2013	61.87	60.95	62.79	61.8	60.99	62.7	61.3	60.86	62.11	60.7	60.47	61.08	60.93	60.69	61.25
10/19/2013	61.38	60.65	62.36	61.36	60.69	62.36	61.21	60.78	61.85	60.68	60.47	61.08	60.91	60.73	61.08
10/20/2013	61.09	60.3	61.8	61.08	60.35	61.8	60.92	60.47	61.42	60.51	60.3	61.08	60.74	60.6	60.86
10/21/2013	60.86	59.96	62.02	60.79	60	61.8	60.39	60.05	60.99	60.01	59.66	60.39	60.24	59.96	60.6

10/22/2013	60.65	59.79	61.68	60.61	59.96	61.59	60	59.7	60.43	59.56	59.19	59.87	59.77	59.4	60.09
10/23/2013	60.09	59.45	60.82	60.06	59.45	60.82	59.67	59.36	60.13	59.29	58.84	59.57	59.49	59.06	59.83
10/24/2013	59.31	58.46	59.79	59.31	58.5	59.79	59.22	58.71	59.79	58.59	58.15	58.97	58.77	58.41	59.19
10/25/2013	58.42	57.72	58.84	58.41	57.81	58.89	58.05	57.68	58.71	57.74	57.42	58.33	57.99	57.64	58.5
10/26/2013	57.44	56.94	58.15	57.48	57.07	58.11	57.19	56.43	57.72	56.65	55.91	57.38	56.87	56.17	57.68
10/27/2013	56.86	56.43	57.55	56.85	56.47	57.55	56.6	56.3	56.94	56.08	55.91	56.21	56.31	56.04	56.43
10/28/2013	56.24	55.56	56.86	56.22	55.65	56.82	55.91	55.39	56.64	55.43	55.08	55.99	55.62	55.3	56.17
10/29/2013	55.47	53.91	57.16	55.72	53.91	56.99	55.16	54.17	56.21	54.9	54.3	55.47	55.1	54.52	55.6
10/30/2013	55.45	54.95	56.47	55.23	54.43	56.43	54.47	54.13	55.08	54.12	53.91	54.34	54.34	54.17	54.56
10/31/2013	55.15	54.43	55.65	55.01	54.04	55.65	54.13	53.78	54.82	53.65	53.34	54.08	53.88	53.65	54.26
11/1/2013	54.88	54.39	55.56	54.86	54.39	55.52	54.42	53.65	55.08	53.41	52.86	54.39	53.68	53.25	54.34
11/2/2013	55.5	54.69	57.12	55.27	54.3	56.51	54.4	53.91	55.52	53.73	53.43	54.73	53.89	53.65	54.3
11/3/2013	54.68	52.95	56.25	54.65	52.95	56.04	54.22	53.04	55.34	53.81	53.12	54.47	53.91	53.56	54.52
11/4/2013	53.97	52.55	55.21	53.83	52.55	55.08	53.25	52.69	54.13	52.99	52.34	53.69	53.29	52.64	53.87
11/5/2013	53.49	52.29	54.47	53.2	52.2	54.08	52.62	52.25	52.9	52.28	52.07	52.51	52.52	52.29	52.73
11/6/2013	52.89	52.16	53.6	52.81	52.07	53.65	52.44	51.76	53.73	51.77	51.19	52.38	51.95	51.54	52.29
11/7/2013	53	52.07	54.21	53.19	52.07	54.26	52.79	52.07	53.6	51.88	51.33	52.73	52	51.63	52.51
11/8/2013	52.65	51.28	53.6	52.67	51.72	53.91	52.26	51.68	53.04	51.54	51.24	51.9	51.68	51.5	52.03
11/9/2013	51.53	50.89	51.9	51.51	50.93	51.94	51.36	50.84	52.07	50.96	50.66	51.5	51.22	50.93	51.63
11/10/2013	51.34	50.75	51.94	51.21	50.62	51.72	50.9	50.49	51.46	50.45	50.05	50.97	50.68	50.31	51.02
11/11/2013	50.63	49.87	51.28	50.63	49.96	51.28	50.51	50.09	51.06	50.01	49.74	50.58	50.28	50.05	50.62
11/12/2013	50.18	48.9	50.89	50.22	49.07	50.93	49.95	49.2	50.49	49.6	49.03	49.96	49.89	49.34	50.14
11/13/2013	49.37	48.49	50.4	49.31	48.54	50.36	49.1	48.54	50.36	48.74	48.32	49.69	48.97	48.58	49.91
11/14/2013	48.5	47.78	49.07	48.5	47.74	49.16	48.42	47.91	49.38	47.93	47.51	49.12	48.12	47.83	48.63
11/15/2013	48.2	47.38	48.85	48.19	47.42	48.81	47.97	47.47	48.76	47.35	47.11	47.91	47.57	47.38	47.87
11/16/2013	48.17	47.38	49.2	47.98	47.29	48.54	47.68	47.29	48.41	47.24	47.02	47.78	47.49	47.33	47.78
11/17/2013	48.44	47.29	49.52	48.13	47.2	49.07	47.51	47.15	48.23	47.09	46.89	47.6	47.3	47.11	47.65
11/18/2013	49.02	48.09	49.83	48.64	47.65	49.38	47.63	47.15	48.81	47.05	46.8	47.65	47.28	47.06	47.74
11/19/2013	47.95	46.71	48.94	48	46.8	48.76	47.83	46.97	48.45	47.19	46.8	47.74	47.4	47.11	47.74
11/20/2013	47.38	46.57	48.41	47.38	46.48	48.36	47.01	46.44	48.05	46.63	46.17	47.11	46.95	46.48	47.56
11/21/2013	47.22	46.26	47.87	47.12	46.3	47.74	46.57	46.21	47.47	46.14	45.99	46.35	46.39	46.17	46.53
11/22/2013	46.98	46.12	47.87	47.08	46.21	47.87	46.58	46.17	47.56	46.11	45.9	46.84	46.34	46.17	46.84
11/23/2013	46.9	46.17	47.65	46.88	46.21	47.51	46.36	46.08	46.84	45.97	45.81	46.21	46.23	46.08	46.44
11/24/2013	45.38	44.86	46.03	45.42	44.81	46.12	45.58	45.04	46.3	45.47	44.86	46.03	45.77	45.08	46.26
11/25/2013	44.22	43.76	44.67	44.2	43.85	44.76	44.14	43.58	45.08	43.81	43.4	44.9	44.06	43.67	45.17
11/26/2013	44.01	43.44	44.9	44.03	43.4	44.81	43.81	43.53	44.76	43.41	43.31	44.04	43.68	43.58	43.95
11/27/2013	45.18	42.76	47.87	44.37	42.89	46.08	43.71	43.12	44.63	43.51	43.12	44.31	43.77	43.44	44.4
11/28/2013	44.03	42.39	46.84	43.74	42.66	45.08	43.66	43.35	44.26	43.33	43.12	43.62	43.6	43.4	43.81
11/29/2013	42.07	40.91	43.76	42.22	41.18	43.4	43.26	42.06	43.81	43.26	42.94	43.49	43.59	43.26	43.85
11/30/2013	40.71	39.74	42.2	40.84	39.74	41.55	42.98	41	43.67	43.07	42.62	43.53	43.36	42.94	43.72

Moakley Bridge Temperature (°F)

Date	Gillette B 0.5 m			Gillette B 1.5 m			Gillette B 3.0 m			Gillette B 4.5 m			Gillette B 5.5 m		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
12/1/2012	44.07	42.53	45.81	45.32	44.4	45.94	44.9	44.49	45.35	45.04	44.72	45.31	45.52	45.26	45.67
12/2/2012	44.8	42.85	46.12	45.43	44.49	46.3	44.61	44.31	45.04	44.61	44.36	44.81	45.07	44.81	45.31
12/3/2012	45.49	44.76	46.39	45.64	44.95	46.66	45.08	44.26	45.9	44.58	44.22	45.26	44.93	44.72	45.31
12/4/2012	45.94	44.49	46.93	45.96	44.86	46.66	44.79	44.22	45.71	44.47	44.26	44.86	44.87	44.72	45.22
12/5/2012	45.92	44.86	47.02	46.22	44.99	47.06	45.52	44.17	46.35	44.76	44.13	46.17	44.93	44.63	45.67
12/6/2012	44.34	43.4	45.62	44.55	43.4	45.67	44.47	43.81	45.85	44.88	44.04	46.17	45.4	44.86	46.48
12/7/2012	45.37	44.45	45.9	45.33	44.49	45.9	44.49	44.26	45.08	44.44	44.36	44.54	44.94	44.86	45.13
12/8/2012	45.1	43.95	46.03	45.36	44.76	45.9	44.59	44.26	45.4	44.48	44.36	44.81	44.96	44.86	45.13
12/9/2012	45.07	44.13	46.21	45.11	44.45	46.03	44.63	44.26	45.4	44.46	44.36	44.81	44.92	44.86	45.08
12/10/2012	45.95	44.49	47.83	45.08	44.4	46.12	44.39	44.22	45.31	44.44	44.36	44.58	44.95	44.86	45.04
12/11/2012	46.32	45.22	48.09	46.06	44.9	47.2	44.57	44.31	45.67	44.48	44.36	44.63	44.97	44.86	45.13
12/12/2012	44.66	43.58	45.9	44.83	43.81	45.99	44.44	43.99	45.4	44.51	44.31	44.67	45.02	44.9	45.17
12/13/2012	44.03	42.85	45.4	44.8	43.95	45.81	44.46	44.04	44.95	44.5	44.36	44.76	45.02	44.9	45.17
12/14/2012	44.45	42.76	45.22	44.56	43.35	45.17	44.32	43.9	44.81	44.36	44.13	44.63	44.84	44.63	44.99
12/15/2012	43.72	42.66	44.86	44.21	43.31	45.08	44.06	43.31	44.58	44.16	43.76	44.4	44.64	44.45	44.81
12/16/2012	42.94	42.02	43.95	43.78	42.57	45.13	43.52	42.98	44.13	43.75	43.35	44.17	44.33	43.95	44.72
12/17/2012	43.24	42.48	44.76	43.56	42.85	45.04	43.32	42.76	44.04	43.46	42.98	44.04	43.95	43.72	44.31
12/18/2012	44.64	43.44	46.75	44.4	43.58	45.81	43.32	43.21	43.85	43.34	43.26	43.53	43.8	43.72	43.95
12/19/2012	44.08	43.17	45.04	43.99	43.31	45.35	43.58	43.12	44.72	43.4	43.17	43.85	43.79	43.62	44.13
12/20/2012	43.75	42.85	44.76	44.69	43.21	45.49	43.56	43.35	44.26	43.53	43.44	43.62	44.03	43.85	44.13
12/21/2012	44.21	42.71	45.49	44.07	43.12	45.26	43.44	43.26	43.85	43.54	43.44	43.76	44.04	43.95	44.17
12/22/2012	42.89	41.14	44.22	44.1	42.57	44.58	43.7	43.44	44.45	43.58	43.49	43.72	44.08	43.99	44.17
12/23/2012	41.75	39.69	43.58	43.49	41.97	44.22	43.62	43.35	44.36	43.59	43.4	43.81	44.08	43.85	44.17
12/24/2012	42.33	40.35	43.58	43.16	42.57	43.72	43.39	43.03	43.76	43.42	43.26	43.67	43.91	43.76	44.04
12/25/2012	42.2	40.86	43.49	43.97	43.08	44.4	43.24	43.03	43.76	43.27	43.08	43.49	43.77	43.58	43.95
12/26/2012	41.59	40.06	43.53	42.76	41.42	43.9	42.88	41.46	43.49	43.01	42.02	43.4	43.58	42.85	43.85
12/27/2012	41.9	41.28	43.4	41.75	41.37	42.39	41.83	41.23	42.66	42.14	41.6	42.71	42.9	42.29	43.85
12/28/2012	42.18	40.2	43.85	42.36	41.42	43.76	42.03	41.74	42.34	42.02	41.79	42.2	42.46	42.29	42.66
12/29/2012	40.61	38.61	43.03	42.45	39.92	43.81	41.84	41.37	42.62	41.88	41.6	42.16	42.4	42.2	42.53
12/30/2012	40.15	38.89	42.16	41.68	39.92	42.98	41.72	41.37	41.97	41.8	41.6	41.93	42.29	42.2	42.39
12/31/2012	40.21	38.37	41.65	40.97	39.78	41.93	41.22	40.72	41.93	41.43	41	41.93	42	41.65	42.39
1/1/2013	39.94	38.61	41.93	41.42	40.25	42.25	41.35	41	42.11	41.25	41.09	41.46	41.8	41.65	41.93
1/2/2013	38.75	35.93	40.81	41.11	39.36	42.11	41.3	40.76	41.88	41.31	41.09	41.46	41.88	41.69	41.97
1/3/2013	37.65	35.15	40.67	40.08	38.84	41.46	40.8	39.78	41.6	41.08	40.72	41.46	41.66	41.32	41.97
1/4/2013	40.41	38.42	41.14	40.71	39.12	41.32	40.55	39.97	41.09	40.49	40.44	40.72	41.05	40.91	41.42
1/5/2013	39.6	37.61	41.14	40.77	40.11	41.46	40.66	40.11	41.42	40.35	40.2	40.49	40.83	40.72	41
1/6/2013	39.56	37.8	41.37	41.16	40.44	41.74	40.16	39.78	41.18	40.13	39.92	40.39	40.67	40.58	40.91
1/7/2013	40.01	38.61	41.51	40.9	40.06	41.83	40.42	39.92	41.32	40.22	40.02	40.86	40.71	40.58	40.95
1/8/2013	39.72	37.42	41.42	40.61	38.94	41.97	40.5	40.02	41.18	40.41	40.11	41.18	40.87	40.76	41.28
1/9/2013	39.78	38.32	41	40.91	39.64	41.74	40.58	40.16	41.42	40.45	40.3	40.72	40.98	40.86	41.09
1/10/2013	40.07	39.41	41.42	40.68	39.78	42.02	40.65	39.78	41.6	40.49	40.06	41.14	41.04	40.72	41.37
1/11/2013	40.33	39.12	41.79	41.07	39.78	41.93	40.63	40.25	41.04	40.67	40.49	40.76	41.23	41.09	41.32
1/12/2013	41.12	39.88	42.34	41.29	40.44	42.11	40.63	40.49	40.86	40.73	40.63	40.81	41.3	41.18	41.37
1/13/2013	41.97	40.91	42.71	41.5	40.86	42.53	40.77	40.58	41.37	40.81	40.72	40.91	41.37	41.28	41.46
1/14/2013	42.4	41.65	43.58	42.36	41.18	43.58	41.5	40.76	42.53	41.09	40.86	41.65	41.57	41.42	41.93
1/15/2013	41.6	40.95	42.25	42.35	41.42	43.17	41.69	41.37	42.66	41.47	41.32	41.69	41.99	41.83	42.29
1/16/2013	40.97	39.78	42.02	42.02	40.86	42.62	41.66	41.55	41.74	41.79	41.69	41.88	42.36	42.29	42.43
1/17/2013	41.62	39.55	42.62	42.16	41.69	42.94	41.91	41.65	42.76	41.96	41.83	42.16	42.52	42.39	42.62
1/18/2013	39.87	38.84	41.28	41.12	39.78	42.06	41.93	41.28	42.71	42.08	41.51	42.62	42.6	42.43	42.66
1/19/2013	41.03	39.83	41.97	41.52	40.76	42.16	41.67	41.09	42.2	41.72	41.51	42.2	42.15	42.02	42.39
1/20/2013	40.75	39.03	42.48	41.71	39.97	42.76	42.12	41.18	42.76	41.86	41.51	42.48	42.19	42.11	42.34
1/21/2013	39.78	37.8	41.55	41.17	39.17	42.8	41.65	40.44	42.76	41.45	40.67	41.97	41.89	41.37	42.29
1/22/2013	39.2	36.51	41.79	41.25	39.97	42.06	41	40.2	42.11	40.86	40.53	41.88	41.32	41.09	42.06
1/23/2013	39.5	38.51	40.86	39.75	38.7	41.04	40	39.12	40.86	40.25	39.5	40.76	40.81	40.2	41.23
1/24/2013	38.47	36.7	40.02	38.64	37.13	40.16	38.37	37.08	39.88	39.05	38.18	40.11	39.73	38.94	40.44
1/25/2013	38.07	36.27	39.17	38.29	37.42	39.27	37.91	37.18	38.98	37.79	37.32	38.56	38.35	37.75	39.27
1/26/2013	36.77	36.03	37.85	37.42	36.27	38.37	37.7	36.7	38.37	37.4	37.08	37.7	37.79	37.56	37.94
1/27/2013	36.91	35.78	38.18	37.01	35.93	38.32	36.61	35.83	37.47	36.81	36.17	37.27	37.39	36.8	37.89
1/28/2013	36.66	35.4	37.47	36.85	35.88	37.56	36.2	35.69	37.04	36.09	35.78	36.41	36.58	36.36	37.08
1/29/2013	36.73	35.35	37.75	36.78	35.78	37.66	36.01	35.69	36.65	35.88	35.73	36.22	36.41	36.27	36.75
1/30/2013	37.58	36.03	38.51	37.13	36.07	37.75	36.27	35.64	37.47	35.96	35.59	37.08	36.28	36.07	36.8
1/31/2013	38.56	37.32	40.02	38.49	37.42	39.88	37.8	36.84	39.31	37	35.88	37.8	37.15	36.22	38.27
2/1/2013	37.09	35.83	38.13	37.8	37.08	38.27	37.74	37.13	38.42	37.25	36.84	37.66	37.62	37.13	37.99
2/2/2013	36.77	35.54	37.99	37.26	35.93	38.18	37.42	37.08	37.94	37.5	37.32	37.61	38.14	37.99	38.23
2/3/2013	35.92	35.01	37.47	37.25	36.65	37.8	37.38	36.89	37.99	37.46	37.23	37.85	38.03	37.85	38.23
2/4/2013	36.22	33.78	37.61	37.4	36.94	37.89	37.17	36.84	37.42	37.27	37.18	37.47	37.86	37.8	37.99
2/5/2013	36.69	35.98	38.18	37	36.27	38.18	37.08	36.41	37.8	37.07	36.8	37.37	37.64	37.42	37.94
2/6/2013	37.2	35.1	38.65	37.86	37.13	38.46	36.96	36.8	37.51	36.91	36.8	37.18	37.43	37.32	37.66
2/7/2013	36.41	34.32	37.61	37.43	36.46	38.13	37.06	36.51	37.7	36.86	36.55	37.23	37.35	37.18	37.56
2/8/2013	35.98	33.68	37.75	36.33	33.98	38.08	36.17	34.27	37.04	36.45	34.96	36.89	37.11	36.31	37.42
2/9/2013	33.44	32.14	34.71	34.32	32.39	35.69	34.98	34.12	36.03	35.41	34.81	36.36	35.99	35.44	36.94
2/10/2013	34.77	32.79	37.04	35.17	33.98	36.65	34.65	34.03	35.44	34.62	34.22	35.1	35.22	34.91	35.54
2/11/2013	35.39	34.62	36.36	35.27	34.66	35.98	34.68	34.42	35.35	34.51	34.32	34.71	35.02	34.86	35.2
2/12/2013	36	35.3	36.65	35.69	34.91	36.51	34.89	34.52	35.83	34.53	34.37	34.86	35.02	34.91	35.2
2/13/2013	35.74	34.96	36.84	35.79	34.96	36.99	35.01	34.71	35.83	34.75	34.57	35.15	35.27	35.1	35.59
2/14/2013	36.22	35.06	38.08	36.09	35.35	37.32	35.19	34.91	35.73	34.97	34.91	35.1	35.53	35.44	35.64
2/15/2013	36.37	35.4	37.32	36.27	35.4	37.27	35.5	35.1	36.75	35.2	35.06	35.83	35.74	35.64	36.07
2/16/2013	36.17	35.69	36.99	36.75	35.83	37.51	35.85	35.49	36.22	35.55	35.4	35.78	36.05	35.88	36.17
2/17/2013	34.97	34.08	36.27	36.19	35.1	37.23	35.65	35.4	35.88	35.74	35.64	35.83	36.38	36.22	36.51

2/18/2013	35.11	33.58	36.17	35.39	34.32	36.22	35.31	34.76	35.93	35.53	35.2	35.83	36.24	35.83	36.55
2/19/2013	36.01	34.91	36.89	36.21	35.2	36.94	35.43	34.91	36.27	35.17	35.01	35.54	35.74	35.59	35.88
2/20/2013	36.66	35.35	37.7	36.76	35.93	37.42	35.76	35.2	36.46	35.5	35.25	36.03	36.08	35.88	36.27
2/21/2013	35.58	34.27	37.61	35.92	34.96	37.42	35.99	35.54	36.75	35.96	35.59	37.27	36.52	36.22	37.42
2/22/2013	35.62	34.52	36.65	36.41	35.15	37.32	36.53	35.73	37.27	36.2	35.83	37.32	36.78	36.65	36.94
2/23/2013	36.64	35.73	37.66	37.08	36.27	38.08	36.41	36.07	37.27	36.26	36.12	36.65	36.83	36.7	36.99
2/24/2013	36.55	35.73	37.99	37.4	36.22	38.08	36.68	36.17	37.61	36.38	36.22	36.6	36.92	36.84	37.13
2/25/2013	37.43	35.69	38.65	37.28	36.22	38.08	36.35	36.22	36.55	36.38	36.27	36.51	36.97	36.89	37.04
2/26/2013	37.89	35.88	39.22	37.85	36.51	38.84	36.68	36.41	37.37	36.59	36.46	36.89	37.14	37.04	37.32
2/27/2013	38.14	37.7	38.7	38.5	37.8	39.36	37.63	36.94	38.65	37.15	36.8	37.61	37.56	37.27	37.75
2/28/2013	38.83	37.51	40.86	38.39	37.56	39.97	37.25	37.08	37.56	37.22	37.04	37.51	37.79	37.61	38.08
3/1/2013	38.84	37.8	39.6	38.91	38.28	40.15	37.55	37.33	37.85	37.6	37.42	37.89	38.17	37.99	38.52
3/2/2013	39.11	37.89	40.12	39.03	38.37	39.97	37.99	37.74	38.23	38.06	37.85	38.23	38.64	38.41	38.75
3/3/2013	39.62	38.46	40.91	39.34	38.75	40.15	38.32	38.14	38.46	38.35	38.17	38.46	38.92	38.75	39.04
3/4/2013	39.12	37.27	40.62	39.55	38.7	41.14	38.71	38.41	39.54	38.66	38.41	38.89	39.22	39.04	39.36
3/5/2013	39.41	38.17	40.86	39.91	38.61	40.91	39.18	38.79	40.48	39.03	38.84	39.16	39.56	39.31	39.69
3/6/2013	39.44	39.13	40.24	39.86	39.16	40.77	39.78	38.93	40.48	39.26	38.98	39.69	39.74	39.54	40.24
3/7/2013	38.57	37.94	39.42	39.03	38.41	39.65	39.34	38.84	39.92	39.24	39.04	39.78	39.74	39.6	39.88
3/8/2013	37.4	36.32	38.32	38.65	37.36	40.12	38.84	37.65	39.36	38.93	38.28	39.42	39.46	39.13	39.78
3/9/2013	38.79	37.22	40.35	39.26	37.8	40.53	38.9	38.37	39.78	38.77	38.46	39.31	39.24	39.07	39.45
3/10/2013	39.72	38.32	40.71	40.15	39.6	40.53	38.9	38.61	39.31	38.79	38.66	38.93	39.28	39.16	39.36
3/11/2013	40.72	39.22	42.75	39.94	39.22	41.83	38.96	38.7	39.31	38.84	38.7	39.13	39.31	39.22	39.45
3/12/2013	41.29	39.97	42.89	41.15	39.6	42.12	39.29	38.84	40.15	39	38.79	39.6	39.39	39.22	39.69
3/13/2013	42.18	40.53	45.21	41.46	40.06	43.03	39.34	39.07	39.78	39.12	38.93	39.42	39.57	39.36	39.88
3/14/2013	40.88	39.07	42.53	40.86	39.51	42.21	39.69	39.22	40.44	39.55	39.22	39.88	40.07	39.88	40.39
3/15/2013	39.25	36.03	40.91	40.13	39.16	40.91	39.86	39.22	40.68	39.78	39.54	39.92	40.35	40.06	40.44
3/16/2013	40.07	38.89	41.23	40.64	39.88	41.14	39.59	39.36	40.06	39.48	39.36	39.65	39.95	39.88	40.06
3/17/2013	40.42	39.13	41.74	40.85	40.01	41.5	39.6	39.36	40.39	39.43	39.31	39.6	39.91	39.83	40.01
3/18/2013	40.27	38.79	41.47	40.26	39.51	41.18	39.63	39.31	39.97	39.47	39.31	39.88	39.93	39.83	40.12
3/19/2013	38.17	37.13	39.74	38.9	37.74	40.15	39.22	37.74	40.53	39.46	38.79	40.39	39.96	39.42	40.59
3/20/2013	39.65	37.71	41.74	39.66	38.89	40.95	38.89	38.7	39.31	38.86	38.7	39.04	39.39	39.16	39.6
3/21/2013	39.62	38.55	40.77	40.23	39.42	41	39.01	38.7	39.74	38.76	38.66	39.04	39.22	39.13	39.36
3/22/2013	40.24	38.28	41.92	40.33	39.31	40.86	38.84	38.61	39.22	38.69	38.61	38.84	39.17	39.13	39.27
3/23/2013	39.43	37.33	41.32	40.27	39.51	40.82	39.16	38.61	40.59	38.76	38.61	39.22	39.25	39.13	39.36
3/24/2013	39.56	37.62	41.56	40.59	39.69	41.32	39.52	38.84	40.68	38.98	38.79	39.42	39.45	39.31	39.6
3/25/2013	40.82	39.54	41.65	41.16	40.44	41.79	39.93	39.04	41.09	39.37	38.98	40.24	39.73	39.51	40.24
3/26/2013	41.24	39.74	42.8	41	40.01	42.12	39.54	39.31	39.88	39.42	39.22	39.69	39.86	39.69	40.06
3/27/2013	41.25	39.69	43.21	41.09	39.88	43.16	39.99	39.54	41.38	39.66	39.45	40.01	40.13	39.97	40.48
3/28/2013	41.69	40.62	42.57	41.62	40.62	42.85	40.07	39.78	40.24	39.99	39.78	40.21	40.5	40.3	40.62
3/29/2013	42.06	40.82	43.45	41.71	40.77	43.39	40.41	40.01	40.95	40.21	40.01	40.62	40.67	40.53	40.95
3/30/2013	43.54	41.92	45.75	42.7	41.27	44.58	40.78	40.35	41.47	40.52	40.24	41	40.97	40.82	41.32
3/31/2013	43.96	42.62	46.22	42.87	41.65	44.13	41.07	40.71	42.12	40.8	40.59	41.18	41.24	41.09	41.47
4/1/2013	43.84	42.33	46.49	43.38	42.39	45.39	41.76	41.38	42.3	41.35	40.95	41.65	41.71	41.32	42.03
4/2/2013	42.32	40.68	43.3	42.65	41.65	43.39	42.17	41.56	42.98	41.82	41.5	42.21	42.28	42.03	42.53
4/3/2013	42.39	39.74	44.31	42.69	41.47	43.9	42.37	41.59	43.45	42.09	41.88	42.39	42.58	42.44	42.85
4/4/2013	43.2	40.24	44.82	43.37	41.74	44.94	42.66	41.74	44.31	41.92	41.7	42.21	42.32	42.12	42.57
4/5/2013	43.55	42.15	45.36	43.4	42.3	45.36	42.89	41.74	44.17	42.07	41.65	43.03	42.33	42.12	42.8
4/6/2013	44.61	41.92	46.11	43.83	42.03	45.54	42.59	42.06	43.48	42.16	41.83	42.57	42.45	42.24	42.71
4/7/2013	43.8	42.66	45.9	43.48	42.66	44.53	42.62	42.12	43.45	42.08	41.83	42.3	42.48	42.24	42.62
4/8/2013	44.36	42.71	46.26	43.95	42.71	46.22	43.14	42.44	44.67	42.72	42.03	43.66	42.88	42.39	43.48
4/9/2013	46.57	44.13	50.22	45.66	43.86	48.45	43.3	42.66	44.73	42.69	42.48	43.45	43.03	42.75	43.45
4/10/2013	46.87	45.27	49.33	46.78	44.76	48.09	44.04	42.94	45.9	43.06	42.62	43.86	43.38	43.07	43.95
4/11/2013	47.49	45.93	48.85	46.85	45.54	48.22	44.04	43.48	45.12	43.53	43.12	44.13	43.85	43.48	44.31
4/12/2013	46.21	44.94	48	45.97	45.18	47.46	44.73	43.75	46.49	44.12	43.54	45.93	44.38	43.95	45.21
4/13/2013	46.16	45.18	47.28	45.31	44.35	46.17	44.17	44.04	44.44	44.13	44.04	44.31	44.57	44.44	44.67
4/14/2013	46.45	45.72	47.34	45.26	44.58	46.02	44.22	44.08	44.67	44.14	44.08	44.22	44.59	44.53	44.67
4/15/2013	45.9	44.85	46.98	45.73	44.67	47.1	44.8	44.13	45.81	44.46	44.13	45.09	44.77	44.58	45.18
4/16/2013	46.63	45.45	47.37	46.67	45.57	47.52	45.95	45	47.34	44.93	44.67	46.44	45.2	44.94	45.45
4/17/2013	48.51	45.93	51.15	48.1	45.99	51.06	46.92	45.66	48.22	46.27	45.27	47.43	45.82	45.39	46.56
4/18/2013	49.55	48	50.94	49.79	48.49	50.76	47.05	45.9	49.24	46.29	45.3	48.15	46.43	45.72	47.88
4/19/2013	49.63	48.58	50.49	49.54	48.15	50.49	48.29	47.07	50.05	47.16	46.35	47.88	47.22	46.49	48.22
4/20/2013	50.71	49.24	52.43	49.93	48.9	51.24	49.05	46.98	49.73	47.84	46.65	49.6	47.38	46.65	49.73
4/21/2013	49.64	48.18	50.7	50.29	49.39	51.19	48.26	46.98	49.73	47.44	46.65	48.49	47.78	47.19	48.31
4/22/2013	49.85	48	50.7	50.44	49.39	51.46	49.21	47.88	50.4	48.26	47.43	49.33	48.43	47.88	49.48
4/23/2013	48.7	48.15	49.91	49.41	48.27	51.19	48.91	48.09	50	48.4	48	49.33	48.61	48.36	49.42
4/24/2013	49.98	48.18	52.59	49.27	48.09	51.1	48.22	47.82	48.63	48.04	47.88	48.36	48.39	48.27	48.58
4/25/2013	50.28	49.33	52.68	50.25	48.85	52.43	49.03	48.06	51.03	48.31	47.97	48.9	48.54	48.15	49.03
4/26/2013	51.04	48.99	53.2	50.96	49.21	53.04	49.61	48.67	50.4	48.65	48.22	49.48	48.75	48.18	49.64
4/27/2013	51.98	50.09	54.61	50.88	49.48	52.59	49.07	48.54	49.82	48.61	48.15	49.21	48.82	48.4	49.3
4/28/2013	52.66	50.4	55.38	51.42	50.14	54.95	49.85	49.03	51.8	49.1	48.58	49.73	49.24	48.85	49.87
4/29/2013	52.7	51.1	54.34	52.24	50.94	54.43	50.29	49.24	52.99	49.44	48.9	50.97	49.63	49.21	50.54
4/30/2013	53.58	51.98	55.99	53.36	51.28	55.65	51.44	50	54.09	49.98	49.42	51.85	50.08	49.64	50.76
5/1/2013	54.97	53.11	57.11	54.32	52.68	55.51	51.54	50.18	53.38	50.45	49.82	52.29	50.52	50.09	51.64
5/2/2013	55.45	54.34	56.39	54.89	52.86	56.64	52.44	50.49	55.56	51.19	50.18	54.43	51.11	50.54	53.35
5/3/2013	55.17	53.26	56.55	55.75	54.95	57.11	53.06	51.15	54.91	51.71	50.76	53.42	51.72	51.03	52.9
5/4/2013	55.49	53.11	56.52	54.84	53.56	55.69	52.94	51.85	54.21	52.12	51.33	53.42	52.18	51.49	53.2
5/5/2013	55.03	52.43	56.61	55.09	54.12	55.99	53.59	52.86	54.43	52.95	52.07	54.12	52.96	52.03	54.21
5/6/2013	55.43	53.69	57.42	55.33	53.56	56.89	54.06	53.08	56.03	53.19	52.47	54.43	53.21	52.65	54.03
5/7/2013	57.14	54.48	59.67	56.54	54.3	59.14	54.31	53.26	55.81	53.38	52.74	54.3	53.5	52.99	54.18
5/8/2013	57.86	55.99	59.52	57.27	55.29	59.4	55.11	53.69	56.98	53.82	53.2	54.86	53.96	53.47	54.86
5/9/2013	58.53	56.73	60.01	57.5	55.9	59.05	54.8	54.09	56.64	53.99	53.56	54.73	54.19	53.82	54.64
5/10/2013	59.61	56.61	61.9	57.85	55.29	60.3	54.95	54.21	57.51	54.41	53.82	55.08	54.68	54.21	55.26

5/11/2013	58.53	56.77	60.78	57.93	56.55	59.95	55.63	54.73	57.25	54.84	54.39	55.69	55.07	54.73	55.78
5/12/2013	58.46	56.68	60.82	57.48	56.12	59.11	56.26	55.26	56.98	55.31	54.95	55.99	55.41	55.04	55.72
5/13/2013	57.09	55.38	58.46	57.36	55.78	58.68	55.73	55.26	56.68	55.19	54.99	55.38	55.45	55.29	55.6
5/14/2013	56.86	55.13	58.89	56.6	55.35	58.84	55.69	54.55	56.82	54.97	54.3	55.6	55.08	54.61	55.78
5/15/2013	56.64	55.29	58.19	56.61	55.17	57.97	55	54.25	56.34	54.26	54.03	54.39	54.47	54.3	54.64
5/16/2013	57.1	54.61	58.89	56.95	54.82	58.96	55.7	54.7	58.37	54.6	54.18	55.38	54.68	54.39	54.99
5/17/2013	57.28	55.6	59.23	57.7	56.25	59.4	56.17	54.52	57.47	54.14	53.47	55.96	53.96	53.42	54.86
5/18/2013	57.86	56.46	59.18	57.25	55.51	59.05	55.23	54.34	55.99	54.47	53.56	55.78	54.46	53.69	56.12
5/19/2013	57.76	56.86	58.96	57.44	56.34	58.37	55.74	54.7	57.38	55.04	54.18	56.64	55.03	54.12	56.95
5/20/2013	59.66	57.97	63.14	58.65	56.03	61.72	55.75	55.04	57.69	54.94	54.48	55.47	55.07	54.43	55.56
5/21/2013	60.76	59.4	61.75	60.56	58.5	62.49	57.16	55.04	61.72	55.69	54.55	59.36	55.57	54.86	57.97
5/22/2013	60.5	58.32	62.02	59.36	57.42	61.5	56.72	55.38	57.97	55.75	54.95	56.95	55.8	54.99	56.86
5/23/2013	59.95	58.12	62.02	58.97	57.04	61.5	56.65	55.81	57.97	55.92	55.56	56.46	56.08	55.51	56.55
5/24/2013	59.02	58.12	60.48	58.57	57.38	59.7	57.37	56.46	58.89	56.42	55.78	57.72	56.57	56.08	57.11
5/25/2013	58.1	56.03	58.75	58.18	56.86	59.67	57.1	56.73	58.46	56.75	56.43	56.98	57.06	56.68	57.33
5/26/2013	56.97	55.78	58.41	57.08	56.3	58.06	56.8	56.39	57.16	56.77	56.52	56.95	57.11	56.95	57.33
5/27/2013	57.6	55.96	60.57	57.43	56.25	59.52	56.67	56.3	57.6	56.46	56.21	56.73	56.73	56.34	57.11
5/28/2013	58.81	57.25	60.85	58.48	57.42	60.57	57.19	56.39	58.12	56.58	56.17	57.33	56.76	56.39	57.38
5/29/2013	59.96	58.93	62.02	59.34	58.24	61.84	57.59	57.07	58.62	56.91	56.61	57.33	57.06	56.77	57.38
5/30/2013	62.94	60.13	67.12	60.24	58.46	62.92	57.53	56.95	58.53	56.9	56.61	57.33	57.08	56.86	57.51
5/31/2013	63.76	60.91	66.65	61.96	58.96	66.51	58.36	57.42	59.95	57.42	56.89	58.24	57.53	57.16	58.15
6/1/2013	62.96	61.75	64.08	62.48	60.57	63.86	59.33	58.03	62.28	58.1	57.42	59.23	58.18	57.51	59.18
6/2/2013	62.75	61.59	64.54	62.5	61.56	63.82	60.65	58.89	62.53	58.87	58.24	60.91	58.78	58.28	59.58
6/3/2013	64.52	61.59	67.37	63.05	61.56	64.38	61.11	59.92	62.24	59.86	58.8	60.94	59.48	58.53	60.17
6/4/2013	63.29	61.93	64.33	62.28	60.13	63.95	59.79	58.93	61.03	58.87	58.41	59.67	58.88	58.5	59.4
6/5/2013	62.64	60.39	64.85	62.43	60.3	64.42	59.61	58.71	60.82	58.52	57.81	59.14	58.56	58.12	59.05
6/6/2013	62.59	60.3	63.99	61.96	60.48	64.24	60.06	58.89	62.1	59.05	58.24	60.3	58.95	58.28	59.88
6/7/2013	61.77	60.44	63.43	61.8	60.51	63.3	61.18	59.7	62.53	59.68	58.75	62.28	59.2	58.62	60.51
6/8/2013	61.87	60.3	64.63	61.1	60.01	62.58	59.32	58.62	60.64	58.72	58.28	59.14	58.82	58.41	59.27
6/9/2013	63.25	61.63	65.88	61.5	59.79	63.14	58.73	58.41	59.27	58.15	57.9	58.46	58.25	58.03	58.53
6/10/2013	63.1	61.59	63.99	62.78	60.69	64.08	59.23	58.37	61.16	58.33	57.85	58.93	58.38	57.97	58.84
6/11/2013	62.37	61.75	63.7	62.35	60.48	63.95	60.12	59.58	61.56	59.13	58.71	59.74	59.1	58.62	59.79
6/12/2013	62.45	61.41	64.17	61.64	60.13	64.29	59.35	58.96	60.22	58.88	58.62	59.14	59.07	58.93	59.23
6/13/2013	62.7	61.25	64.08	62.39	60.01	64.29	59.88	59.14	62.92	59.15	58.71	59.79	59.34	59.02	59.7
6/14/2013	61.85	60.39	63.99	61.49	60.48	62.53	60.66	59.83	63.55	59.74	59.49	60.17	59.88	59.61	60.08
6/15/2013	63.27	61.07	66.81	62.12	60.39	63.7	59.94	59.61	60.6	59.61	59.4	59.88	59.84	59.7	60.04
6/16/2013	63.36	61.34	64.76	62.6	61.29	64.04	60.27	59.88	62.19	59.84	59.58	60.08	60.08	59.79	60.35
6/17/2013	64.43	61.81	67.93	63.59	62.15	65.07	60.77	60.26	62.8	60.16	59.83	60.73	60.39	60.17	60.73
6/18/2013	64.89	63.09	66.51	65.33	63.82	67.33	61.81	60.51	64.76	60.56	60.08	61.38	60.7	60.35	61.16
6/19/2013	65.65	63.61	67.24	65.6	63.86	66.81	61.82	61	63.27	60.78	60.39	61.84	60.75	60.51	61.68
6/20/2013	66.31	64.51	68.27	65.65	63.55	67.59	62.78	61.2	66.47	61.34	60.17	65.48	61.1	60.39	62.58
6/21/2013	66.75	64.67	70.11	65.88	64.29	68.7	62.28	61.41	65.01	61.32	60.69	62.53	61.34	60.82	62.24
6/22/2013	66.65	65.14	68.83	65.61	63.52	67.96	61.86	61.29	63.05	61.29	60.91	61.72	61.5	61.25	61.97
6/23/2013	66.33	64.54	70.68	65.06	63.14	67.03	61.65	60.94	62.65	60.98	60.57	61.47	61.13	60.69	61.59
6/24/2013	66.76	64.29	71.49	65.17	61.93	67.21	61.13	59.92	62.28	60.19	59.36	60.82	60.11	59.11	60.94
6/25/2013	66.91	64.42	72.27	64.28	61.68	67.75	60.1	59.49	61.03	59.18	58.24	60.04	59.02	58.24	60.01
6/26/2013	66.17	63.95	68.79	64.58	62.15	66.56	60.27	59.4	62.87	58.82	58.03	59.7	58.6	57.94	59.27
6/27/2013	66.54	64.94	67.33	64.66	62.53	67.46	59.59	58.93	60.35	58.65	58.15	59.23	58.59	58.15	59.02
6/28/2013	65.5	63.61	67.68	63.41	61.34	65.97	59.35	58.5	60.6	58.56	58.06	59.02	58.55	58.03	59.02
6/29/2013	65.05	63.36	67.12	63.97	62.87	66.9	60.21	59.18	61.2	59.01	58.37	59.67	58.93	58.46	59.7
6/30/2013	66.95	64.42	69.26	64.65	63.09	66.9	61.07	59.88	63.43	59.54	58.93	60.35	59.5	58.84	60.17
7/1/2013	68.24	66.9	71.02	65.31	63.18	67.06	60.83	60.17	62.19	59.94	59.31	60.91	59.97	59.45	60.82
7/2/2013	67.27	65.88	68.92	65.8	63.52	68.31	61.78	60.13	66.38	60.03	59.67	60.64	60.12	59.79	60.44
7/3/2013	67.86	66.13	70.16	65.42	62.58	67.71	60.94	60.13	63.52	59.88	59.61	60.3	59.97	59.74	60.22
7/4/2013	67.3	64.76	70.97	64.68	62.71	68.7	60.87	59.95	62.28	59.9	59.58	60.78	60	59.67	60.69
7/5/2013	67.36	64.58	71.15	65.19	62.24	68.86	61.34	60.48	62.87	60.48	59.67	61.9	60.54	59.88	61.81
7/6/2013	68.61	65.48	72.01	65.51	63.36	67.28	61.77	61.12	62.8	60.87	60.22	61.41	60.95	60.51	61.41
7/7/2013	68.81	66.22	71.02	65.04	63	68.58	62.14	60.85	65.01	61.08	60.44	62.87	61.16	60.69	62.15
7/8/2013	68.71	67.28	70.54	67.4	64.38	70.03	64.35	61.41	66.99	62.27	60.91	65.28	61.83	61	64.04
7/9/2013	69.17	67.59	70.38	68.27	66.22	69.26	64.75	63.39	66.43	63.12	61.59	64.58	62.75	61.41	64.38
7/10/2013	68.92	67.24	71.92	67.68	65.48	69.94	64.9	64.08	66.13	63.9	62.65	64.89	63.79	62.31	64.98
7/11/2013	68.57	67.41	70.5	67.94	66.9	69.26	66.13	65.53	67.84	65.08	63.99	66.13	64.77	63.39	65.57
7/12/2013	69.21	68.61	70.29	69.12	67.8	70.11	67.77	66.22	68.92	65.94	64.85	66.94	65.66	64.51	66.69
7/13/2013	69.82	68.74	70.93	68.82	68.11	69.73	66.84	66.09	67.68	66.16	65.44	66.99	66.12	65.19	66.87
7/14/2013	70.8	68.83	73.38	69.35	67.96	71.53	66.95	66.22	68.4	66.36	65.75	67.12	66.36	65.66	66.94
7/15/2013	72.77	70.81	75.72	71.31	69.98	72.7	67.91	66.9	69.73	67.11	66.34	68.23	67.13	66.16	68.02
7/16/2013	74.01	72.64	76.03	72.38	70.07	74.77	69.01	67.68	70.84	68.05	66.94	69.55	67.98	66.72	69.01
7/17/2013	75.65	73.26	80.1	73.53	72.57	75.25	69.97	68.86	71.24	69.05	67.75	69.94	68.89	67.68	69.85
7/18/2013	74.33	72.64	76.46	73.83	72.14	76.33	71.44	69.69	73.51	70.12	68.74	72.18	69.81	68.18	71.83
7/19/2013	75.28	73.6	76.59	74.65	72.91	76.03	71.61	70.68	72.7	70.47	69.73	71.4	70.22	69.01	71.37
7/20/2013	73.89	72.36	75.07	73.59	72.45	74.95	70.97	69.82	72.39	69.58	69.01	70.47	69.38	68.83	70.03
7/21/2013	72.99	71.87	74.46	72.52	69.91	74.08	69.96	67.8	71.74	68.2	66.94	69.91	67.56	66.43	69.08
7/22/2013	72.6	69.76	74.86	71.62	68.79	73.81	68.7	67.21	69.94	66.82	65.82	68.18	66.39	65.32	68.11
7/23/2013	72.11	69.98	73.6	70.23	67.89	72.57	67.04	65.88	69.01	65.69	64.63	67.21	65.41	64.29	66.69
7/24/2013	71.35	67.89	75.04	68.25	66.56	70.5	65.87	65.07	66.6	65.15	64.38	65.7	65.03	64.29	65.7
7/25/2013	67.51	66.34	69.13	67.78	66	69.64	66.2	64.72	67.93	64.78	63.95	66.13	64.58	63.99	65.53
7/26/2013	67.41	66.43	68.45	67.02	65.1	68.4	64.54	63.99	65.23	64.19	63.9	64.54	64.31	63.99	64.58
7/27/2013	67.91	65.88	70.75	66.62	64.8	69.42	64.89	64.2	66.56	64.34	63.99	65.14	64.52	64.29	64.94
7/28/2013	68.61	66.25	71.19	68.29	66	71.06	66.43	65.28	67.28	65.54	64.54	66.22	65.39	64.67	65.88
7/29/2013	70.81	69.64	72.82	69.62	67.8	71.28	66.6	65.97	68.05	65.86	65.32	67.03	65.8	65.1	66.78
7/30/2013	71.49	70.11	73.44	69.82	67.96	71.58	66.81	66.16	67.89	66.14	65.66	66.94	66.19	65.44	66.81
7/31/2013	71.52	70.68	72.7	70.48	68.74	71.87	68.2	66.43	69.73	67.34	65.91	69.04	67.17	66.16	69.01

8/1/2013	71.99	70.81	73.87	71.37	70.2	72.82	69.58	68.65	70.5	68.5	67.24	69.21	68.16	66.65	68.95
8/2/2013	71.83	70.25	74.52	71.11	70.29	72.45	69.81	68.92	70.88	68.62	68.14	69.82	68.51	67.75	69.13
8/3/2013	71.04	70.29	71.92	70.95	69.91	72.18	68.76	68.4	70.11	68.3	68.02	68.61	68.46	68.14	68.7
8/4/2013	69.95	68.65	72.27	69.98	69.01	71.19	68.7	67.96	70.16	67.97	67.62	68.4	68.05	67.59	68.52
8/5/2013	70.51	69.01	72.64	69.39	67.5	71.74	67.12	65.79	70.68	65.96	64.94	67.62	65.67	64.2	67.75
8/6/2013	68.74	67.15	70.72	68.53	66.69	70.38	66.68	65.44	68.4	65.15	64.45	66.78	64.93	63.95	66.25
8/7/2013	69.32	68.18	71.28	68.83	67.28	71.1	66.66	65.62	68.4	65.52	64.8	66.25	65.37	64.54	66.22
8/8/2013	68.4	67.68	69.35	68.27	67.21	69.21	66.62	65.79	67.89	65.65	65.14	66.43	65.58	65.01	66.25
8/9/2013	68.5	67.5	69.94	67.96	67.41	68.74	66.88	65.91	67.55	65.63	65.14	66.22	65.56	65.1	66.09
8/10/2013	70	68.23	72.01	67.95	66	69.55	65.49	64.51	66.43	64.85	64.11	65.41	64.92	64.17	65.57
8/11/2013	68.59	67.15	70.11	67.38	65.97	68.86	64.81	63.95	65.88	63.9	63.21	64.42	63.74	62.96	64.33
8/12/2013	67.85	66.69	69.82	67.06	65.53	69.51	64.01	62.8	64.8	63.1	62.19	63.52	62.99	62.06	63.52
8/13/2013	66.16	65.48	66.9	66.22	65.14	67.41	64.11	63.09	65.41	62.42	61.84	63.21	62.28	61.68	62.74
8/14/2013	66.73	65.44	67.93	65.73	63.52	67.84	62.77	61.9	64.63	61.62	60.44	62.1	61.48	60.22	61.97
8/15/2013	64.87	63.77	66.13	64.28	62.31	66.16	61.88	60.91	62.74	60.89	60.44	61.38	60.75	60.08	61.29
8/16/2013	64.32	62.87	65.44	63.9	61.75	65.1	61.51	60.78	62.8	60.67	60.39	61.07	60.8	60.51	61.2
8/17/2013	63.45	62.28	65.1	63.26	61.81	64.42	61.82	60.64	62.87	60.85	60.3	61.9	60.87	60.39	61.75
8/18/2013	65.05	63.21	67.33	63.96	62.74	65.48	61.84	61.2	62.92	60.88	60.51	61.47	60.89	60.44	61.29
8/19/2013	64.2	62.65	66	63.56	61.72	64.98	61.54	60.91	62.06	60.87	60.44	61.34	60.99	60.51	61.41
8/20/2013	64.28	62.74	67.68	63.86	62.1	65.88	62.22	61.34	63.48	61.32	60.64	62.31	61.35	60.64	62.1
8/21/2013	65.07	63.14	67.84	64.35	62.37	66.25	62.51	61.93	63.73	61.67	60.91	62.28	61.72	61	62.46
8/22/2013	64.38	63.48	65.75	64.22	62.96	65.62	62.93	62.31	63.99	62.09	61.56	62.65	62.09	61.5	62.58
8/23/2013	64.67	63.64	66.56	64.4	63.39	66	63.28	62.24	64.2	62.45	61.75	63.55	62.34	61.68	63.27
8/24/2013	64.84	63.3	66.78	64.59	63.43	66.22	63.35	62.65	64.2	62.38	61.56	63.36	62.28	61.56	63.14
8/25/2013	64.71	63.77	67.33	64.37	63.09	66.25	62.86	62.15	64.11	62.1	61.63	62.65	62.11	61.72	62.58
8/26/2013	64.18	63.55	65.19	64.05	63.43	65.01	62.69	62.1	63.95	61.82	61.47	62.28	61.9	61.63	62.19
8/27/2013	65.05	63.95	67.06	64.71	63.48	66.43	63.01	61.93	63.99	61.99	61.5	62.96	62.01	61.75	62.8
8/28/2013	66.85	65.1	68.45	66.16	65.14	66.99	63.51	62.1	65.23	62.12	61.68	62.96	62.13	61.84	62.53
8/29/2013	66.14	65.53	68.49	66.3	65.48	67.41	65.69	63.14	67.03	63.1	61.9	65.01	62.46	61.93	63.48
8/30/2013	66.73	65.48	67.59	65.51	63.99	66.99	62.75	62.31	63.3	62.13	61.81	62.58	62.21	61.81	62.53
8/31/2013	65.28	64.67	66.51	64.78	63.52	66.31	62.63	62.24	63.27	62.12	61.9	62.58	62.29	62.02	62.65
9/1/2013	65.51	64.85	66.73	65.08	64.46	65.92	63.81	62.75	64.67	62.77	62.15	63.52	62.77	62.36	63.22
9/2/2013	67.67	65.87	69.9	65.93	65.06	67.11	64.17	63.35	64.93	63.23	62.49	64.07	63.26	62.66	63.99
9/3/2013	68.05	66.73	69.26	66.55	65.1	68.06	64.12	63.52	65.4	63.35	62.92	64.12	63.44	63.09	63.99
9/4/2013	66.5	65.23	68.14	66.16	64.63	67.84	64.02	63.48	64.8	63.3	63.01	63.86	63.44	63.13	63.95
9/5/2013	64.96	63.73	65.87	65.16	63.99	66.39	64.4	63.6	65.66	63.69	63.09	64.63	63.73	63.22	64.33
9/6/2013	65.05	63.39	67.93	65	63.39	67.16	63.67	63.09	64.42	63.3	62.96	63.86	63.47	63.13	63.99
9/7/2013	64.3	63.69	65.53	64.3	63.48	65.57	63.61	62.75	64.59	62.84	62.45	63.05	62.98	62.32	63.3
9/8/2013	64.51	63.26	66.17	64.35	63.35	65.49	63.67	62.75	64.55	62.82	62.41	63.73	62.75	62.36	63.26
9/9/2013	64.15	62.7	65.32	64.04	62.75	65.19	63.13	62.41	64.07	62.32	61.98	62.66	62.5	62.23	62.79
9/10/2013	63.53	62.32	64.59	63.46	62.45	64.29	62.71	62.02	63.6	62.05	61.8	62.49	62.28	62.06	62.62
9/11/2013	65.4	63.22	67.54	64.78	63.13	67.16	62.89	62.23	65.19	62.06	61.8	62.45	62.24	62.06	62.49
9/12/2013	65.75	64.5	66.94	65.43	64.2	66.73	63.35	62.19	64.93	62.12	61.76	62.49	62.23	61.8	62.62
9/13/2013	67.23	64.89	68.44	65.77	64.63	66.77	64.07	63.35	65.15	63	62.36	63.86	62.84	62.28	63.35
9/14/2013	66.24	64.8	67.54	64.54	63.01	65.66	62.91	62.49	63.56	62.39	62.11	62.83	62.43	62.19	62.75
9/15/2013	64.3	62.88	65.57	63.96	62.7	65.32	62.37	61.89	63.09	61.86	61.59	62.11	62.02	61.76	62.19
9/16/2013	62.75	61.59	64.12	62.79	61.8	64.07	62.18	61.59	63.01	61.62	61.29	61.98	61.79	61.51	62.19
9/17/2013	62.65	60.65	64.67	62.31	60.82	64.2	61.53	60.6	62.75	61.17	60.65	62.11	61.26	60.86	62.15
9/18/2013	62.5	60.9	64.29	62.09	60.78	63.26	60.84	60.3	61.63	60.35	60.09	60.78	60.5	60.26	60.86
9/19/2013	62.12	60.69	64.03	61.8	60.69	63.18	60.93	60.39	61.68	60.44	59.87	61.12	60.54	60.05	61.12
9/20/2013	62.89	61.63	64.76	62.4	61.38	63.82	61.3	60.65	62.02	60.61	60.09	61.38	60.66	60.22	61.38
9/21/2013	62.48	61.46	63.13	62.41	61.51	63.13	61.37	60.82	62.23	60.66	60.13	61.38	60.77	60.43	61.51
9/22/2013	62.73	61.59	64.46	62.38	61.68	63.65	61.6	61.16	62.02	61.19	60.86	61.51	61.35	61.03	61.72
9/23/2013	62.44	60.65	64.16	62.31	61.33	63.78	61.57	61.16	62.19	61.26	61.03	61.59	61.44	61.16	61.76
9/24/2013	62.41	61.03	63.78	62.13	61.38	63.09	61.16	60.86	61.68	60.87	60.73	61.16	61.07	60.86	61.42
9/25/2013	62.37	61.55	63.35	62.14	61.25	63.13	60.91	60.56	61.25	60.41	60.13	60.86	60.58	60.3	61.08
9/26/2013	62.45	61.16	64.46	62.26	61.21	63.95	61.29	60.43	62.36	60.66	60.09	62.02	60.75	60.17	61.68
9/27/2013	62.2	61.16	63.99	62.77	61.68	63.86	60.84	60.35	61.72	60.34	60.17	60.69	60.52	60.3	60.73
9/28/2013	62.99	62.41	63.48	61.86	60.78	63.09	60.72	60.22	61.33	60.36	60.09	60.86	60.59	60.3	60.9
9/29/2013	62.96	61.72	63.65	62.41	61.42	63.48	61.17	60.78	61.55	60.66	60.39	61.12	60.83	60.56	61.16
9/30/2013	62.94	61.03	63.95	62.95	61.98	63.86	61.3	60.65	62.28	60.67	60.35	61.03	60.87	60.6	61.16
10/1/2013	63.51	62.15	64.76	63.18	61.46	64.07	61.16	60.73	61.85	60.7	60.43	60.95	60.94	60.78	61.08
10/2/2013	63.36	62.75	64.07	62.86	61.51	63.86	61.14	60.69	61.76	60.84	60.6	61.38	61.11	60.9	61.46
10/3/2013	63.1	62.15	64.93	62.85	61.68	64.03	61.59	61.12	62.23	61.26	60.9	61.59	61.51	61.12	61.8
10/4/2013	62.65	61.51	64.16	62.67	61.72	64.29	61.83	61.46	62.66	61.53	61.33	61.72	61.8	61.68	61.93
10/5/2013	63.56	62.06	64.97	63.09	61.76	64.46	61.93	61.55	62.62	61.66	61.42	61.98	61.91	61.76	62.19
10/6/2013	62.87	61.76	64.2	62.88	61.93	63.95	62.16	61.63	63.09	61.9	61.63	62.58	62.13	61.89	62.66
10/7/2013	63.53	62.06	64.85	62.98	61.93	64.59	62.03	61.55	62.83	61.73	61.63	62.11	62.07	61.98	62.41
10/8/2013	62.74	61.46	63.9	62.9	62.11	64.03	62.58	62.06	63.3	62.31	62.06	62.83	62.47	62.28	62.79
10/9/2013	61.92	60.95	63.43	62.32	61.46	63.43	62.18	61.72	63.01	62.15	61.8	62.62	62.38	62.23	62.53
10/10/2013	62.64	61.25	63.99	62.5	61.55	63.99	61.91	61.63	62.49	61.91	61.8	62.02	62.24	62.06	62.32
10/11/2013	63.14	61.72	64.59	63.09	61.98	64.38	61.98	61.68	62.28	61.75	61.59	61.93	61.99	61.76	62.15
10/12/2013	62.34	61.33	64.16	62.37	61.42	63.65	61.73	61.29	63.05	61.64	61.33	62.15	61.95	61.72	62.32
10/13/2013	61.62	60.05	63.43	62.35	61.29	63.3	61.49	61.12	61.89	61.37	61.25	61.63	61.65	61.55	61.8
10/14/2013	61.83	60.43	63.22	61.95	61.25	63.6	61.2	60.99	61.59	61.14	61.03	61.33	61.46	61.29	61.55
10/15/2013	62.07	61.08	63.65	62.07	61.03	63.6	61.17	60.73	62.28	61.03	60.86	61.25	61.34	61.25	61.46
10/16/2013	62.24	60.56	63.56	62.16	60.69	63.99	61.03	60.69	61.68	60.92	60.73	61.16	61.22	61.08	61.38
10/17/2013	62.32	61.42	63.18	62.15	61.16	62.96	60.96	60.69	61.72	60.71	60.56	60.9	60.99	60.82	61.16
10/18/2013	61.96	60.86	62.83	61.92	60.99	62.88	61.29	60.78	62.11	60.86	60.65	61.29	61.1	60.86	61.55
10/19/2013	61.35	60.6	62.32	61.41	60.73	62.19	61	60.6	61.51	60.81	60.6	61.12	61.12	60.95	61.29
10/20/2013	61.1	60.22	61.76	61.14	60.35	61.76	60.72	60.17	61.25	60.59	60.26	60.95	60.92	60.65	61.08
10/21/2013	60.89	60.05	61.93	60.89	60.22	61.89	60.38	60	60.9	60.14	59.83	60.56	60.4	60.09	60.69

10/22/2013	60.65	59.79	61.51	60.72	60	61.46	60.01	59.7	60.65	59.7	59.4	59.92	59.97	59.62	60.22
10/23/2013	60.08	59.49	60.65	60.11	59.57	60.69	59.58	59.14	60.05	59.4	59.06	59.7	59.67	59.32	60.09
10/24/2013	59.31	58.67	59.79	59.42	58.8	59.83	59.06	58.63	59.49	58.72	58.24	59.1	58.96	58.63	59.32
10/25/2013	58.35	57.72	58.76	58.45	57.85	58.89	57.92	57.59	58.67	57.81	57.42	58.37	58.15	57.85	58.63
10/26/2013	57.38	56.86	58.2	57.53	57.07	58.28	57.19	56.73	57.64	56.7	56.12	57.38	56.98	56.38	57.77
10/27/2013	56.83	56.3	57.38	56.96	56.43	57.51	56.47	56.17	56.82	56.17	56.08	56.3	56.48	56.21	56.6
10/28/2013	56	54.87	56.82	56.16	55.47	56.94	55.8	55.17	56.38	55.5	55.13	56.25	55.76	55.47	56.3
10/29/2013	54.98	53.73	56.56	55.31	53.91	56.77	54.8	53.91	55.99	54.84	54.39	55.6	55.2	54.65	55.78
10/30/2013	55.36	54.52	56.3	55.33	54.47	56.43	54.32	53.95	54.95	54.19	53.95	54.43	54.52	54.34	54.69
10/31/2013	55.09	54.17	55.82	55.08	53.95	55.86	54.06	53.6	54.95	53.69	53.34	54.13	54.03	53.65	54.43
11/1/2013	54.87	54.17	55.39	54.95	54.3	55.43	54.45	53.34	55.17	53.62	52.99	54.52	53.78	53.3	54.56
11/2/2013	55.27	54.04	56.82	55.26	54.13	56.6	54.42	53.65	55.65	53.79	53.52	54.3	54.02	53.82	54.3
11/3/2013	54.36	52.9	55.95	54.47	53.04	56.08	53.93	52.73	55.39	53.76	53.25	54.47	53.99	53.73	54.3
11/4/2013	53.56	42.29	54.95	53.54	43.58	55.04	52.94	52.34	53.91	52.96	52.42	53.47	53.36	52.82	53.82
11/5/2013	53.4	52.2	54.47	53.29	52.38	54.47	52.53	52.07	53.43	52.38	52.12	52.64	52.71	52.25	52.95
11/6/2013	52.86	52.25	53.47	52.86	52.2	53.52	52.28	51.85	52.86	51.89	51.41	52.25	52.16	51.72	52.6
11/7/2013	52.96	51.98	53.99	53.25	52.2	54.3	52.61	51.85	53.38	51.99	51.54	52.86	52.15	51.85	52.64
11/8/2013	52.5	51.24	53.34	52.61	51.41	53.78	52.09	51.46	52.77	51.57	51.37	51.9	51.83	51.72	52.03
11/9/2013	51.45	50.8	51.94	51.52	50.93	52.03	51.13	50.71	51.76	50.98	50.66	51.41	51.43	50.97	51.81
11/10/2013	51.34	50.58	52.16	51.3	50.66	51.85	50.77	50.36	51.19	50.56	50.45	50.97	50.88	50.58	51.15
11/11/2013	50.58	49.78	51.33	50.67	49.96	51.37	50.26	49.83	50.93	50.08	49.83	50.8	50.49	50.18	50.89
11/12/2013	50.07	48.94	50.84	50.16	49.07	51.02	49.74	48.9	50.75	49.62	49.03	50.09	50.04	49.52	50.31
11/13/2013	49.32	48.32	50.36	49.37	48.45	50.4	48.87	48.32	50.09	48.68	48.36	49.29	49.09	48.72	49.65
11/14/2013	48.45	47.65	49.12	48.53	47.78	49.25	48.18	47.65	49.07	48	47.6	48.94	48.3	47.91	48.98
11/15/2013	48.18	47.33	48.81	48.25	47.51	48.98	47.84	47.24	48.67	47.51	47.29	47.96	47.8	47.6	48.18
11/16/2013	48.07	47.2	49.2	48	47.38	48.85	47.54	47.11	48.41	47.32	47.11	47.69	47.67	47.56	47.91
11/17/2013	48.3	47.2	49.16	48.16	47.29	49.2	47.43	47.02	48.41	47.17	47.02	47.38	47.47	47.24	47.69
11/18/2013	49.19	48.09	50.14	48.93	48.09	49.78	47.65	46.84	48.9	47.11	46.89	47.65	47.44	47.33	47.74
11/19/2013	47.97	46.71	48.76	48.01	46.84	48.72	47.58	46.71	48.41	47.25	46.75	47.83	47.61	47.29	47.91
11/20/2013	47.13	46.35	47.83	47.18	46.35	48	46.72	46.17	47.65	46.58	46.21	47.02	47.03	46.66	47.51
11/21/2013	47.16	46.12	47.74	47.15	46.26	48	46.52	45.99	47.47	46.19	46.03	46.39	46.63	46.53	46.75
11/22/2013	46.76	45.94	47.83	47.09	46.39	48.09	46.45	46.03	47.42	46.19	46.03	46.57	46.58	46.44	46.75
11/23/2013	46.91	46.12	47.6	46.97	46.35	47.78	46.18	45.9	46.66	46.04	45.9	46.21	46.46	46.3	46.62
11/24/2013	45.37	44.76	46.21	45.49	44.9	46.35	45.26	44.72	46.21	45.35	44.72	45.94	45.85	45.08	46.48
11/25/2013	44.17	43.62	44.99	44.26	43.76	45.08	43.9	43.49	44.95	43.77	43.44	44.9	44.22	43.95	45.22
11/26/2013	43.81	42.71	44.54	44.08	43.4	44.76	43.63	43.31	44.31	43.49	43.4	43.67	43.95	43.85	44.04
11/27/2013	45.1	42.94	48.85	44.19	43.17	46.3	43.44	43.03	44.58	43.57	43.21	44.45	43.91	43.72	44.31
11/28/2013	44.15	42.25	47.69	43.88	42.76	44.9	43.39	42.94	43.85	43.38	43.26	43.58	43.85	43.72	44.04
11/29/2013	42.01	41.14	42.98	42.33	41.37	43.21	42.93	41.65	43.58	43.27	42.85	43.58	43.8	43.49	44.04
11/30/2013	40.82	40.06	42.06	41.07	40.25	41.97	42.52	40.35	43.35	43.04	42.62	43.49	43.59	43.26	44.04

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1 (EPA)
WATER DIVISION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED.

PUBLIC NOTICE PERIOD: January 15, 2026 – February 16, 2026

PERMIT NUMBER: MA0003832

NAME AND MAILING ADDRESS OF APPLICANT:

Procter and Gamble-Gillette
One Gillette Park
Boston, MA 02127

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Procter and Gamble-Gillette
Gillette Park
Boston, MA 02127

RECEIVING WATER AND CLASSIFICATION:

Fort Point Channel
Boston Inner Harbor (MA70-02), Class SB (CSO)

PREPARATION OF THE DRAFT PERMIT:

EPA is issuing for public notice and comment the Draft NPDES Permit for Procter and Gamble-Gillette, which discharges non-contact cooling water and various process wastewaters. The effluent limits and permit conditions have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to publish for public notice their CWA § 401 certification and a separate state Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

Matthew Stamas
Telephone: (617) 918-1573
Email: Stamas.Matthew@epa.gov

Any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

CWA §316(b) COOLING WATER INTAKE STRUCTURES

> The Draft Permit contains requirements applicable to the facility's cooling water intake structure under section 316(b) of the CWA, which are fully explained in the Fact Sheet.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by February 16, 2026**,** which is the close of the public comment period. Comments should be submitted to the EPA contact at the email listed above. If you prefer to submit comments by mail, please call or email the EPA contact above to make arrangements for that. Upon the close of the public comment period, EPA will make all comments available to MassDEP. All commenters who want MassDEP to consider their comments in the state decision-making processes (*i.e.*, the separate state permit and the CWA § 401 certification) must submit such comments to MassDEP during the state comment period for the state Draft Permit and CWA § 401 certification. For information on submitting such comments to MassDEP, please follow the instructions found in the state public notice at: https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities.

Any person, prior to the close of the EPA public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the Regional Administrator finds that response to this notice indicates significant public interest.

In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
U.S. EPA – REGION 1