

**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”),

Swansea Water District

is authorized to discharge from a facility located at

**Swansea Water District Desalination Facility
240 Vinnicum Road
Swansea, MA 02777**

to receiving water named

**Palmer River
Narragansett Bay Watershed**

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 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 January 13, 2017 and modified on March 1, 2022.

This Permit consists of this **cover page, Part I, Attachment A** (Marine Acute Toxicity Test Procedure and Protocol, July 2012), **Attachment B** (Marine Chronic Toxicity Test Procedure and Protocol, November 2013), and **Attachment C** (PFAS Analyte List), 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. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated reverse osmosis (RO) brine concentrate, filter backwash reject water from the three microfiltration (MF) systems, strainer flushings and cleaning solutions from Outfall Serial Number 001 to the Palmer River. 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	Average Weekly	Maximum Daily	Measurement Frequency ⁴	Sample Type
Effluent Flow ⁵	2.71 MGD	*****	Report MGD	Continuous	Recorder
Total Suspended Solids (TSS) ⁶ (October 1- May 31) (June 1-September 30)	20 mg/L 40 mg/L	30 mg/L 70 mg/L	Report Report	2/Week 2/Week	Composite Composite
Salinity ^{7,8} (July 1-September 30) (October 1-June 30)	***** *****	***** *****	42 ppt 32 ppt	1/Day 1/Day	Composite Composite
Dissolved Oxygen ^{7,9,11}	Minimum of 5.0 mg/L			1/Day	Composite
pH ^{10,11}	Within 6.5 - 8.5 standards units			1/Day	Grab
Total Residual Chlorine ¹²	70.2 µg/L	*****	121.7 µg/L	1/Discharge cycle	Grab
Ammonia-Nitrogen	Report mg/L	---	---	1/Month	Composite
Total Kjeldahl Nitrogen	Report mg/L Report lb/day	---	---	1/Month	Composite
Nitrite + Nitrate	Report mg/L Report lb/day	---	---	1/Month	Composite
Total Recoverable Copper ¹³	---	---	31.6 µg/L	2/Month	Composite
PFAS Analytes ¹⁴	---	---	Report ng/L	1/Quarter	Composite
Adsorbable Organic Fluorine ¹⁵	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing ^{16,17}					
LC ₅₀	---		≥100%	2/Year	Composite
C-NOEC	---	---	≥ 11%	2/Year	Composite
Hardness	---	---	Report mg/L	2/Year	Composite

Effluent Characteristic	Effluent Limitations			Monitoring Requirements ^{1,2,3}	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency ⁴	Sample Type
Alkalinity	---	---	Report mg/L	2/Year	Composite
pH	---	---	Report S.U.	2/Year	Grab
Specific Conductance	---	---	Report umho/cm	2/Year	Composite
Total Solids	---	---	Report mg/L	2/Year	Composite
Total Dissolved Solids	---	---	Report mg/L	2/Year	Composite
Total Ammonia Nitrogen	---	---	Report mg/L	2/Year	Composite
Total Organic Carbon	---	---	Report mg/L	2/Year	Composite
Total Residual Chlorine	---	---	Report mg/L	2/Year	Grab
Total Cadmium	---	---	Report mg/L	2/Year	Composite
Total Copper	---	---	Report mg/L	2/Year	Composite
Total Nickel	---	---	Report mg/L	2/Year	Composite
Total Lead	---	---	Report mg/L	2/Year	Composite
Total Zinc	---	---	Report mg/L	2/Year	Composite

Ambient Characteristic ¹⁸	Reporting Requirements		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type
Hardness	---	Report mg/L	2/Year	Grab
Alkalinity	---	Report mg/L	2/Year	Grab
pH ¹⁹	---	Report mg/L	2/Year	Grab
Specific Conductance	---	Report mg/L	2/Year	Grab
Total Ammonia Nitrogen	---	Report mg/L	2/Year	Grab
Total Organic Carbon	---	Report mg/L	2/Year	Grab
Total Aluminum	---	Report mg/L	2/Year	Grab

Ambient Characteristic ¹⁸	Reporting Requirements		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type
Total Cadmium	---	Report mg/L	2/Year	Grab
Total Copper	---	Report mg/L	2/Year	Grab
Total Nickel	---	Report mg/L	2/Year	Grab
Total Lead	---	Report mg/L	2/Year	Grab
Total Zinc	---	Report mg/L	2/Year	Grab
Temperature ¹⁹	---	Report °C	2/Year	Grab

Influent Characteristics	Reporting Requirements		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type
TSS	Report mg/L	---	2/Month	Grab
PFAS Analytes ¹⁴	---	Report ng/L	1/Quarter	Grab
Adsorbable Organic Fluorine ¹⁵	---	Report ng/L	1/Quarter	Grab

Sludge Characteristic	Reporting Requirements		Monitoring Requirements ^{1,2,3}	
	Average Monthly	Maximum Daily	Measurement Frequency ⁴	Sample Type ⁵
PFAS Analytes ¹⁴	---	Report ng/g	1/Quarter	Grab

Footnotes:

1. 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.

2. 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 "0" 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).

3. 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. Measurement frequency of 1/month is defined as the sampling of one discharge event in each calendar month. Measurement frequency of 1/quarter is defined as the sampling of one discharge event during one calendar quarter. Calendar quarters are defined as January through March, inclusive, April through June, inclusive, July through September, inclusive and October through December, inclusive. Measurement frequency of 1/year is defined as the sampling of one discharge event during one calendar year. If no sample is collected during the measurement frequencies defined above; the Permittee must report an appropriate No Data Indicator (NODI) Code.

4. A composite sample will consist of one grab sample per hour taken during the discharge cycle and combined proportional to flow.

5. Effluent flow shall be reported as a monthly average flow in million gallons per day (MGD). Report intake and effluent flow for each operating date and include as a separate attachment to the DMR.

The effluent shall be discharged to the Palmer River through a two-port diffuser for no longer than a six (6) hour period that begins no more than three (3) hours before high tide and ends no more than three (3) hours after high tide. For each monthly DMR, the permittee shall submit an electronic attachment detailing the time of each discharge cycle to confirm that the start and end time of the discharge is within 3 hours of high tide.

6. TSS effluent monitoring shall only be sampled at a location that represents the effluent from the sludge drying beds before it is blended with any other waste stream.

7. Sampling is required for intake and effluent. Intake samples for salinity and dissolved oxygen shall be grab samples collected within thirty minutes of the end of the intake cycle. Effluent samples shall be composite samples collected from the discharge following the sampled intake cycle. The Permittee shall report the minimum dissolved oxygen value for each month on the discharge monitoring report.

8. The salinity of the final effluent shall be measured using a salinometer.

The salinity shall be less than or equal to 42 parts per thousand (ppt) during the months of July through September and less than or equal to 32 ppt during the months of October through June.

For each monthly DMR, the Permittee shall submit an electronic attachment summarizing the average ambient salinity concentrations for each discharge cycle and the effluent salinity data collected during the month. The attachment shall include the maximum daily intake and effluent salinity concentrations and record the number of times the effluent limit was violated during the month in the "No. Ex" column of the row containing the effluent sampling data.

9. The dissolved oxygen (DO) concentration of the final effluent shall be greater than or equal to 5.0 mg/l. The DO concentration of the effluent shall also be equal to or greater than concentration in the receiving water.

The permittee shall report the minimum daily intake and effluent concentrations on its discharge monitoring report and record the number of times the effluent limit was violated during the month (i.e., the number of times the effluent concentration was less than the intake concentration) in the "No. Ex" column of the row containing the effluent sampling data. The permittee shall submit an electronic attachment summarizing all the intake and effluent DO data collected during the month.

10. 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.).

11. State certification requirement.

12. Liquid chlorine or cleaning solutions that contain chlorine shall be neutralized and dechlorinated prior to final discharge. Whenever chlorine is added to wastewater flow, the effluent shall be sampled for total residual chlorine (TRC) at the frequency required by the permit.

When chlorine sampling is required, the permittee shall collect at least one TRC grab sample per day. For every day that more than one grab sample is taken, the monthly DMR shall include an attachment documenting the individual grab sample results for that day, the date and time of each sample, the method used for analysis, and a summary of any operational modifications implemented in response to the sample results. All test results using EPA approved methods (see 40 CRF Part 136) shall be used in the calculation and reporting of maximum daily data submitted on the DMR (see Part II. Section D.1.d.(2)).

If chlorine is not used during a monitoring period, TRC monitoring is not necessary and the Permittee may use a "NODI" (No Data Indicator) code in the relevant discharge monitoring report.

13. The minimum level (ML) for copper is defined for 3 µg/L. The value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). This method or other EPA approved method with an equivalent or lower ML shall be used. Sampling results less than the ML shall be reported "< [ML]" on the Discharge Monitoring Report.

14. PFAS analytes include those listed in Attachment C (40 parameters) and are listed separately in NetDMR. Report in nanograms per liter (ng/L). Until there is an analytical method approved in 40 CFR Part 136 for PFAS, monitoring shall be conducted using Method 1633. The reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after the effective date of the permit.

After one year of monitoring, if all samples are non-detect for all forty PFAS compounds using either an approved method in 40 CFR Part 136, or EPA Method 1633, the Permittee may request to remove the requirement for PFAS monitoring. The written request shall include a summary of the monitoring data and include the attached analytical reports. Until written notice is received from EPA indicating that the monitoring requirements have been changed, the Permittee is required to continue the monitoring specified in this Permit. The request shall be submitted as specified in Part I.D.3.a.(3) – Reporting Requirements

15. Report in nanograms per liter (ng/L). Until there is an analytical method approved in 40 CFR Part 136 for Adsorbable Organic Fluorine, monitoring shall be conducted using Method 1621. The reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after the effective date of the permit.

After one year of monitoring, if all samples are non-detect for AOF, using either a method in 40 CFR Part 136, or EPA Method 1621, the Permittee may request to remove the requirement for AOF monitoring. The written request shall include a summary of the monitoring data and include the attached analytical reports. Until written notice is received from EPA indicating that the monitoring requirements have been changed, the Permittee is required to continue the monitoring specified in this Permit. The request shall be submitted as specified in Part I.D.3.a.(4) – Reporting Requirements

16. The Permittee shall conduct acute toxicity tests (LC₅₀) and chronic toxicity tests (C-NOEC) 2/year testing with the *Menidia beryllina* (inland silverside) only, in accordance with test procedures and protocols specified in **Attachment A and B** of this permit. Toxicity test samples shall be collected during June and September.

TEST DATES in:	Submit Results by:	TEST SPECIES	Acute Limit LC ₅₀	Chronic Limit C-NOEC
June September	July 15 October 15	Menidia beryllina (inland silverside)	100%	11%

The June toxicity test each year shall be conducted when the effluent is a mix of brine from the R.O. units, treated cleaning in place (CIP) and strainer wastewater. The permittee shall indicate which toxicity tests include the mix of wastewater.

LC₅₀ and C-NOEC are defined in Part II.E. of this permit. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal in the month following completion of the tests, (i.e., July and October).

17. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, 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 and B**, 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 and B**, Part VI. CHEMICAL ANALYSIS.

18. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, 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 and B**. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

19. 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 protocols.

Part I.A. continued.

2. Wastewater from the pretreatment system strainer and microfiltration membranes shall be treated in the dewatering sludge drying beds prior to mixing with the final effluent. Reverse osmosis brine and the clarified liquid from the drying beds shall be combined in a concentrate equalization tank and discharged to the Palmer River through the diffuser. The discharge shall occur over a six (6) hour period during high tide. The discharge may begin no more than three (3) hours before high tide and end no more than three hours (3) hours after high tide.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall(s) listed in Part I.A.1, 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 D.1.e.(1) of the Standard Conditions of this Permit (24-hour reporting).

C. OPERATION AND MAINTENANCE OF THE DESALINATION FACILITY

Operation and maintenance of the Desalination Facility shall be in compliance with the General Requirements of Part II and the following terms and conditions.

1. Maintenance Staff

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of the permit.

2. Preventative Maintenance Program

The permittee shall maintain an ongoing preventative maintenance program to prevent malfunctions or failures of the system infrastructures. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Chemical Identification

The Permittee shall keep a record of the following information for all water additives used and discharged at the facility, including, but not limited to, chemicals used for coagulation, pH neutralization, dechlorination, control of biological growth, control of corrosion and scale in waterpipes, etc.):

(a). Product name, chemical formula, and manufacturer of the additive;

- (b). Purpose or use of the additive;
- (c). The frequency (e.g., hourly, daily, etc.), magnitude (e.g., maximum application concentration) duration (e.g., hours, days), and method of application for the additive.

4. Staff Training

A description of training to be provided for employees to assure they understand the goals, objectives, and procedures of the requirements of the NPDES Permit, and their individual responsibilities for complying with the goals and objectives of the NPDES permit. Training should be conducted on an annual basis. Certification of such training should be recorded and kept on site.

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 for discontinuation of per- and polyfluoroalkyl substances (PFAS) sampling (see Part I.A. footnote 14) requirements;
- (4) Request for discontinuation of Adsorbable Organic Fluorine (AOF) sampling (see Part I.A. footnote 15) requirements;
- (5) 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 or by hard copy mail to the following address:

**U.S. Environmental Protection Agency
Water Division
NPDES Applications Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912**

4. Submittal of Reports in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted in hard copy, with a cover letter describing the submission:

- (1) Written notifications required under Part II, Standard Conditions. Beginning December 21, 2025, such notifications 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/>.

b. This information shall be submitted to EPA's Enforcement and Compliance Assurance Division (ECAD) at the following address:

**U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912**

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 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. Below are state certification conditions expected to be proposed by the State. These conditions are not open for public notice as part of this Draft Permit. Rather, MassDEP will make the complete draft certification available for public notice separately from this Draft Permit and any comments on the certification conditions should be submitted directly to the State as part of that separate public notice process. Consistent with CWA 401(d), EPA will incorporate any and all conditions in the state's 401 water quality certification into the Final Permit.

1. The discharge shall be free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.
2. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms.
3. The discharge shall be free from floating, suspended and settleable solids in concentrations and combinations that would impair any use assigned to the receiving water, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom.
4. The discharge shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to the receiving water.
5. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the receiving water, impart an oily 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.
6. The discharge shall be free from such concentrations or combinations that are aesthetically objectionable, that would impair any use assigned to the receiving water, or that would cause tainting or undesirable taste or odor in the edible portions of aquatic life.
 7. The discharge shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

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 chlorine¹ (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° 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 TEST¹

1. Test type	48hr Static, non-renewal
2. Salinity	25ppt \pm 10 percent for all dilutions by adding dry ocean salts
3. Temperature (°C)	20°C \pm 1°C or 25°C \pm 1°C, temperature must not deviate by more than 3°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, <u>\leq 24 hours age range</u>
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 <u>Artemia</u> 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	\geq 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 TEST¹

1. Test Type	48 hr Static, non-renewal
2. Salinity	25 ppt \pm 10 % by adding dry ocean salts
3. Temperature	20°C \pm 1°C or 25°C \pm 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 <u>Artemia</u> 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 \geq 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.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Level for effluent^{*1} (mg/L)</u>
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
<u>Total Metals</u>			
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-Kärber
- Trimmed Spearman-Kärber
- 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.

MARINE CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable silverside chronic and sea urchin chronic toxicity tests in accordance with the appropriate test protocols described below:

- Inland Silverside (Menidia beryllina) Larval Growth and Survival Test
- Sea Urchin (Arbacia punctulata) 1 Hour Fertilization Test

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

II. METHODS

The permittee shall use 40 CFR Part 136 methods. 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. Where 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 AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a marine, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a fresh 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 hold time extension. All fresh test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6° C.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

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 (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. For TRC analysis performed on site the results must be included on the chain of custody (COC) presented to WET laboratory. For the purpose of sample preparation, i.e. eliminating chlorine prior to toxicity testing, if called for by the permit, TRC analysis may also be performed by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing. According to 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 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.

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 oxidants (as per 40 CFR Part 122.21).

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge’s zone of influence at a reasonably accessible location. 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 test acceptability criteria (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 the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternatedilution water (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 is the case where repeating a test due to toxicity in the site dilution water requires an immediate decision for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires 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 <https://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.

If the use of an 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.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

EPA New England requires that if a reference toxicant test was being performed concurrently with an effluent or receiving water test and fails, both tests must be repeated.

The following tables summarize the accepted Menidia and Arbacia toxicity test conditions and test acceptability criteria:

**EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE
SEA URCHIN, ARBACIA PUNCTULATA, FERTILIZATION TEST¹**

1. Test type	Static, non-renewal
2. Salinity	30 o/oo \pm 2 o/oo by adding dry ocean salts
3. Temperature	20 \pm 1°C temperature must not deviate by more than 3°C during test
4. Light quality	Ambient laboratory illumination
5. Light intensity	10-20 uE/m ² /s, or 50-100 ft-c (Ambient Laboratory Levels)
6. Test vessel size	Disposal (glass) liquid scintillation vials (20 ml capacity), presoaked in control water
7. Test solution volume	5 ml
8. Number of sea urchins	Pooled sperm from four males and pooled eggs from four females are used per test
9. Number of egg and sperm cells	About 2000 eggs per chamber and 5,000,000 sperm cells per vial
10. Number of replicate chambers	4 per treatment
11. Dilution water	Uncontaminated source of natural seawater or deionized water mixed with artificial sea salts
12. Dilution factor	Approximately 0.5, must bracket the permitted RWC
13. Test duration	1 hour and 20 minutes
14. Effects measured	Fertilization of sea urchin eggs
15. Number of treatments per test ²	5 and a control. (receiving water and laboratory water control) An additional dilution at the permitted effluent concentration (% effluent) is required.

16. Acceptability of test	70% - 90% egg fertilization in all controls. Minimum of 70% fertilization in dilution water control. Effluent concentrations exhibiting greater than 70% fertilization, flagged as statistically significantly different from the controls, will not be considered statistically different from the controls for NOEC reporting.
17. Sampling requirements	For on-site tests, samples are to be 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.
18. Sample volume required	Minimum 1 liter

Footnotes:

¹ Adapted from EPA 821-R-02-014

EPA NEW ENGLAND RECOMMENDED TEST CONDITIONS FOR THE INLAND SILVERSIDE, MENIDIA BERYLLINA, GROWTH AND SURVIVAL TEST¹

1. Test type	Static, renewal
2. Salinity	5 o/oo to 32 o/oo +/- 2 o/oo of the selected salinity by adding artificial sea salts
3. Temperature	25 ± 1°C, temperature must not deviate by more than 3°C during test
4. Light quality	Ambient laboratory light
5. Light intensity	10-20 uE/m ² /s, or 50-100 ft-C (Ambient Laboratory Levels)
6. Photoperiod	16 hr light, 8 hr darkness
7. Test vessel size	600 - 1000 mL beakers or equivalent (glass test chambers should be used)
8. Test solution volume	500-750 mL/replicate loading and DO restrictions must be met)
9. Renewal of test solutions	Daily using most recently collected sample
10. Age of test organisms	Seven to eleven days post hatch; 24 hr range in age
11. Larvae/test chamber	15 (minimum of 10)
12. Number of replicate chambers	4 per treatment
13. Source of food	Newly hatched and rinsed <u>Artemia</u> nauplii less than 24 hr old
14. Feeding regime	Feed once a day 0.10 g wet wt <u>Artemia</u> nauplii per replicate on days 0 – 2 feed 0.15 g wet wt <u>Artemia</u> nauplii per replicate on days 3-6
15. Cleaning	Siphon daily, immediately before test solution renewal and feeding
16. Aeration ²	None
17. Dilution water	Uncontaminated source of natural seawater; or deionized water mixed with artificial sea salts

18. Effluent concentrations	5 and a control (receiving water and laboratory water control) An additional dilution at the permitted effluent concentration (% effluent) is required
19. Dilution factor	≥ 0.5 , must bracket the permitted RWC
20. Test duration	7 days
21. Effects measured	Survival and growth (weight)
22. Acceptability of test	The average survival of dilution water control larvae is a minimum of 80%, and the average dry wt of unpreserved control larvae is a minimum of 0.5 mg, or the average dry wt of preserved control larvae is a minimum of 0.43 mg if preserved not more than 7 days in 4% formalin or 70% ethanol
23. Sampling requirements	For on-site tests, samples are collected daily and used within 24 hours of the time they are removed from the sampling device. For off-site tests, samples must be first used within 36 hours of collection.
24. Sample Volume Required	Minimum of 6 liters/day.

Footnotes:

¹ Adapted from EPA 821-R-02-014

² If dissolved oxygen (D.O.) falls below 4.0 mg/L, aerate all chambers at a rate of less than 100 bubbles/min. Routine D.O. checks are recommended.

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 values and \geq two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

VI. CHEMICAL ANALYSIS

The toxicity test requires measurement of pH, salinity, and temperature at the beginning and end of each 24 hour period in each dilution and controls for both daily test renewal and waste. The following chemical analyses shall be performed for each initial sample as well as any renewal samples, if necessary pursuant to the requirement of Part III above.

<u>Parameter</u>	<u>Effluent</u>	<u>Diluent</u>	<u>Minimum Level for effluent^{*1} (mg/L)</u>
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
<u>Total Metals</u>			
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 AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported.

The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-014. Guidance for this review can be found at:

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

In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoint growth for *Menidia beryllina* as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-014.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value, for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for marine tests in Section 10.2.8.3, p. 54, Table 6 of EPA-821-R-02-014. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.
- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-

R-003, June 2000, Section 6.4.2. This document can be located under Guidance Documents at the following USEPA website location:

<https://www.epa.gov/aboutepa/epa-region-1-new-england>
(click on NPDES, EPA Permit Attachments)

If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater than the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-014, page 45

For discussion on Hypothesis Testing, refer to EPA 821-R-02-014, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-014, Section 9.7

2. *Menidia beryllina*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-014, page 181

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 182

Refer to growth data statistical analysis flowchart, EPA 821-R-02-014, page 193

3. *Arbacia punctulata*

Refer to fertilization data testing flowchart, EPA 821-R-02-014, page 312

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
 - Test sensitivity evaluation results (test PMSD for growth)
 - Permit limit and toxicity test results
 - Summary of test sensitivity and concentration response evaluation

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 limits (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.

Target Analyte Name	Abbreviation	CAS Number
Perfluoroalkyl carboxylic acids		
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnA	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTeDA	376-06-7
Perfluoroalkyl sulfonic acids		
Acid Form		
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	68259-12-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Fluorotelomer sulfonic acids		
1H,1H, 2H, 2H-Perfluorohexane sulfonic acid	4:2FTS	757124-72-4
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid	6:2FTS	27619-97-2
1H,1H, 2H, 2H-Perfluorodecane sulfonic acid	8:2FTS	39108-34-4
Perfluorooctane sulfonamides		
Perfluorooctanesulfonamide	PFOSA	754-91-6
N-methyl perfluorooctanesulfonamide	NMeFOSA	31506-32-8
N-ethyl perfluorooctanesulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids		
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols		
N-methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7
N-ethyl perfluorooctanesulfonamidoethanol	NEtFOSE	1691-99-2
Per- and Polyfluoroether carboxylic acids		
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6

Target Analyte Name	Abbreviation	CAS Number
Ether sulfonic acids		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7
Fluorotelomer carboxylic acids		
3-Perfluoropropyl propanoic acid	3:3FTCA	356-02-5
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	914637-49-3
3-Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4

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¹ Updated July 17, 2018 to fix typographical errors.

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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

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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

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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

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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

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- (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

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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

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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.

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- 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

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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

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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

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“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 96-483 and 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

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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

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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.

LC₅₀ means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The *LC₅₀* = 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

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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).

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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

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(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

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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

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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.

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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

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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

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
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: MA0103390

PUBLIC NOTICE START AND END DATES: December 19, 2024, to February 3, 2025

NAME AND MAILING ADDRESS OF APPLICANT:

Swansea Water District (SWD)
700 Wilbur Drive
Swansea, MA 02777

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Swansea Water Desalination Facility
240 Vinnicum Road
Swansea, MA, 02777

RECEIVING WATER AND CLASSIFICATION:

Palmer River (MA53-03)
Narragansett Bay Watershed
Class SB

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Appendices

Appendix A – Monitoring Data Summary

Appendix B – Reasonable Potential and Limits Calculations

1.0 Proposed Action

The Swansea Water District (the “Permittee”) has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to authorize pollutant discharges from the Swansea Desalination Facility (the “Facility”) into the Palmer River (the river).

The permit currently in effect was signed on January 13, 2017, with an effective date of April 1, 2017, and expired on March 31, 2022. The 2017 Permit was modified on March 1, 2022. The permit modification revised the monthly average salinity limit of 32 ppt to a maximum daily limit of 32 ppt from October through June and added a maximum daily limit of 42 ppt from July through September. The salinity modification ended in September 2023 and the salinity limit reverted to a monthly average limit of 32 ppt.

The Permittee filed an application seeking NPDES permit reissuance from EPA dated December 17, 2021, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA on December 22, 2022, the Facility’s 2017 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d). EPA and the State conducted a site visit at the Facility on November 30, 2023.

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 establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). 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” in order 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), the NPDES permit must include water quality-based limitations. *See* CWA §§ 301(b)(1)(C) and 401; 40 CFR §§ 122.4(d), 122.44(d)(1) and (5), 124.53, and 124.55.

2.1 Technology-Based Requirements

Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. *See* CWA § 301(b). As a class, publicly owned treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 301(b)(1)(B). The performance level for POTWs is referred to as “secondary treatment.” Secondary treatment is comprised of technology-based requirements expressed in terms of biochemical oxygen demand (BOD₅), total suspended solids (TSS) and pH. *See* 40 CFR Part 133.

Under CWA § 301(b)(1), POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1977. Since all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. *See* 40 CFR § 125.3(a)(1).

2.2 Water Quality-Based Requirements

The CWA and federal regulations also require that permit limits based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR § 131.10-12. Generally, WQSs consist of three parts: 1) the designated use or uses assigned for a water body or a segment of a water body; 2) numeric 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. The applicable State WQSs can be found in Title 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQSs 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 average monthly limits.

When permit effluent limitation(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 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 basis” 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).

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 WQSs 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 the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among to 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 contain 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 WQSs, 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 WQSs, 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. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

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(b). EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

See Section 7.0 below for a detailed discussion of the expected state certification conditions and the potential impact to the permit. Note that the draft state certification will also be made available for public comment¹ by the State separately from this Draft Permit as part of the permit reissuance process. 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.

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. 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 WQSs under CWA § 301(b)(1)(C). Should a facility's effluent flow exceed the flow assumed in these calculations, the in-stream

¹ 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>.

dilution would be reduced, and the calculated effluent limitations might not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs 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). To ensure that the assumptions underlying EPA's reasonable potential analyses (RPA) 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.² 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 WQSs.

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 Monitoring and Reporting Requirements

2.4.1 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 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) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative

² 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).

information on the levels of regulated constituents in the discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and 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*.³ 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 level⁴ (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.

2.4.2 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

³ Fed. Reg. 49,001 (Aug. 19, 2014).

⁴ 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).

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 electronically via a secure internet application to EPA 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.⁵

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 Final Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit such as for providing written notifications required under the Part II Standard Conditions.

2.5 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.

2.6 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 2017 Permit and permit modification issued 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 section of this fact sheet that addresses the individual pollutant.

Since the Permittee has operated its Facility properly with regards to TSS and salinity, an exception to the CWA's anti-backsliding provision applies, which allows an increase in the limits of these two pollutants. *See* CWA § 402(o). This provision specifies that a less stringent effluent limitation may be applicable if information is available that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that would

⁵ <https://netdmr.zendesk.com/hc/en-us>

have justified the application of a less stringent effluent limitations at the time of permit issuance.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The Facility is located at 240 Vinnicum Road in Swansea, Massachusetts. The Facility began treating brackish water from the river as an additional source of drinking water for residents in Swansea in 2013. A locational map is provided in Figure 1.

The Facility uses microfiltration (MF) and reverse osmosis (RO) to treat brackish water from the tidal portion of the river and groundwater from three groundwater wells and one bedrock well for potable water. The Facility consists of a water treatment plant, a river intake and pumping station, a two-port outfall diffuser located in the river, and associated pipelines and storage tanks. A process flow diagram is provided in Figure 2.

Raw water from the river and the active Vinnicum Wellfield groundwater wells are treated separately then combined before the distribution of potable water. Wellfield water is aerated and filtered by MF. Chemicals are added prior to MF to coagulate and remove organics, and to oxidize iron and manganese. The chemicals used for the MF systems are sulfuric acid for pH adjustment, an aluminum/ferric chloride blend as a coagulant for organics removal, and potassium permanganate to oxidize iron and manganese in the raw water.

River water is treated using two stages of MF and chemical addition. Reject water from the first stage MF passes through a second stage MF and this increases the total amount of finished water and reduce the volume of backwash sent for treatment. The permeate from each MF stage is treated by RO to remove salt. The chemicals used for the RO system may include sulfuric acid for pH adjustment, anti-scalants, and soda ash to adjust the alkalinity. The RO permeate is disinfected with chlorine, mixed with the MF permeate from the wellfield water treatment system, treated with corrosion control chemicals, fluoridated, and sent to the distribution system.

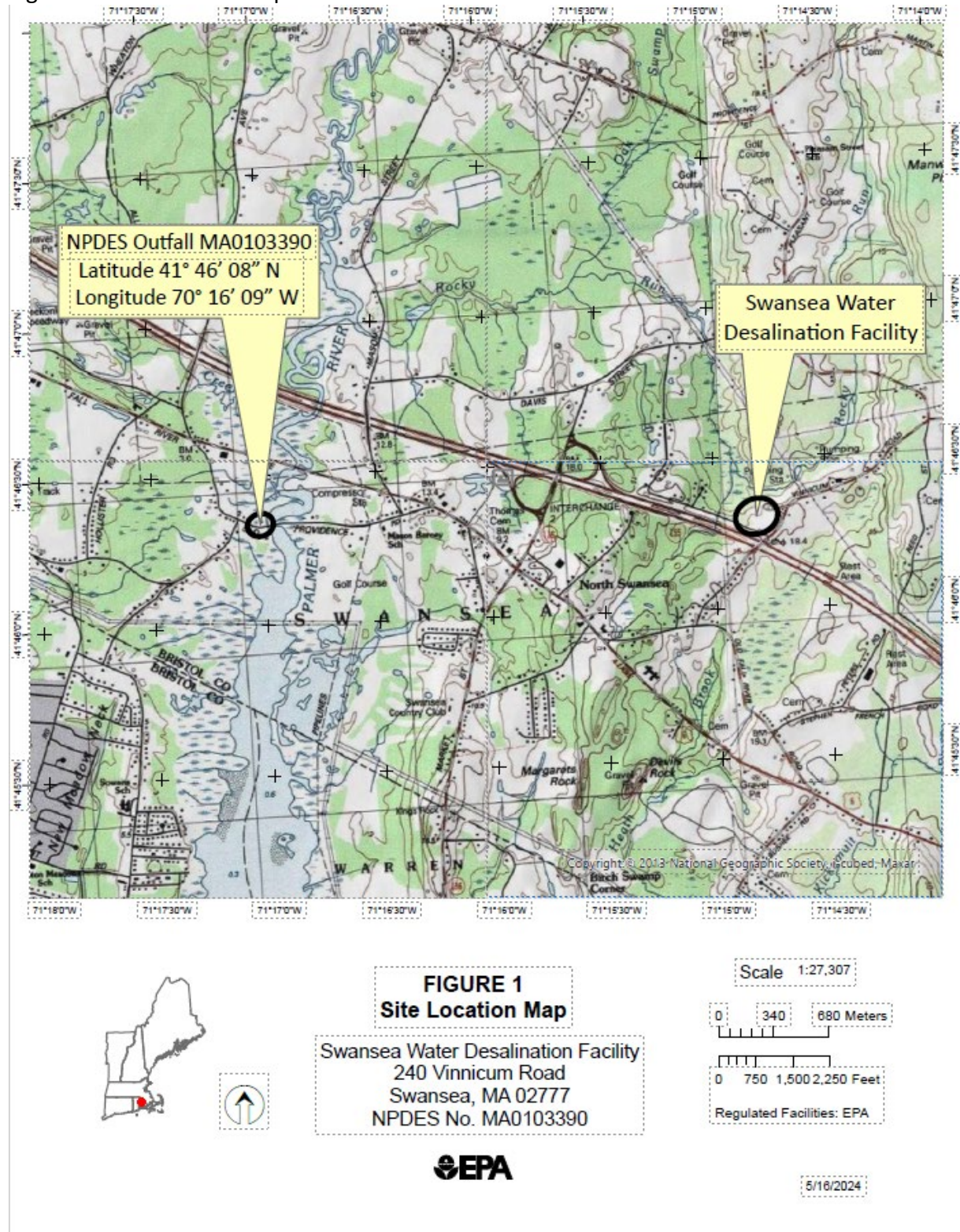
Membrane-specific cleaning chemicals, such as caustic soda, acid, and hypochlorite are used as necessary for each specific membrane system. The Draft Permit requires cleaning fluids other than hypochlorite, sent to a tank for off-site disposal.

3.2 Location and Type of Discharge

The outfall, a two-port diffuser, is located about 2.4 miles from the mouth of the river and 1800 feet from the Massachusetts-Rhode Island state line at latitude 41° 46' 19.636 N and longitude -71° 16' 58.294 W. See Figure 1 below. It is approximately 4.6 m (15 ft) below the surface of the river in a depression approximately 8.5 m (28 ft) deep and approximately 50 feet south of the Old Providence Road Bridge spanning the river. The ports, 0.22 m (8.7 in) in diameter oriented 60° above the horizontal, are separated by 5 m (16.4 ft) in an approximate north - south orientation pointing west. The two-port diffuser is designed for a discharge flow rate of 3,700 gallons per minute (gpm).

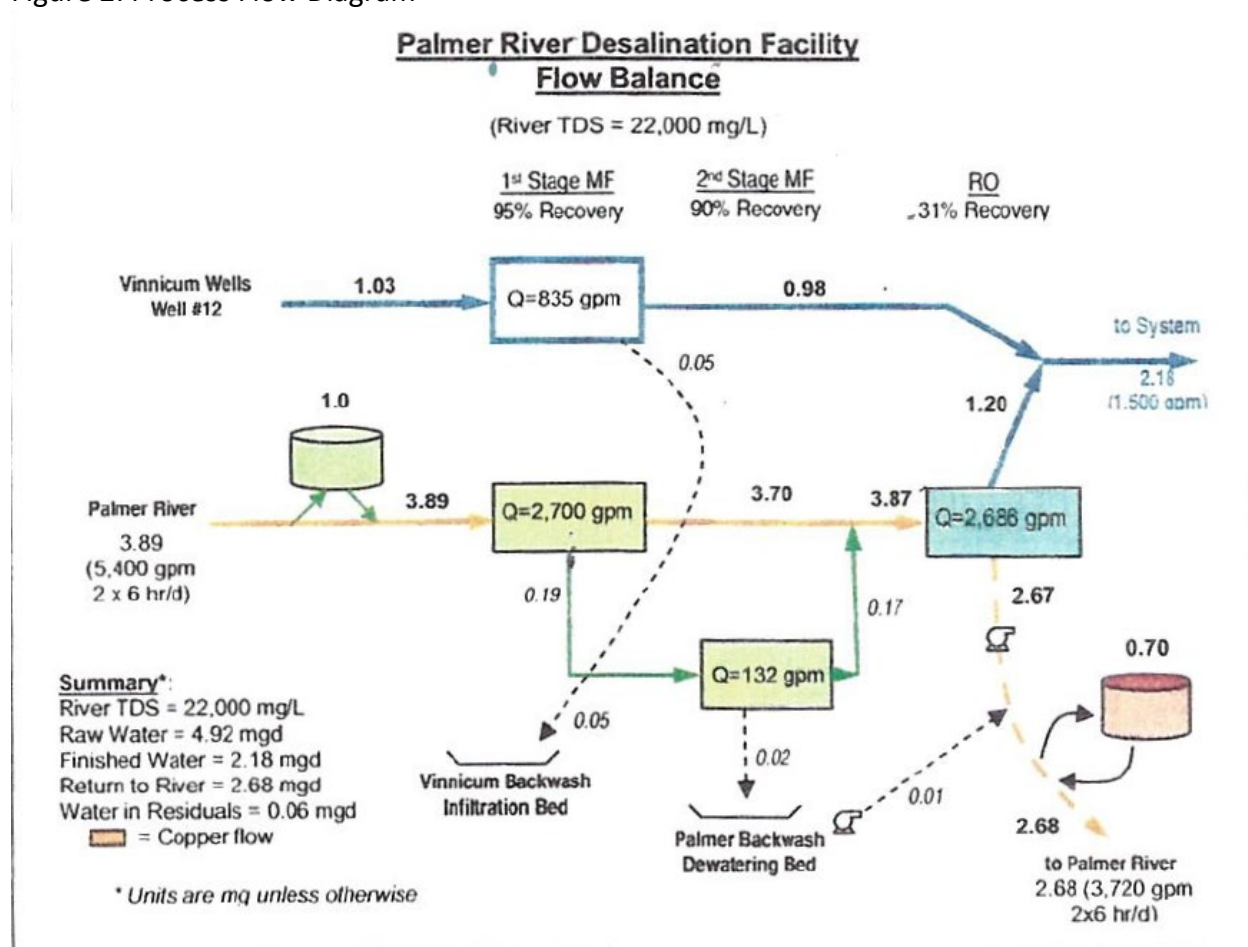
The intake structure is just north of the Old Providence Road Bridge approximately 4 miles downstream of Shad Factory Dam, the upstream extent of tidal influence.

Figure 1. Site Location Map



The Facility's liquid waste stream is primarily a mix of RO brine concentrate, and filter backwash reject water from the three MF systems. Other waste products included in the waste stream are strainer flushings, and cleaning solutions for the membranes. The MF backwash is discharged to sludge drying beds. RO brine concentrate and the clarified liquid from the drying beds, are combined in a concentrate equalization tank and discharged back to the Palmer River through the two-port diffuser during a six (6) hour period beginning three (3) hours before high tide and ending three (3) hours after high tide. The Draft Permit requires wastewater from the pretreatment system strainer and backwash from the MF membranes to be treated in the sludge drying beds prior to mixing with the final effluent.

Figure 2: Process Flow Diagram



4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Palmer River is a major tributary within Narragansett Bay Watershed. The river flows approximately 11 miles and comprises an east and west branch that converges to form the main branch of the river. The east and west branches of the river each flow approximately 5 miles before converging with the main branch; the main branch of the river flows approximately one mile before joining the Barrington River in Rhode Island, then the Warren

River before draining into the Narragansett Bay (the Bay). The east, west, and main branches of the river are freshwater up to the outlet of Shad Factory Pond where it becomes an estuary. The estuarine segment of the river continues to flow south southwesterly for approximately a mile through Swansea, MA to the MA-RI state line.

The Swansea Water Desalination Facility discharges treated wastewater through Outfall 001 in the tidal portion of the Palmer River (Segment ID MA53-03). The Facility's 2017 Permit limits the timing of the discharge to not more than 3 hours before and not more than three (3) hours after high tide when salinity is relatively high and the receiving water characteristics are influenced by marine waters from the upper Narragansett Bay⁶. Segment ID MA53-03 of the Palmer River is 0.11 square miles and begins at the Route 6 bridge in Rehoboth and ends at the Massachusetts/Rhode Island state line.

The river is a significant fishery resource habitat area that supports marine and anadromous fisheries including one of the only four remaining natal spawning population of American Shad in Massachusetts. Appendix B of a Massachusetts Division of Marine Fisheries technical report, Recommended Time of Year Restrictions (TOY) for Coastal Alteration Projects to Protect Marine Fishery Resources in Massachusetts⁷ presents a table, listing the Palmer River as a spawning run in Rehoboth and Swansea with habitat present for American Shad and White Perch based upon recent documentation (<10 years) and recommends these species to be protected from January 1 to July 15 and September 1 to November 15.

The tidal portion of the river is classified as a Class SB water, with shellfishing as a qualifier in the Massachusetts WQSs, 314 Code of Massachusetts Regulations (CMR) 4.06. Class SB waters are described in the Commonwealth of Massachusetts Water Quality Standards at 314 CMR 4.05(4)(b) as follows:

“Those Coastal and Marine Waters so designated pursuant to 314 CMR 4.06; including, without limitation, 314 CMR 4.06(2) and certain surface waters designated in 314 CMR 4.06(6)(b). These 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. In the case of a water intake structure at a desalination facility, the Department has the authority under 33 U.S.C. § 1251 (FWPCA § 401) M.G.L. c. 21, §§ 26 through 53 and 314 CMR 3.00: Surface Water Discharge Permit Program to condition the water intake structure to assure

⁶ Barrett Energy Resources Group, Swansea Desalination Facility, Notice of Project Change-Report #1, January 17, 2016.

⁷ Massachusetts Division of Marine Fisheries Technical Report TR-47, Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts, January 2015. page 13. <https://www.mass.gov/files/documents/2016/08/ry/tr-47.pdf>

compliance of the withdrawal activity with 314 CMR 4.00 including, but not limited to, compliance with the narrative and numerical criteria and protection of existing and designated uses⁸.

Table 1 has the designated use attainment decisions for Segment ID MA53-03 as presented in the, *Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle, Appendix 19, Narragansett Bay (Shore) Drainage Area Assessment and Listing Decision Summary⁹* (2022 Final Massachusetts Integrated List of Waters).

Table 1. Designated Uses and Listing Statis for Segment ID MA53-03, Palmer River

Designated Use	Status	Causes of Impairment
Fish and other Aquatic Life and Wildlife	Fully Support with Alert Status	
Fish Consumption	Not Assessed	
Shellfish Harvesting	Not Supporting with Alert Status	Fecal Coliform
Primary Contact Recreation	Not Supporting	<i>Enterococcus</i>
Secondary Contact Recreation	Not Supporting	<i>Enterococcus</i>
Aesthetics	Fully Supporting	

The impairment status of shellfish harvesting, primary contact recreation and secondary contact recreation in the 2022 Final Massachusetts Integrated List of Waters¹⁰ (2022 Integrated List) is listed as not supporting these designated uses. Shellfish harvesting is listed as not supporting with an alert status due to the size of the prohibited area. Shellfish harvesting is prohibited in 92% in this segment of the river with fecal coliform as the cause of the impairment.

The primary and secondary contact recreation uses are impaired due to fecal coliform and *Enterococcus* and although no human source of bacteria was identified there is not enough information to delist fecal coliform at this time. The impairment source is identified as agricultural land-use upstream of the segment while other potential sources of bacteria include septic systems, waterfowl, and stormwater. The designated use of fish, other aquatic life and wildlife is listed as fully support with an alert status for total nitrogen. The alert status is due to elevated seasonal average total nitrogen concentrations data from 2016-2019 in this segment

⁸ 314 CMR 4.00 Massachusetts Surface Water Quality Standards. <https://www.mass.gov/doc/314-cmr-400/download>

⁹ MassDEP. 2023. Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. CN 568.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA. <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download>

¹⁰ MassDEP. 2023. Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. CN 568.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Worcester, MA. pages 116-129. <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download>

of the river with a range of 0.6 mg/L to 0.9 mg/L based on a total of 40 samples. Fish consumption was not assessed and the aesthetic use was not assessed due to a lack of information.

4.2 Ambient Data

Ambient monitoring in the Palmer River has been a requirement of the State Section 401 Water Quality Certification (WQC) that has been incorporated into the SWD's NPDES Permits since the Facility went on-line in 2013. The 401 WQCs issued by MassDEP for the 2017 Permit and 2022 Permit Modification requires the Permittee to continue biological and hydrological monitoring with an annual report due by June 30.

The annual report provides hydrological data on temperature, pH, salinity, dissolved oxygen, and turbidity as well as benthic, ichthyoplankton, juvenile finfish, and adult finfish monitoring results. The hydrological samples are collected at 3-foot intervals from the river's surface to the bottom at the Route 6 Bridge upstream of Facility's intake and at the Old Providence Bridge approximately 50 feet upstream of the discharge. From 2013 to 2021, annual benthic sampling was undertaken in June. The 2022 WQC shifted the benthic monitoring to September to capture possible changes in the benthos due to a higher salinity discharge in the late summer. Benthic grabs are taken along two transects, one above and one below the Old Providence Bridge. The ichthyoplankton samples are collected at two locations; upstream of the Facility's intake and at the Old Providence Bridge approximately 50 feet upstream of the discharge. Juvenile and adult finfish sampling is undertaken using beach seines and fyke nets at locations upstream and downstream of the Old Providence Bridge. Ambient monitoring data from 2013 through 2022 have shown both annual and seasonal patterns in the hydrologic monitoring, natural variability in the benthic community as well as variations in the numbers fish and fish taxa present as eggs, larvae, juveniles, and adults. These changes resemble the variability seen in coastal estuaries and have not been attributed to the Swansea Desalination Plant's discharge. MassDEP is maintaining the ambient monitoring requirement in the draft state WQC with modifications.

EPA used ambient pH and temperature data from the 2022 annual report in the RPA to determine the ammonia criteria and ambient metals data from Whole Effluent Toxicity Tests (WET) were used to determine the need for metal limits in the Draft Permit. See Appendix B.

4.3 Available Dilution

To ensure that the discharge does not cause or contribute to violations of WQSs under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water¹¹. Massachusetts water quality regulations require that the MassDEP "will establish extreme

¹¹ EPA Permit Writer's Manual, Section 6.2.4. <https://www.epa.gov/npdes/resources-permit-writers>

hydrologic conditions at which aquatic life criteria must be applied on a case-by-case basis.”
314 CMR 4.03(3)(c).

Certain water quality-based effluent limits were established with the use of a mixing zone. Mixing zones are regulated at 314 CMR 4.03(2) and are defined as “a limited area or volume of a waterbody as a mixing zone for the initial dilution of the discharge.”

4.03(2). Mixing Zones. In applying 314 CMR 4.00, the Department may recognize a limited area or volume of a waterbody as a mixing zone for the initial dilution of a discharge. The MA WQS allow waters within a mixing zone to fail to meet specific water quality criteria provided specific conditions are met:

(a). Mixing zones shall be limited to an area or volume as small as feasible. There shall be no lethality to organisms passing through the mixing zone as determined by the Department. The location, design and operation of the discharge shall minimize impacts on aquatic life and other existing and designated uses within and beyond the mixing zone.

(b). Mixing zones shall not interfere with the migration or free movement of fish and other aquatic life. There shall be safe and adequate passage for swimming and drifting organisms with no deleterious effects on their populations.

(c). Mixing zones shall not create nuisance conditions, accumulate pollutants in sediments or biota in toxic amounts or otherwise diminish the existing or designated uses of the segment disproportionately.

The available dilution is from a PLUMES® modeling study designed and completed by Applied Science Associates (ASA) in 2006. In 2015 the PLUMES model was validated with a dye study showing that earlier model results generally matched the field data.

The 2017 Permit corrected the dilution calculation which provided an increase in available dilution from the dilution applied in the 2008 Permit. For a detailed explanation of the revised dilution factor, see the 2016 Fact Sheet issued on August 8, 2016¹².

A dilution of 9.36 is used in the RPA to determine the need for effluent limits in the Draft Permit.

5.0 Proposed Effluent Limitations and Conditions

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

¹² NPDES Permit MA0103390, pages 138 to 140.

<https://www3.epa.gov/region1/npdes/permits/2017/finalma0103390permit.pdf>

In accordance with 40 CFR § 122.45(b)(2), EPA based the calculation of effluent limitations upon the design flow of the Facility.

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 effluent limitations' development process. A quantitative description of the discharge in terms of effluent parameters, based on a review of monitoring data submitted by the Permittee from December 2018 through November 2023 (the review period) is attached as Appendix A to this Fact Sheet. EPA's Reasonable Potential Analysis (RPA) is presented in Appendix B and results of the analyses are discussed in the applicable sections below.

5.1.1 Effluent Flow

The Swansea Water District operates the Facility when the demand for potable water exceeds the capacity of the Town's groundwater wells. This typically occurs during the summer and fall seasons. The effluent flow discharged to the Palmer River is from an equalization tank that contains a mix of treated brine concentrate from the reverse osmosis system, filter backwash water from three microfiltration membrane units, strainer flushing's and cleaning solutions used to clean the membranes. Filter backwash from the microfiltration membranes is sent to the sludge drying beds for treatment before it is combined with the brine concentrate in the equalization tank. The combined waste stream from the equalization tank is batch discharged through a two-port diffuser to the Palmer River.

The discharge is limited to a six-hour high tide period (no more than three hours before high tide and no more than three hours after high tide). The effluent flow limit in the Draft Permit is a monthly average limit of 2.71 MGD, the design flow of the Facility, the same as in the 2017 Permit. The flow is measured continuously.

There were no exceedances of the design flow for the review period. Flow data can be viewed in Appendix A.

5.1.2 Total Suspended Solids (TSS)

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 and reduce light penetration through the water column or 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 that can have a long-term impact on the water column through cycles of re-suspension.

The 2017 Permit has average monthly and weekly TSS limits of 20 and 30 mg/L and a maximum daily reporting requirement. These technology-based limits are based on Best Professional Judgement (BPJ) in accordance with Section 402(a)(1) of the CWA and 40 CFR 125.4. The limitations are based on TSS concentrations estimated to be achievable by using sedimentation basins/tanks/ponds to treat filter backwash and other wastewaters from potable water treatment facilities. Another factor impacting suspended solid in the final effluent is the variability of the river flow entering the Facility at the intake.

DMR data provided in Appendix A has TSS data for the review period and Table 2 shows the TSS exceedances for the review period.

Table 2. TSS DMR Data

	TSS, Monthly Average, 20 mg/L	TSS, Weekly Average, 30 mg/L
6/30/2019		35
9/30/2019		32.75
6/30/2022	24.78	44.6
7/31/2022	31.94	63.88
8/31/2022	35.75	71.5
4/30/2023	26.25	52.5
8/31/2023		42.6
9/30/2023	23.67	30.38
11/30/2023	32.25	51.6

The CWA section 402(o)(2) outlines specific anti-backsliding exceptions to the general prohibition against revising an existing TBEL that was developed on a case-by-case basis using BPJ. This CWA provision provides that relaxed limitations may be allowed where the permittee has installed and properly operates and maintains the required treatment facilities, but still has been unable to meet the effluent limitations. EPA conducted a site visit in November 2023 and found the Permittee operating the Facility properly and is therefore, applying an anti-backsliding exception for TSS effluent limits from June 1 through September 30. An increase in the monthly average TSS limit from 20 mg/L to 40 mg/L and weekly average TSS limit from 30 mg/L to 70 mg/L is warranted due to low instream flow during the summer months with the potential for an increase in suspended solids due to the brackish water. This provision of the CWA only allows less stringent limits to the treatment level achieved at the Facility, and data in Table 2 provides the level of TSS achieved at the Facility.

A technical report published by the Massachusetts Division of Marine Fisheries in 2016¹³ states,

¹³Evans N.T, Ford K. H., Chase B. C., and Sheppard J. J., "Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts", Massachusetts Division of Marine Fisheries Technical Report TR-47, <https://www.mass.gov/files/documents/2016/08/ry/tr-47.pdfchrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mass.gov/files/documents/2016/08/ry/tr-47.pdf>

“American shad populations in Massachusetts have been in rapid decline for almost two decades due to pollution, habitat loss, upland development, and overfishing (ASMFC 2009a). Elevated levels of turbidity caused by dredging, construction projects, stormwater run-off and other inputs may cause significant stress to migrating, spawning, and developing eggs and larvae. Adult shad may be tolerant of turbidity levels up to 1000 mgL⁻¹ total suspended solids (TSS) and hatching success of eggs was not significantly impacted at levels below 1000 mgL⁻¹. However, concentrations greater than 100 mgL⁻¹ TSS were found to significantly reduce larval survival and TSS equal to 500 mgL⁻¹ for four days resulted in high mortality (Wilbur and Clark 2001) of eggs was not significantly impacted at levels below 1000 mgL⁻¹ (ASMFC 2009a).”

The information referenced in this report indicates that an increase in the seasonal TSS limits from June through September are not likely to impact any life stages or habitat of the ichthyoplankton population adversely. The TSS limits will remain the same as the limits in the 2017 for the months of October through May.

5.1.3 Salinity

Salinity, the dissolved salt content of a body of water helps determine the chemical and biological characteristics of a water body. Salinity can be a chemical stressor in the aquatic environment as fluctuating levels of salinity can affect aquatic biological organisms which are adapted to prevailing salinity concentrations.

The Permittee submitted a request for a higher salinity limit during development of the 2017 Permit for operational flexibility due to unexpected higher salinities levels in the river during the drier months when groundwater sources are limited¹⁴. However, the Permittee was required to go through the Massachusetts Environmental Policy Act (MEPA) Office before EPA could issue a permit modification for revised limits because the 2006 MEPA certificate restricted the discharge of salinity in the effluent higher than 32 ppt.¹⁵ The Permittee submitted a Notice of Project Change to MEPA for consideration to revise the original MEPA certificate. MEPA required the Permittee to conduct a pilot study to ensure that any increase in salinity discharged to the river would not adversely impact fish and aquatic wildlife.

The Permittee received a MEPA Certificate on October 27, 2017, with conditions that the Permittee, and the agencies¹⁶ address the following:

- Identification of measures to maximize efficiency of other drinking water resources and

¹⁴EPA Region 1, Swansea Desalination Facility Permit Modification, March 2022.

<https://www3.epa.gov/region1/npdes/permits/2022/finalma0103390permitmod.pdf>

¹⁵ EPA Region 1, Swansea Desalination Facility Permit Modification, March 2022.

<https://www3.epa.gov/region1/npdes/permits/2022/finalma0103390permitmod.pdf>

¹⁶ The agencies are EPA Region 1, MassDEP, Massachusetts Coastal Zone Management and the Massachusetts Division of Marine Fisheries.

strengthen water conservation efforts to minimize growth in water demand.

- Specification of thresholds during the seasonal dry period upon which increased salinity discharge limits will be authorized.
- Specification of enhanced monitoring protocol, including timing, frequency, methods, and reporting, necessary to demonstrate that impacts are “not significant to a biological community in the river segment.”

EPA issued a permit modification that revised the 2017 salinity limit. The modification changed the average monthly limit of 32 ppt to a maximum daily limit from October to June which is more stringent than the 2017 limit, but it also included a less stringent maximum daily limit of 42 ppt from July through September. The less stringent limit was intended to accommodate the Facility’s request for an increase in the effluent limit during months of low stream flow with higher salinity levels in the river.

There were no exceedances reported from the time the 2022 Permit Modification went into effect. The highest salinity recorded during the review period in July 2022 was 38.63 ppt. As discussed in the Statement of Basis of the 2022 Permit Modification, the Permittee conducted two field pilot studies to address the MEPA requirements and both studies showed the maximum salinity discharged was no higher than 42 ppt. The hydrological and biological monitoring reports from 2013 to 2022 also concluded that there are no adverse impacts to the ichthyoplankton and fish communities attributable to the operation of the Facility.

As noted earlier in this Fact Sheet, the 2022 drought conditions in southern Massachusetts likely led to lower streamflow and groundwater levels however, the results from the 2022 Hydrological and Biological Monitoring Program¹⁷ report stated,

“Overall, statistical analysis suggests benthic samples have been more similar within year, less similar between years with no differences detected between benthic communities along the upstream and downstream transects from 2013 through 2022. Results suggest that variation in densities between years is widespread within the Palmer River estuarine zone rather than influenced by the Swansea desalination facility, and that both upstream and downstream sampling locations are similar and relatively unstressed or sufficiently undisturbed to sustain a benthic community consistent with a dynamic environment.”

On November 30, 2023, EPA and MassDEP conducted a site visit and the Permittee requested the Draft Permit continue to include the daily maximum seasonal salinity limits that were in the modification issued in 2022. Since the Permittee has operated its Facility properly regarding managing effluent salinity levels, an exception to the CWA’s anti-backsliding provision applies, which allows an increase in the salinity limits. See CWA § 402(o). This provision specifies that a less stringent effluent limitation may be applicable if information is available that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that would have justified the application of a less stringent effluent limitation at the time of permit issuance. This “new information” is described below.

EPA considers the updated information from the two pilot studies which show the maximum salinity discharged did not exceed 42 ppt, data from the annual Hydrological and Biological Monitoring Program that show no adverse trends in the ichthyoplankton or benthic communities from the 2013 through 2022 and maximum daily DMR salinity data during the summer months are less than 40 ppt a solid indication the revised limits will not adversely impact the river 's water quality from the discharge. Therefore, the Draft Permit includes a daily maximum salinity limit of 32 ppt from October through June and a daily maximum salinity limit of 42 ppt from July through September.

5.1.4 Dissolved Oxygen

State WQS at 314 CMR 4.05(4)(b)(3) for a Class SB Water requires that dissolved oxygen (DO) shall not be less than 5.0 mg/L. Where natural background conditions are lower, DO shall not be less than natural background. Natural seasonal and daily variations that are necessary to protect existing and designated uses shall be maintained.¹⁸

The 2017 Permit includes a dissolved oxygen (DO) limit of not less than 5.0 mg/L based on the State WQS. The DMR data in Appendix A shows there were no exceedances of this limit. The DO limit of 5.0 mg/L, a state certification requirement, is carried forward in the Draft Permit.

5.1.5 Total Residual Chlorine

Chlorine and chlorine compounds are toxic to aquatic life. Free chlorine is directly toxic to aquatic organisms and can react with naturally occurring organic compounds in receiving waters to form toxic compounds such as trihalomethane. Chlorine, on occasion, is used to clean filter membranes and reverse osmosis membranes at the facility.

The 2017 Permit has monthly average and maximum daily effluent limits of 70.2 µg/L and 121.7 µg/L. There were no exceedances of the total residual chlorine (TRC) limits during the review period.

The TRC limits are based on chlorine criteria defined in the National Recommended Water Quality Criteria:2002, EPA 822R-02-047 (November 2002), as adopted by the MassDEP in the State Water Quality Standards at 314 CMR 4.05(5)(e) and 314 CMR 4.06, Table 29(a). The acute and chronic saltwater instream criteria for chlorine are 7.5 µg/L (chronic) and 13 µg/L (acute). The criteria are multiplied by the dilution to determine the monthly average and maximum daily effluent limits of 70.2 µg/L and 121.7 µg/L in the Draft Permit.

Chronic criterion x dilution
 $7.5 \mu\text{g/L} \times 9.36 = 70.2 \mu\text{g/L}$

Acute criterion x dilution
 $13 \mu\text{g/L} \times 9.36 = 121.7 \mu\text{g/L}$

¹⁸ MassDEP. 314 CMR 4.05(4)(b)(1) <https://www.mass.gov/doc/314-cmr-400/download>

The type and frequency of monitoring is a grab sample collected once per discharge cycle.

5.1.6 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.

The pH limits are based Class SB water of the Massachusetts WQSs at 314 CMR 4.05(3)(b)3. This regulation states, “The pH for said (Class SB) waters shall be 6.5 to 8.5 except when due to natural causes.” These limitations are based on CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)¹⁹.

The pH range during the review period was from 6.67 to 8.46 S.U. achieving WQS during the review period. The Draft Permit limits are a range from 6.5 to 8.5 S.U. when the Facility is discharging.

5.1.7 Ammonia

Ammonia (NH₃) is the unionized form of ammonia nitrogen. Elevated levels of ammonia can be toxic to aquatic life. Temperature, and pH affect the toxicity of ammonia in aquatic life. The toxicity of ammonia increases as temperature increases and ammonia concentration and toxicity increase as pH increases. Ammonia can affect fish growth, gill condition, organ weights and hematocrit, and can result in excessive plant and algal growth that can cause eutrophication. Ammonia can also affect dissolved oxygen through nitrification, in which oxygen is consumed as ammonia is oxidized. Low oxygen levels can then, in turn, increase ammonia by inhibiting nitrification. Total ammonia-nitrogen concentrations in surface waters tends to be lower during summer than during winter due to uptake by plants and decreased ammonia solubility at higher temperatures.

The 2017 Permit requires the Permittee report the average monthly ammonia load discharged to the river. The highest average monthly load reported was 1.841 #/day in December 2020 with a range of 0.109 – 1.841 lb/day during the review period. EPA converted the DMR data (lb/day) to concentration (mg/L) levels to calculate the reasonable potential of ammonia to cause or contribute to an exceedance of WQC due to toxicity.

EPA reviewed ambient pH and temperature data outside the zone of influence of the discharge from the Hydrological and Biological Monitoring Reports for the review period. The average ambient data from the 2022 report from July through September were used to determine the applicable ammonia criteria used in the reasonable potential analysis (RPA) and the need for an

¹⁹ MassDEP. 314 CMR 4.05(4)(b)(1) <https://www.mass.gov/doc/314-cmr-400/download>

ammonia limit. EPA used data from this report as Southern New England was officially experiencing extreme drought conditions in August and September of 2022 according to the drought data from National Oceanic and Atmospheric Administration (NOAA)²⁰ to evaluate critical water quality conditions in the river.

The ammonia criteria are defined in the National Recommended Water Quality Criteria:2002, EPA 822R-02-047 (November 2002), as adopted by the MassDEP in the State Water Quality Standards at 314 CMR 4.05(5)(e) and 314 CMR 4.06, Table 29(a). The acute and chronic ammonia criteria of 10.1 mg/L and 1.5 mg/L were based on an average temperature of 25°C, and pH of 7.7 S.U.

The information and assumption described above used in the RPA (See Appendix B) show there is no reasonable potential for the ammonia concentration in the discharge to cause or contribute to an exceedance of the acute or chronic ammonia criteria in the warm weather months and therefore, the Draft Permit does not include ammonia limits during this permit cycle. Because the Palmer River supports one of the few small stream American shad (*Alosa sapidissima*) fisheries in the Massachusetts, has a river herring (*Alosa sp.*) fishery, a population of rainbow smelt (*Osmerus mordax*) and white perch (*Morone americana*), the monthly monitoring requirement will remain in the Draft Permit to determine reasonable potential in future NPDES permits.

5.1.8 Nitrogen

Nitrogen is an essential nutrient for plant growth. However, elevated concentrations of nitrogen can result in eutrophication, where nutrient concentrations lead to excessive plant and algal growth. Respiration and decomposition of plants and algae under eutrophic conditions reduce dissolved oxygen concentrations below levels necessary to support aquatic life.

Total nitrogen is the sum of Total Kjeldahl Nitrogen (TKN) (ammonium, organic and reduced nitrogen) and nitrate-nitrite. It is derived by individually monitoring for organic nitrogen compounds, ammonia, nitrate, and nitrite and adding the components together. Some forms of nitrogen can be directly toxic to aquatic life at high concentrations, depending on ambient temperature and pH conditions.

A review total nitrogen concentration in segment MA53-03 of the Palmer River described in Appendix 19 of the Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle states,

“EPA staff conducted discrete water quality monitoring data along this Palmer River AU (MA53-03 at the Rt.6 bridge, Rehoboth (EPA_PM29) & Old Providence Rd, Swansea (EPA_PM43), once or twice in 2012-2013 and typically monthly in 2016-2019. The maximum total nitrogen concentration measured 1.8 mg/L, but the seasonal average

²⁰ <https://www.drought.gov/historical-information?dataset=0&selectedDateUSDM=20220712&state=Massachusetts&countyFips=25005>

concentration averaged 0.6 mg/L to 0.9 mg/L (n= 40 five sample average concentrations for both stations 2016-2019). According to CALM guidance (MassDep 2022), total nitrogen concentrations at mid-ebb tide conditions >0.5mg/L in an estuarine area can be indicative of moderately to severely degraded habitat health for the system, however no primary producer biological screening data are available to evaluate or clarify the existence of a nutrient enrichment problem for this Palmer River.”²¹

Further upstream of the intake, the 2022 Integrated List of Waters (303d) has seasonal total nitrogen data for Segment MA53-05 from 0.4-1.0 mg/L (5-day averages n=60) also indicating moderately-severely degraded health for the system. MassDEP list designated use of Fish, other Aquatic Life and Wildlife as “fully support” for this segment with an Alert Status due to a few indicators of nutrient enrichment²².

EPA Region 1 funded development of the Palmer River Water Quality Report²³ and the Palmer River Watershed Based Plan²⁴(Plan) through EPA’s Southeast New England Program (SNEP) and Section 319 of the CWA.

The Palmer River Water Quality Report issued in December 2019 states,

“While still dominated by forest, the Palmer River watershed contains significant agriculture and development and faces increasing development pressure. In 1992, the Rhode Island Department of Environmental Management (RIDEM) listed its portion of the Palmer River as impaired for primary contact recreation and shellfish consumption due to elevated levels of fecal coliform and as impaired for fish and wildlife habitat due to low dissolved oxygen levels, with a total nitrogen impairment listing added in 1998. The Massachusetts Department of Environmental Protection (Mass DEP) listed its portion of the Palmer River as impaired due to elevated levels of fecal coliform

²¹ MassDEP. 2023. Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. CN 568.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Appendix 19 Narragansett Bay Shore Coastal Drainage Area Assessment and Listing Decision Summary Worcester, MA. page 115. [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download](https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download)

²² MassDEP. 2023. Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. CN 568.1, Massachusetts Department of Environmental Protection, Bureau of Water Resources, Division of Watershed Management, Watershed Planning Program. Appendix 19 Narragansett Bay Shore Coastal Drainage Area Assessment and Listing Decision Summary Worcester, MA. page 36. [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download](https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-19-narragansett-bay-shore-coastal-drainage-area-assessment-and-listing-decision-summary/download)

²³US Environmental Protection Agency prepared by Horsley Witten Group and FB Environmental Associates, December 2019. Palmer River Water Quality Analysis Report. page 2. [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.epa.gov/sites/default/files/2020-04/documents/palmer-snep-wq-report.pdf](https://www.epa.gov/sites/default/files/2020-04/documents/palmer-snep-wq-report.pdf)

²⁴ Massachusetts Association of Conservation Districts 2020. “WATERSHED-BASED PLAN Palmer River Watershed”, July 2020. <https://www.mass.gov/doc/palmer-river-wbp-ma53-22/download>

beginning in 2002 (segment MA53-03 from the Route 6 bridge to the state line was first listed in 1998), along with nutrient and flow alteration impairment listings. In 2002 and 2004, a total maximum daily load (TMDL) was approved for the Palmer River watershed in RI for fecal coliform and in MA for E. coli, respectively (RIDEM, 2002; ESS Group Inc, 2004). The 2004 MA TMDL study found that 33 out of 88 sampling stations along the Palmer River violated state criteria for fecal coliform and/or E. coli. The Palmer River also exhibited elevated levels of total suspended solids (TSS) and nutrients (nitrogen and phosphorus)."

The Palmer River Watershed-Based Plan report²⁵, published in July 2020, states there are indicators of nutrient enrichment in the mainstem of the river and its' tributaries. Figure 3 is a map of the twelve core sampling locations referred to in the report.

The report provides a ranking analysis of the sampling sites that identifies Clear Run Brook (MA53-13), Rocky Run (MA53-18, MA53-16), and the mainstem of the Palmer River (MA53-22) as having the most degraded water quality of the sampling sites. The report goes on to explain the poor water quality at these locations is likely due to the dominance of agricultural land use and failing septic systems.

The sampling sites, PM29 and PM43 shown on the Figure 3, are above the intake and below the outfall, the report identifies non-migratory geese as a prominent source of waste impacting water quality at these sites.

²⁵ Massachusetts Association of Conservation Districts 2020. "WATERSHED-BASED PLAN Palmer River Watershed", July 2020. Page 11. <https://www.mass.gov/doc/palmer-river-wbp-ma53-22/download>

Figure 3. Palmer River Sampling Sites



The 2017 Permit included average monthly reporting requirements (reported in lb/day) for Total Kjeldahl Nitrogen (TKN) and nitrite plus nitrate. The fact sheet for the 2016 Draft Permit states that, “ Since Narragansett Bay is downstream of the discharge and suffers from nutrient impairments, a monitoring requirement for total nitrogen will remain in the permit.” The 2016

Fact Sheet states the average of the total nitrogen monthly averages was 5.5 lb/day from July 2013 to April 2016 and the average of the monthly averages during the review period was 21 lb/day.

Based on information from the reports referenced above, EPA notes that the nutrient load upstream of the intake may also be contributing to the increase in total nitrogen discharged from the Facility because the Swansea Water Desalination Facility simply concentrates the nitrogen that is already in the source water and discharges it at a higher concentration. Given that the facility is not an independent source of nitrogen (*e.g.*, municipal wastewater or agriculture), and the total load is relatively low, EPA finds that there is no reasonable potential for the Swansea discharge to cause or contribute to a violation of water quality standards. However, to continue to track nutrient trends in the discharge, monitoring TKN and nitrite plus nitrate will remain a requirement in the Draft Permit.

5.1.9 Metals

Metals are naturally occurring constituents in the environment and generally vary in concentration according to local geology. Metals are neither created nor destroyed by biological or chemical processes. However, metals can be transformed through processes including adsorption, precipitation, co-precipitation, and complexation. Some metals are essential nutrients at low levels for humans, animals, plants, and microorganisms, but toxic at higher levels (*e.g.*, copper and zinc). Other metals have no known biological function (*e.g.*, lead). The environmental chemistry of metals strongly influences their fate and transport in the environment and their effects on human and ecological receptors. In aquatic systems, metal bioavailability refers to the concentration of soluble metal that adsorb onto, or absorb into and across, membranes of living organisms. The greater the bioavailability, the greater the potential for bioaccumulation, leading to increased toxicological effects.²⁶ Toxicity results when metals are biologically available at toxic concentrations affecting the survival, reproduction, and behavior of an organism.

5.1.10 Copper

The 2017 Permit has a maximum daily copper limit of 53.4 µg/L. EPA used effluent copper data in the RPA to determine if more stringent limits are necessary to meet state WQS downstream of the discharge. Appendix B shows there is a need for more stringent copper limit in the Draft Permit. The RPA presents a establishes a maximum daily copper limit of 31.6 µg/L. The discharge is intermittent and EPA has determined there is no reasonable potential for copper in the discharge to exceed the chronic criteria an average monthly limit is not included in the Draft Permit. This determination is based on Best Professional Judgement (BPJ). Given that most of their recent copper data are well below the proposed limit of 31.6 µg/L, a compliance schedule is not warranted for this more stringent limit.

²⁶ Magelhaes, Danielly et al. 2015. *Metal bioavailability and toxicity in freshwaters*. Environmental Chemistry Letters. DOI 10.1007/s10311-015-0491-9.

5.1.11 Other Metals

Ambient and effluent data from quarterly Whole Effluent Toxicity (WET) for cadmium, lead, nickel, and zinc were used in the RPA to determine the need for effluent limits in the Draft Permit.

Cadmium data from the WET tests indicate it was not detected above the laboratory minimum levels. However, lead, nickel, and zinc were detected in the effluent. EPA completed RPA to determine if these pollutants cause, or have a reasonable potential to cause, or contribute to an excursion above State WQSs per EPA's 2002 *National Recommended Water Quality Criteria* for metals.

Based on the WET data, and the RPA, there is no reasonable potential to cause or contribute to an excursion of WQS for cadmium, lead, nickel, and zinc, so the Draft Permit does not propose any new limits for these metals.

Effluent and ambient monitoring for each of these metals will continue to be required in the WET tests.

5.1.12 Bis (2-ethylhexyl) Phthalate

Bis (2-ethyl hexyl) phthalate is a plasticizer widely used in the manufacturing of PVC and is listed as a priority pollutant in Appendix A to 40 CFR Part 423. This pollutant was listed on the priority pollutant scan of the 2015 permit application as detected with an average daily and maximum daily discharge of 25.1 µg/L and 56.0 µg/L. EPA included quarterly monitoring in the 2017 Permit (see Appendix A) due to the levels reported in the application. It was also listed in 2021 permit application with an average daily discharge of 7.15 µg/L and maximum daily discharge of 13.0 µg/L.

DMR effluent data submitted for the review period shows Bis (2-ethyl hexyl) phthalate was detected once in May of 2019 at a level of 13 µg/L with the remaining quarterly data reported as non-detect. The recommended water quality criteria for toxic pollutants updated in 2015 and adopted by MassDEP in 2021 has the human health criterion for Bis (2-ethylhexyl) phthalate with an exposure to fish and shellfish consumption in 314 CMR 4.00 as 0.37 µg/L. EPA's RPA of Bis (2 ethyl hexyl) phthalate compared the effluent concentration to the human health criterion to determine whether the discharge has the reasonable potential to cause or contribute to an exceedance of the water quality criterion.

The RPA demonstrates that Bis (2-ethylhexyl) phthalate does not cause, have reasonable potential to cause, or contribute to an excursion above the water quality criterion. See Appendix B. Therefore, EPA has removed the quarterly reporting requirements in the Draft Permit.

5.1.13 Per-and polyfluoroalkyl (PFAS)

As explained at <https://www.epa.gov/pfas>, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.²⁷ EPA is collecting information to evaluate the potential impacts that discharges of PFAS from facilities may have on downstream drinking water, recreational and aquatic life uses.

Background Information

On October 20, 2020, MassDEP published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL) of 20 parts per trillion (ppt) for the sum of the following six PFAS. See 310 CMR 22.00.

- Perfluorohexanesulfonic acid (PFHxS)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluorodecanoic acid (PFDA)

Although the Massachusetts water quality standards do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states:

All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife.

The narrative criterion is further elaborated at 314 CMR 4.05(5)(e)2 which states:

Human Health Risk Levels. Where EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

²⁷ EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan*, EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, and consistent with recent EPA guidance,²⁸ the Draft Permit requires that the Facility conduct quarterly influent and effluent and sludge sampling for PFAS chemicals and annual sampling of certain industrial users. The quarterly monitoring shall begin the first full calendar quarter beginning six months after the effective date of the permit. The annual monitoring for certain industrial users shall begin the first full calendar year following the effective date of the permit.

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits on a facility specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

“SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—

(A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;”.

(See 40 CFR § 122.21(e)(3)(ii) and 40 CFR § 122.44(i)(1)(iv)(B)).

The Draft Permit requires the use of Method 1633, Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples, published by EPA in January 2024²⁹. Monitoring should include each of the 40 PFAS parameters detectable by Method 1633 (see Draft Permit Attachment C for list of PFAS parameters) and the monitoring frequency is quarterly. Reporting of all 40 PFAS analytes is necessary to address the emerging understanding and remaining uncertainties regarding sources and types of analytes of PFAS in wastewater and

²⁸ Radhika Fox, Assistant Administrator, EPA to Water Division Directors, EPA Regions 1-10, December 5, 2022, Subject: “Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs.” Available at: https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf

²⁹ <https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas#method-1633>.

their impacts. While MassDEP has currently adopted MCLs for only 6 of these analytes as described above, it is possible that MCLs, water quality criteria and/or effluent limitation guidelines could be adopted for many of the other 36 analytes measured by Method 1633 during the life of the permit. Therefore, EPA considers it prudent to require reporting for all 40 analytes that are measured using Method 1633 to ensure EPA has sufficient data to address each of these PFAS analytes in the future. This level of monitoring is recommended in EPA's *October 2021 PFAS Strategic Roadmap*³⁰ and in an EPA memo dated December 5, 2022, called *Addressing PFAS Discharges in EPA-Issued NPDES Permits and Expectations Where EPA is the Pretreatment Control Authority*³¹.

All PFAS results must be reported on DMRs (see 40 CFR § 122.41)(l)(4)(i)). Additionally, EPA has recently published Method 1621 to screen for organofluorines in wastewater. Organofluorines (molecules with a carbon-fluorine bond) are rarely naturally occurring and the most common source of organofluorines are PFAS and non-PFAS fluorinated compounds such as pesticides and pharmaceuticals. The Permittee shall monitor Adsorbable Organic Fluorine using Method 1621 once per quarter concurrently with PFAS monitoring to screen for a broader range of these types of emerging contaminants. This requirement also takes effect the first full calendar quarter following six months after the effective date of the permit.

All monitoring results may be used by EPA in the next permit reissuance to ensure the discharge continues to protect designated uses.

5.1.14 Whole Effluent Toxicity

CWA §§ 402(a)(2) and 308(a) 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. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQs. Under CWA §§ 301, 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.

³⁰ https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf

³¹ https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf

In accordance with current EPA guidance and State policy,³² 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 LC₅₀.

For a Facility with a dilution factor between 10:1 and 100:1 EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) recommends acute or chronic toxicity testing and recommends that toxicity testing be required even if the effluent is not determined to cause or contribute to an excursion above water quality criteria. Both EPA's *Technical Support Document for Water Quality-based Toxics Control* (1991) and the *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters* (February 23, 1990) recommended criterion to prevent acutely toxic effects is 0.3 T.U.

The acute and chronic WET limits in the 2017 Permit are LC₅₀ greater than or equal to 100% and C-NOEC greater than or equal to 11% using silverside, *Menidia beryllina* as the test species. As shown in Appendix A, the WET test results indicate no toxicity in any WET tests. Therefore, in accordance with 40 CFR § 122.44(d), the Draft Permit continues the effluent limits from the 2017 Permit.

Toxicity testing must be performed in accordance with EPA Region 1's test procedures and protocols specified in **Attachment A, Marine Acute Toxicity Test Procedure and Protocol** (July 2012), **and Attachment B, Marine Chronic Toxicity Test Procedure and Protocol** (November 2013) of the Draft Permit.

6.0 Operation and Maintenance of the Desalination Facility

The standard permit conditions for 'Proper Operation and Maintenance', found at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. The requirements at 40 CFR § 122.41(d) impose a 'duty to mitigate' upon the permittee, which requires that "all reasonable steps be taken to minimize or prevent any discharge violation of the permit that has a reasonable likelihood of adversity affecting human health or the environment.

General requirements for proper operation and maintenance, and mitigation are in Part II of the Draft Permit. Specific permit conditions have also been included in Part I.B. and I.C of the Draft Permit. These requirements include reporting of unauthorized discharges, maintaining an adequate maintenance staff, annual staff training, chemical identification, and performing preventative maintenance at the Facility. These requirements are included to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

³² *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

7.0 Potential Alternative Permit Conditions

In the development of this permit, the Region considered a variety of alternative permit conditions and monitoring requirements in lieu of narrative requirements, as described in greater detail below. To ensure compliance with these applicable state narrative water quality standards, the State has indicated that it will include the narrative requirements in its water quality certification. See Part I.E of the Draft Permit. Based on the State's intent to include these requirements in the state certification, EPA does not find it necessary to include the alternative permit conditions and monitoring requirements in the Draft Permit. However, if some or all these narrative conditions are not included in the final state certification, EPA will include the applicable alternative permit conditions and monitoring requirements in the Final Permit. Therefore, EPA has described these alternative permit conditions and monitoring requirements in detail below and is soliciting public comments on the inclusion of these if the state certification does not include the applicable narrative conditions.

The alternative permit conditions and monitoring requirements described below relate to reasonable potential analyses, WET testing, and visual inspections of the receiving water. Each of these are related to compliance with specific narrative state water quality standards. It should also be noted that if any of these alternative requirements and monitoring requirements were to be included in this permit reissuance, EPA may remove or reduce these in the future and/or implement an alternative permitting approach if EPA finds that these are no longer necessary to protect these state water quality standards.

To be clear, each of the items described in this section below are not included in the Draft Permit and EPA intends to include them in the Final Permit only if the corresponding narrative condition is not included in the State's final certification of this permit and pursuant to any changes based on public comments.

Reasonable Potential Analyses

Given that EPA guidance³³ directs that reasonable potential analyses should be based on critical conditions, EPA uses the pollutant concentrations based on all available information provided to EPA during the development of the permit. As discussed in more detail in the pollutant-specific sections above, this information includes data from the Permittee's most recent application, DMR data during the review period, and any other available information included in the administrative record.

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).

³³ See 2010 NPDES Permit Writer's Manual, chapter 6 available at: https://www.epa.gov/sites/default/files/2015-09/documents/pwm_chapt_06.pdf

If the permitting authority determines that the discharge of a pollutant will not cause, have the reasonable potential to cause, or contribute to an excursion above WQSS, the permit does not need to contain WQBELs for that pollutant. However, EPA must ensure that the discharge of that pollutant does not increase during the permit term to the point that would violate water quality standards. Therefore, Part I.B.1 (Unauthorized Discharges) of the permit may include the following provision to ensure that EPA's reasonable potential analyses (for all pollutants) remain protective throughout the life of the permit, and which would also clearly articulate the scope of the protections afforded to the Permittee pursuant to CWA section 402(k):

“Any pollutant loading greater than the proposed discharge (the “proposed discharge” is based on the chemical-specific data and the facility's design flow as described in the permit application, or any other information provided to EPA during the permitting process) is not authorized by this permit.”

EPA notes that such increases may be allowable, but the Permittee must first submit a request to EPA to authorize such an increase. This request will allow EPA to conduct an updated reasonable potential analysis to reassess whether a WQBEL is needed for the newly proposed discharge. Permit modification or reissuance may be required before the proposed discharge would be authorized.

Toxicity

The Massachusetts WQSS 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.” To ensure the receiving water is free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife, throughout the permit term, EPA may incorporate additional WET requirements described below.

The Permittee shall conduct at least two accelerated re-tests at 14-day intervals which must be started within 14 days and 28 days of receiving the following results:

- any WET test results in a violation of any WET limit and the test acceptability criteria were met (only re-test for the species that failed); or
- the Permittee identifies or is provided notice of a sudden and significant death of large numbers of fish and/or shellfish in the vicinity of the discharge (test for all species identified in permit).

If the receiving water was used as the dilution water and is suspected to be toxic (*e.g.*, based on results from the initial test), the Permittee shall conduct the accelerated WET tests using laboratory water as the dilution water with a similar pH and hardness as the receiving water. If the WET tests using laboratory water do not violate any WET limits, the Permittee shall return to a normal monitoring frequency but should request to continue to use laboratory water as the dilution water based on these results. If either accelerated WET test violates any WET limits (and the test acceptability criteria were met), the discharge is considered to have persistent toxicity and the Permittee must immediately initiate a Toxicity Identification Evaluation and

Toxicity Reduction Evaluation (TIE/TRE) in accordance with subpart b below to resolve any toxic impacts on the receiving water.

The details of these requirements are presented below and were developed based on guidance available in EPA's *2024 NPDES WET Permit Writers' Manual*³⁴. EPA notes that the results of the TIE/TRE might also lead to additional, future NPDES permit controls, such as additional WET permit limits, chemical-specific permit limits, or a compliance requirement to reduce or eliminate toxicity.

- (1) If the WET re-test described above results in a violation of the WET limits, the Permittee must immediately initiate a TIE/TRE designed to identify and reduce toxicity in the discharge. Notice of TIE/TRE study implementation is to be submitted to EPA (via email: R1NPDESReporting@epa.gov) and the State within 10 days of receiving notification of WET re-test failure.
- (2) A TIE/TRE schedule and action plan must be submitted to EPA and the State as an electronic attachment to the DMR within 60 days of receipt of WET re-test failure.

The TIE/TRE schedule (from the initiation date to the termination date) should be as short as possible, and no longer than 24 months as follows: The "TIE/TRE initiation date" is the date of the receipt of results for the toxicity test that confirms persistent toxicity and the "TIE/TRE termination date" is the date corrective actions to resolve toxicity are identified and a schedule for completing these corrective actions is proposed.

The objective of the action plan is to identify the source(s) of toxicity by analyzing toxicity testing samples for any toxicant identified as being a potential source of toxicity and ascertaining whether the same level of toxicity occurs when any suspected toxicant level varies. This information might lead to finding one or more toxicants or confirming or eliminating suspected toxicants and possibly their source(s).

- (3) Quarterly "TIE/TRE Progress Reports" should be submitted to EPA and the State as an electronic attachment to the DMR at the end of each quarter after the TIE/TRE initiation date. The progress report should list all activities and findings related to resolving toxicity, including all WET and chemical test data. The data summaries of the TIE/TRE also should be provided in a tabulated format with explanations of the procedures used and the recorded findings from the study.
- (4) A "Final TIE/TRE Report" should be submitted to EPA and the State within 45 days of the TIE/TRE termination date (as an electronic attachment to the DMR) and should summarize the TIE/TRE activities and findings, propose the corrective

³⁴ Available at: <https://www.epa.gov/system/files/documents/2024-06/npdes-wet-permit-writers-manual.pdf>

action(s) to be taken, and propose a schedule to complete any identified corrective action(s).

- (5) After submission of the “Final TIE/TRE Report,” the Permittee shall continue to submit quarterly “Toxicity Reduction Progress Reports” (as an electronic attachment to the DMR) documenting progress on the corrective actions being taken to reduce toxicity in accordance with the proposed schedule.
- (6) Upon completion of all corrective actions identified in the “Final TIE/TRE Report,” the Permittee shall submit a “Toxicity Reduction Completion Report” (as an electronic attachment to the DMR) summarizing the corrective actions taken based on the TIE/TRE and shall include all information necessary to demonstrate that the discharge is no longer toxic and consistently complies with all WET limits.

Visual Inspection of the Receiving Water

Massachusetts surface water quality standards include several narrative requirements related to aesthetics, solids and oil & grease, as follows:

(314 CMR 4.05(5)(a)) **Aesthetics**. All surface waters shall be free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

(314 CMR 4.05(3)(a)5.; (3)(b)5.; (3)(c)5.; (4)(a)5.; (4)(b)5.; and (4)(c)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.

(314 CMR 4.05(3)(b)7. and (4)(b)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.

To ensure compliance with these narrative water quality standards, Table A.1 of the permit may include a reporting requirement for “Aesthetics,” and a footnote which more specifically requires the following monitoring requirements:

Once per month, the Permittee shall conduct a visual inspection of the receiving water in the vicinity of the outfall and report any changes that may be caused by the discharge as follows:

- 1) any observable change in odor,
- 2) any visible change in color,
- 3) any visible change in turbidity,
- 4) the presence or absence of any visible floating materials, scum or foam,
- 5) the presence or absence of any visible settleable solids,
- 6) the presence or absence of any visible film or sheen on the surface of the water or coating the banks of the water course.

Although there is no objective means to measure the impact of the discharge on the taste of the receiving water, the Permittee shall report to EPA and MassDEP any complaints it receives from the public regarding taste and/or odor and document what remedial actions, if any, it took to address such complaints.

The results do not need to be submitted each month. Rather, a summary of the 12 monthly visual inspections as well as any complaints received from the public regarding the taste of the receiving water shall be submitted as an electronic attachment to the December DMR, which is due each January 15th for the previous calendar year.

If an oily sheen is observed on the surface of the water in the vicinity of the outfall during the monthly visual inspection, the Permittee shall follow the procedures described above related to accelerated WET testing and potentially (if the accelerated tests demonstrate toxicity) conduct a TIE/TRE.

The Massachusetts “aesthetics” narrative water quality standard also seeks to protect against any discharge that, “produce[s] undesirable or nuisance species of aquatic life.” Because the production of undesirable or nuisance species of aquatic life is most commonly caused by the discharge of excess nutrients, this portion of the standard is addressed in this Draft Permit through compliance with the requirements described in the nitrogen and/or phosphorus sections of the Fact Sheet above.

The “solids” narrative water quality standard also requires that waters shall be “free from floating, suspended and settleable solids...that would impair the benthic biota or degrade the chemical composition of the bottom.” The Benthic Survey discussion below would address this portion of the standard particularly with respect to settleable solids. Total suspended solids (TSS) are regulated based on secondary treatment standards as described in the TSS section above.

The “oil & grease” narrative water quality standard also prohibits the receiving water from being deleterious or toxic to aquatic life. This portion of the standard is addressed in the Toxicity section above.

8.0 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/or the Secretary of Commerce, as appropriate, 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) within the Department of Interior administers section 7 consultations for terrestrial and freshwater organisms, while the National Oceanic and Atmospheric Administration's National Marine Fisheries Service within the Department of Commerce (NOAA Fisheries) administers section 7 consultations for listed species of marine organisms (including marine mammals and marine reptiles), as well as for anadromous fish.

The federal action being considered in this case is EPA's proposed reissuance of an NPDES permit for the Facility. The Draft Permit is intended to replace the 2017 Permit and the 2022 Permit Modification in governing the Facility. 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 to determine if EPA's proposed NPDES permit could potentially impact any such listed species in this segment of the Palmer River, as well as Narragansett Bay.

For protected species under the jurisdiction of the USFWS, two ESA listed species, the endangered northern long-eared bat (*Myotis septentrionalis*) and the tricolored bat (*Perimyotis subflavus*) listed as "proposed endangered", were identified as potentially occurring in the action area of the Facility's discharge³⁵. According to the USFWS, the endangered northern long-eared bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of forested habitats." This species is not considered aquatic. However, because the Facility's projected action area in Swansea, Massachusetts overlaps with the general statewide range of the northern long-eared bat, EPA prepared a northern long-eared bat Determination Key profile for the Swansea Water Desalination Facility NPDES Permit reissuance and submitted it to USFWS. In response, the USFWS notified EPA by letter³⁶ that based upon the project information provided by EPA, along with a standing USFWS analysis, the USFWS has determined that the permit modification will have "No Effect" on the northern long-eared bat. The USFWS determination letter concluded EPA's consultation responsibilities for the Swansea Water Desalination Facility NPDES permit modification action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

³⁵ USFWS Official Species List, Project Code: 2024-0078124; April 16, 2024.

³⁶ USFWS NLE Bat No Effects Determination Letter, Project Code: 2024-0078124; April 16, 2024.

Regarding the “proposed endangered” tricolored bat, the protected status of the tricolored bat was only recently included in the IPaC System. A Determination Key for the tricolored bat has not yet been included in the IPaC System. The other IPaC System option that is routinely used to determine the effect status of the federal action on the tricolored bat, the Northeast Protected Species Determination Key, does not include the tricolored bat at this time. Because the habitat of the tricolored bat is generally similar to the NLE bat, EPA has judged that the federal action will also have “no effect” on the proposed endangered tricolored bat. No further ESA coordination with USFWS is required for the tricolored bat. No ESA section 7 consultation is required with USFWS for the Swansea Water Desalination Facility.

For protected species under the jurisdiction of NOAA Fisheries, a number of anadromous and marine species and life stages are present in Massachusetts and Rhode Island coastal waters and bays. Various life stages of protected fish, sea turtles and whales have been documented in Massachusetts/Rhode Island coastal and inland waters, either seasonally or year-round. In general, adult and subadult life stages of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and adult shortnose sturgeon (*Acipenser brevirostrom*) are present in coastal waters. These sturgeon life stages are also found in some river systems in Massachusetts, along with early life stages of protected sturgeon and juvenile shortnose sturgeon.

Protected marine species, including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp’s ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*) are found in coastal waters and bays. Adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*) have also been documented in coastal waters and bays. Certain coastal areas have also been designated as critical habitat for North Atlantic right whale feeding.

In this case, the Facility’s outfall discharges directly into the Palmer River. The resulting tidally influenced action area does not extend the full three miles downstream to the mouth of the river. Therefore, the action area does not overlap with Narraganset Bay waters where protected marine sea turtle species are found.

According to the NOAA Fisheries ESA Mapper website³⁷, the following threatened/endangered life stages of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) from all Distinct Population Segments (DPS) are likely present in the Palmer River action area: adult (migrating and foraging) and subadult (migrating and foraging) year-round. In addition, endangered adult shortnose sturgeon (*Acipenser brevirostrom*) are likely present in the Palmer River action area while migrating and foraging from April 1 to November 30 each year.

EPA has thoroughly evaluated the potential impacts of the permit action on these anadromous species. EPA’s preliminary determination is that this action may affect, but is not likely to adversely affect, the life stages of the two ESA listed sturgeon species which are expected to be found in the Palmer River and overlap the action area of the discharge. EPA has judged that a

³⁷ <https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper>

formal consultation pursuant to section 7 of the ESA is not required. EPA is seeking concurrence from NOAA Fisheries regarding this determination through the information in the Draft Permit, this Fact Sheet and an ESA section 7 informal consultation document which has been submitted to NOAA Fisheries Protected Resources Division during the Draft Permit's public comment period.

As part of the overall ESA coordination, EPA routinely notifies USFWS and NOAA Fisheries when an NPDES Draft Permit and supporting Fact Sheet have been placed on public notice, along with a link to all relevant documents.

8.1 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. (1998)), EPA is required to consult with the National Oceanic and Atmospheric Administration Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 CFR § 600.910 (a)). Adverse impacts 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.

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). The EFH regulations clarify that "waters" includes aquatic areas and their associated physical, chemical, and biological properties that are used by the managed fish species, and those areas historically used by those species, where appropriate. "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.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (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. A New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment in 2017 updated the descriptions. The information is included on the NOAA Fisheries website at:

<https://www.fisheries.noaa.gov/action/omnibus-essential-fish-habitat-amendment-2>.

In some cases, a narrative identifies rivers and other waterways that should be considered EFH due to present or historic use by federally managed species

The federal action being considered in this case is EPA's proposed NPDES permit for the Facility, which discharges through Outfall 001, into the Palmer River, segment MA53-03, in Swansea, Massachusetts. The Palmer River is covered by EFH designation for riverine systems at Latitude

41° 46' 08"N Longitude 71° 16' 09, W" as determined by the NOAA EFH Mapper.³⁸ EPA's review of the relevant essential fish habitat information provided by NOAA Fisheries indicates that the outfall exists within designated EFH for the following 17 federally managed species and two Habitat Areas of Particular Concern (HAPCs).

Species/Management Unit	Lifestage(s) Found at Location
Atlantic Butterfish	Adult, Eggs, Juvenile, Larvae
Atlantic Cod	Eggs, Juvenile, Larvae
Atlantic Herring	Adult, Juvenile, Larvae
Atlantic Mackerel	Adult, Eggs, Juvenile, Larvae
Black Sea Bass	Adult, Juvenile
Bluefish	Adult, Juvenile
Little Skate	Adult, Juvenile
Longfin Inshore Squid	Adult, Juvenile
Pollock	Juvenile
Red Hake	Adult, Eggs/Larvae/Juvenile
Sand Tiger Shark	Neonate/Juvenile
Scup	Adult, Eggs, Juvenile, Larvae
Silver Hake	Eggs/Larvae
Summer Flounder	Adult, Juvenile, Larvae
Windowpane Flounder	Adult, Eggs, Juvenile, Larvae
Winter Flounder	Eggs, Juvenile, Larvae/Adult
Winter Skate	Adult, Juvenile
Habitat Area of Particular Concern	
Inshore 20m Juvenile Cod	
Summer Flounder SAV	

Therefore, consultation with NOAA Fisheries under the Magnuson-Stevens Fishery Conservation and Management Act is required.

8.1.1 EPA's Finding of all Potential Impacts to EFH

EPA has determined that the operation of this Facility, as governed by this permit action, may adversely affect the EFH of the 17 species and the two HAPCs identified in the table above. The Draft Permit has been conditioned in the following way to minimize any impacts that reduce the quality and/or quantity of EFH:

³⁸ NOAA Fisheries EFH Mapper at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3

- This Draft Permit action does not constitute a new source of pollutants. It is the reissuance of an existing NPDES permit;
- Whole effluent toxicity tests conducted 2/year are regulated by the Draft Permit to meet water quality standards;
- Total suspended solids, salinity, pH, dissolved oxygen, total residual chlorine, and total recoverable copper are regulated by the Draft Permit to meet water quality standards;
- A state approved mixing zone is proposed for this Draft Permit. The plume will dilute back to ambient conditions before contacting the river bottom and does not pose a chronic impact to benthic habitat;
- The water withdrawal intake structure complies with the narrative and numerical criteria and protection of existing and designated uses as specified in Massachusetts Water Quality Standards (314 CMR 4.00);
- The Draft Permit prohibits the discharge to cause a violation of State water quality standards;
- The Draft Permit prohibits the discharge of pollutants or combinations of pollutants in toxic amounts;
- The Draft Permit proposes effluent limitations and conditions that were developed to be protective of all aquatic life; and
- The proposed Draft Permit requirements minimize any reduction in quality and/or quantity of EFH, either directly or indirectly.

EPA believes that the conditions and limitations contained in the Draft Permit adequately protect all aquatic life, as well as the essential fish habitat and the habitat areas of particular concern associated with the Palmer River. Further mitigation is not warranted. Should adverse impacts to EFH and HAPCs be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NOAA Fisheries Habitat and Ecosystem Services Division will be contacted and an EFH consultation will be re-initiated.

As part of the overall EFH coordination, EPA routinely notifies NOAA Fisheries when an NPDES Draft Permit and supporting Fact Sheet have been placed on public notice, along with a link to all relevant 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.

9.0 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 Facility is required to contact the CZMP in Massachusetts for consistency review. The Facility submitted a letter dated December 17, 2021³⁹, to Massachusetts CZMP stating that the proposed activity at the facility, to discharge wastewater from the Facility will comply with the CZMP water quality and habitat policies.

The Federal Consistency Review will be initiated once the draft NPDES Permit is issued and concluded when the CZMP receives a 401 State Certification for the final permit. EPA expects that CZM will find the discharge consistent with its policies.

10.0 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, Betsy Davis at the following email address: davis.betsy@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.

³⁹ Letter, Jeffrey Sutherland, Superintendent, Swansea Water District to Massachusetts Coastal Zone Management, December 17, 2021. RE: Federal Consistency Review for NPDES Permit Renewal – Permit Number MA0103390.

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) 918-1576.

11.0 Administrative Record

The administrative record on which this Draft Permit is based may be accessed by contacting Betsy Davis at 617-918-1576 or via email to davis.betsy@epa.gov.

December 2024

Date

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

Effluent Data							
Parameter	Flow	Flow	TSS	TSS	TSS	pH	pH
	Monthly Avg	Daily Max	Monthly Avg	Weekly Avg	Daily Max	Minimum	Maximum
Units	MGD	MGD	mg/L	mg/L	mg/L	SU	SU
Effluent Limit	2.71	Report	20	30	Report	6.5	8.5
Minimum	0.227579	0.3985	3.43	5.75	6.5	6.67	7.69
Maximum	0.744832	1.3012	35.75	71.5	76	7.86	8.46
Median	0.426762	0.6309	12	19.13	31	7.46	8.25
No. of Violations	0	N/A	6	9	N/A	0	0
12/31/2018							
1/31/2019							
2/28/2019							
3/31/2019							
4/30/2019	0.227579	0.5404	4.13	8.25	10.5	6.71	7.97
5/31/2019	0.384006	0.5876	12.15	24.3	50	7.42	8.11
6/30/2019	0.37034	0.6312	20	35	56.5	7.4	8.25
7/31/2019	0.460977	0.6826	5.79	10.13	9.5	7.52	8.34
8/31/2019	0.437448	0.6744	5.4	8.64	11.7	7.63	8.03
9/30/2019	0.484257	0.8006	18.71	32.75	58.5	7.63	8.22
10/31/2019	0.445171	0.7945	6.8	13.6	22.5	7.63	8.24
11/30/2019	0.449409	0.576	12.75	25.5	20.5	7.7	8.09
12/31/2019							
1/31/2020							
2/29/2020							
3/31/2020							
4/30/2020							
5/31/2020							
6/30/2020	0.48371	0.6337	10.83	16.25	16	7.12	7.86
7/31/2020	0.572858	1.3012	12	21.6	24.5	6.67	7.69
8/31/2020	0.744832	1.2952	6.44	12.88	15.5	7.5	8.26
9/30/2020	0.591	0.8766	9.63	19.25	19	7.46	8.04
10/31/2020	0.529885	0.7091	3.5	5.83	9.5	7.46	8.24
11/30/2020	0.377453	0.9875	14.81	29.63	45.5	7.52	8.29
12/31/2020	0.334435	0.4925	4.3	7.17	10.5	7.11	8.42
1/31/2021							
2/28/2021							
3/31/2021							
4/30/2021							
5/31/2021	0.3629	0.5458	16.5	24.75	29.5	7.33	8.05
6/30/2021	0.365793	0.513	3.43	6	6.5	7.16	8.11
7/31/2021	0.321219	0.48	12.75	19.13	63	7.47	8.19
8/31/2021	0.330013	0.5302	8.07	14.13	27	7.37	8.3
9/30/2021	0.312954	0.5013	7.88	15.75	14	7.34	8.3
10/31/2021	0.356245	0.7182	12	24	35	7.58	8.46

Effluent Data							
Parameter	Flow	Flow	TSS	TSS	TSS	pH	pH
	Monthly Avg	Daily Max	Monthly Avg	Weekly Avg	Daily Max	Minimum	Maximum
Units	MGD	MGD	mg/L	mg/L	mg/L	SU	SU
Effluent Limit	2.71	Report	20	30	Report	6.5	8.5
Minimum	0.227579	0.3985	3.43	5.75	6.5	6.67	7.69
Maximum	0.744832	1.3012	35.75	71.5	76	7.86	8.46
Median	0.426762	0.6309	12	19.13	31	7.46	8.25
No. of Violations	0	N/A	6	9	N/A	0	0
11/30/2021	0.260273	0.3985	3.83	5.75	9.5	7.72	8.39
12/31/2021	0.368725	0.4809	7	7	9	7.86	8.24
1/31/2022							
2/28/2022							
3/31/2022							
4/30/2022							
5/31/2022	0.426762	0.564928	8.21	14.38	40.5	7.4	8.13
6/30/2022	0.425714	0.669376	24.78	44.6	63	7.49	8.25
7/31/2022	0.538507	0.6309	31.94	63.88	76	7.5	8.25
8/31/2022	0.421119	0.6397	35.75	71.5	60.5	7.31	8.34
9/30/2022	0.531115	0.734	13.92	20.88	54.5	7.54	8.46
10/31/2022	0.396238	0.624	10	17.5	54.5	7.56	8.46
11/30/2022	0.498353	0.8678	12.69	20.3	62	7.46	8.4
12/31/2022	0.430108	0.6637	11.38	15.17	23	7.54	8.25
1/31/2023							
2/28/2023							
3/31/2023							
4/30/2023	0.4243	0.5982	26.25	52.5	55	7.38	8.33
5/31/2023	0.427181	0.573	13.43	18.8	54.5	7.24	8.18
6/30/2023	0.441972	0.5975	13.61	24.5	36.5	7.68	8.44
7/31/2023	0.366594	0.5022	10	17.5	31	7.39	8.33
8/31/2023	0.45589	0.7536	23.67	42.6	59	7.36	8.4
9/30/2023	0.51747	0.6205	15.19	30.38	56	7.32	8.36
10/31/2023	0.491494	0.6528	6.63	13.25	16.5	7.32	8.17
11/30/2023	0.362273	0.4922	32.25	51.6	60	7.32	8.3

Effluent Data						
Parameter	TRC	TRC	DO	Ammonia	TKN	Nitrite+Nitrate
	Monthly Avg	Daily Max	Minimum	Monthly Avg	Daily Max	Monthly Avg
Units	ug/L	ug/L	mg/L	lb/d	lb/d	lb/d
Effluent Limit	70.2	121.7	5	Report	Report	Report
Minimum	1.58	10	7.31	0.109	0	0.077
Maximum	12.58	50	11.74	1.841	26.372	166.036
Median	5.67	20	8.64	0.216	1.478	8.968
No. of Violations	0	0	0	N/A	N/A	N/A
12/31/2018						
1/31/2019						
2/28/2019						
3/31/2019						
4/30/2019	1.58	20	9.45	0.987	3.651	1.386
5/31/2019	2.58	20	9.13	0.16	< 2.45	15.628
6/30/2019	5	20	8.01	0.494	7.159	0.077
7/31/2019	7.42	20	7.81	0.192	9.052	4.614
8/31/2019	8.39	20	8.84	0.474	< 2.812	18.24
9/30/2019	7.67	30	8.88	0.848	10.483	1.01
10/31/2019	5.81	20	9.47	1.374	26.372	9.282
11/30/2019	3.64	10	10.75	0.187	1.201	166.036
12/31/2019						
1/31/2020						
2/29/2020						
3/31/2020						
4/30/2020						
5/31/2020						
6/30/2020	2.22	10	8.49	0.202	1.321	78.947
7/31/2020	3.55	20	8.56	0.239	2.713	59.725
8/31/2020	7.1	40	7.31	0.311	2.7	17.268
9/30/2020	7	40	8.93	0.246	1.828	12.322
10/31/2020	5.2	20	9.16	1.149	1.478	11.048
11/30/2020	4	20	9.13	0.157	7.165	0.394
12/31/2020	4	10	10.62	1.841	1.027	0.139
1/31/2021						
2/28/2021						
3/31/2021						
4/30/2021						
5/31/2021	7.5	10	8.72	1.271	9.741	7.566
6/30/2021	5.33	40	8.21	0.824	1.07	7.627
7/31/2021	10.65	30	8.24	0.134	1.001	6.697
8/31/2021	7.42	20	8.06	1.266	< 2.211	0.688
9/30/2021	5.67	30	8.04	0.94	4.933	13.052
10/31/2021	4.52	20	9.42	0.149	8.625	14.854

Effluent Data						
Parameter	TRC	TRC	DO	Ammonia	TKN	Nitrite+Nitrate
	Monthly Avg	Daily Max	Minimum	Monthly Avg	Daily Max	Monthly Avg
Units	ug/L	ug/L	mg/L	lb/d	lb/d	lb/d
Effluent Limit	70.2	121.7	5	Report	Report	Report
Minimum	1.58	10	7.31	0.109	0	0.077
Maximum	12.58	50	11.74	1.841	26.372	166.036
Median	5.67	20	8.64	0.216	1.478	8.968
No. of Violations	0	0	0	N/A	N/A	N/A
11/30/2021	4.33	20	8.86	0.109	2.061	28.656
12/31/2021	2.5	10	11.74	0.83	1.003	7.687
1/31/2022						
2/28/2022						
3/31/2022						
4/30/2022						
5/31/2022	2.26	10	9.03	0.925	10.176	22.389
6/30/2022	4.67	30	8.46	0.426	1.396	17.752
7/31/2022	5.48	20	8.04	0.225	< 2.631	11.228
8/31/2022	7.42	20	8.15	0.176	< 2.668	8.78
9/30/2022	11.11	40	8.64	0.221	< .5	11.073
10/31/2022	8.28	20	8.15	0.165	< 2.602	8.261
11/30/2022	7	30	7.49	0.208	3.836	10.392
12/31/2022	4.62	20	11.13	0.179	< 2.768	8.968
1/31/2023						
2/28/2023						
3/31/2023						
4/30/2023	5.29	30	9.16	0.177	3.093	0.885
5/31/2023	5.48	20	8.55	0.178	5.496	0.891
6/30/2023	7.33	50	8.41	0.184	< 2.492	0.922
7/31/2023	10	40	8.22	0.153	4.649	0.764
8/31/2023	12.58	40	8.11	0.19	5.531	35.969
9/30/2023	7	30	8.3	0.216	< 2.587	10.79
10/31/2023	8.71	40	9.11	0.205	< 6.805	2.246
11/30/2023	7.33	40	9.83	0.151	< 2.052	1.399

Effluent Data					
Parameter	Copper	Salinity	Salinity	Salinity	Bis(2-ethylhexyl) phthalate
	Daily Max	Monthly Avg	Daily Max	Daily Max	Daily Max
Units	ug/L	ppk	ppt	ppt	ug/L
Effluent Limit	54.3	32	32	42	Report
Minimum	0	7.81	31.17	23.16	0
Maximum	45	34.96	25.48	38.63	13
Median	10	22.5		29.61	Non-Detect
No. of Violations	0	2	0	0	N/A
12/31/2018					
1/31/2019					
2/28/2019					
3/31/2019					
4/30/2019	21	7.81			
5/31/2019	13	13.8			13
6/30/2019	< 3	18.77			
7/31/2019	38				
8/31/2019	< 3				
9/30/2019	16				< 5.8
10/31/2019	45	34.68			< 8.6
11/30/2019	< 3	28.62			
12/31/2019					
1/31/2020					
2/29/2020					
3/31/2020					
4/30/2020					
5/31/2020					
6/30/2020	5	30.89			<3.05
7/31/2020	32				
8/31/2020	24				<100
9/30/2020	28				
10/31/2020	26	34.96			<24.25
11/30/2020	< 3	24.09			
12/31/2020	< 3	10.86			
1/31/2021					
2/28/2021					
3/31/2021					
4/30/2021					
5/31/2021	15	25.28			
6/30/2021	5	24.36			< 194
7/31/2021	< 3	15.36			< 194
8/31/2021	7	22.79			
9/30/2021	15	15.5			
10/31/2021	11	22.5			< 194

Effluent Data					
Parameter	Copper	Salinity	Salinity	Salinity	Bis(2-ethylhexyl) phthalate
	Daily Max	Monthly Avg	Daily Max	Daily Max	Daily Max
Units	ug/L	ppk	ppt	ppt	ug/L
Effluent Limit	54.3	32	32	42	Report
Minimum	0	7.81	31.17	23.16	0
Maximum	45	34.96	25.48	38.63	13
Median	10	22.5		29.61	Non-Detect
No. of Violations	0	2	0	0	N/A
11/30/2021	22	14.66			
12/31/2021	14	18.67			
1/31/2022					
2/28/2022					
3/31/2022					
4/30/2022					
5/31/2022	13		28.75		< 194
6/30/2022	14		31.17		
7/31/2022	15			36.51	
8/31/2022	16			38.63	< 20
9/30/2022	< 3			29.8	
10/31/2022	< 3		25.95		
11/30/2022	< 3		24.72		
12/31/2022	< .003		20.92		< 77.7
1/31/2023					
2/28/2023					
3/31/2023					
4/30/2023	< 3		24.29		
5/31/2023	7		25.01		
6/30/2023	10		30.79		< 100
7/31/2023	6			23.16	
8/31/2023	16			29.42	
9/30/2023	9			29.12	< 100
10/31/2023	5		22.17		
11/30/2023	< 3		27.27		< 80

Effluent WET Data							
Parameter	Total Solids	TSS	TDS	pH	TRC	LC50 Acute Menidia	C-NOEC Chronic Menidia
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Min	Daily Min
Units	mg/L	mg/L	mg/L	SU	mg/L	%	%
Effluent Limit	Report	Report	Report	Report	Report	100	11
Minimum	13000	2.4	No Data	6.68	No Data	100	50
Maximum	44000	4.7	No Data	7.34	No Data	100	100
Median	24000	3.2	No Data	6.95	No Data	100	100
No. of Violations	N/A	N/A	N/A	N/A	N/A	0	0
12/31/2018							
5/31/2019	13000	3.9		6.68	< .02	100	100
8/31/2019	16000	3.2		7.34	< .02	100	50
12/31/2019							
5/31/2020							
8/31/2020	44000	3.1		6.94	< .02	100	100
12/31/2020							
5/31/2021	24000	2.4		6.95	< .02	100	100
8/31/2021	33000	4.7		6.95	< .02	100	100
12/31/2021							
6/30/2022	30000	15		7.23	0.018	100	100
9/30/2022	25000			7.54	< .011	100	100
12/30/2023							
6/30/2023	27000	12		7.57	< .011	100	100
9/30/2023	30000	16		7.66	< .011	100	100

Effluent WET Dat							
Parameter	Ammonia	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report	Report	Report	Report	Report
Minimum	0	0	No Data	0.0023	0	0	0
Maximum	0.7	0.43	No Data	0.16	0.0012	0.0037	0.028
Median	0.14	0.065	No Data	0.0041	0.0007	Non-Detect	0.0028
No. of Violations	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12/31/2018							
5/31/2019	0.16	0.43	< .0005	0.0024	< .0005	0.0037	0.028
8/31/2019	< .1	0.052	< .0005	0.026	0.0007	< .002	0.0097
12/31/2019							
5/31/2020							
8/31/2020	< .1	0.065	< .0003	0.0023	0.0003	0.0016	0.0028
12/31/2020							
5/31/2021	0.7	< .4	< .0008	0.0041	0.0012	< .005	< .022
8/31/2021	0.14	0.27	< .001	0.16	0.0011	< .0063	< .027
12/31/2021							
6/30/2022	< .1	< .1	< .001	< .01	< .0003	< .005	< .02
9/30/2022	< .05	0.34	< .001	14	0.0337	< .005	< .02
12/30/2023							
6/30/2023	< .05	0.27	< .0002	4.6	< .0005	< .002	0.006
9/30/2023	< .05	0.57	< .0005	< .003	< .0005	< .001	< .005

Effluent WET Dat				
Parameter	Hardness	Alkalinity	TOC	Specific Conductance
	Daily Max	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L	um/sec
Effluent Limit	Report	Report	Report	Report
Minimum	No Data	No Data	4.2	No Data
Maximum	No Data	No Data	6.9	No Data
Median	No Data	No Data	4.8	No Data
No. of Violations	N/A	N/A	N/A	N/A
12/31/2018				
5/31/2019			6.9	
8/31/2019			6.7	
12/31/2019				
5/31/2020				
8/31/2020			4.6	
12/31/2020				
5/31/2021			4.8	
8/31/2021			4.2	
12/31/2021				
6/30/2022			5.64	
9/30/2022			9.41	
12/30/2023				
6/30/2023			8.62	
9/30/2023			8.17	

Ambient WET Data							
Parameter	pH	Ammonia	Aluminum	Cadmium	Copper	Lead	Nickel
	Minimum	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	SU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report	Report	Report	Report	Report
Minimum	7.32	7.32	0	No Data	0	0	0
Maximum	7.8	7.47	0.18	No Data	0.24	0.0049	0.0058
Median	7.47	7.47	0.11	No Data	Non-Detect	0.0024	Non-Detect
No. of Violations	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5/31/2019	7.32	0.24	0.11	< .0005	0.0018	0.0026	< .002
8/31/2019	7.47	< .1	0.092	< .0005	0.0012	0.0006	< .002
12/31/2019							
5/31/2020							
8/31/2020	7.47	< .1	0.18	< .0005	0.012	0.0049	0.0058
12/31/2020							
5/31/2021	7.67	0.39	0.16	< .0008	0.0037	0.0024	< .005
8/31/2021	7.8	< .11	< .11	< .005	< .015	< .005	< .032
12/31/2021							
6/30/2022	7.3	0.1	< 1	0.0001	0.0027	< .0003	0.008
9/30/2022	7.57	0.1	0.11	< .001	12	0.0139	< .005
12/31/2022							
6/30/2023	7.57	0.13	0.035	< .0002	18.9	0.0022	< .002
9/30/2023	7.6	< .05	0.109	< .0005	< .003	< .0005	< .001

Ambient WET Data					
Parameter	Zinc	Hardness	Alkalinity	TOC	Specific Conductance
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	um/sec
Effluent Limit	Report	Report	Report	Report	Report
Minimum	0	No Data	No Data	3.5	No Data
Maximum	0.038	No Data	No Data	8	No Data
Median	0.0068	No Data	No Data	4.9	No Data
No. of Violations	N/A	N/A	N/A	N/A	N/A
5/31/2019	0.0073			4.9	
8/31/2019	0.0068			5	
12/31/2019					
5/31/2020					
8/31/2020	0.038			8	
12/31/2020					
5/31/2021	< .022			4.5	
8/31/2021	< .14			3.5	
12/31/2021					
6/30/2022	0.006			6.45	26600
9/30/2022	< .02			8.19	
12/31/2022					
6/30/2023	0.013			7.03	
9/30/2023	< .005			7.26	

Influent Data				
Parameter	Flow	Flow	DO	Salinity
	Monthly Avg	Daily Max	Minimum	Monthly Avg
Units	MGD	MGD	mg/L	ppk
Effluent Limit	Report	Report	Report	Report
Minimum	0.46584	0.6686	0.77	4.17
Maximum	1.055423	2.1404	10.22	28.79
Median	0.79085	1.0914	3.07	13.33
No. of Violations	N/A	N/A	N/A	N/A
12/31/2018				
1/31/2019				
2/28/2019				
3/31/2019				
4/30/2019	0.507563	0.8506	7.99	4.64
5/31/2019	0.874139	1.2436	8.32	8.14
6/30/2019	0.914497	1.3513	5.11	9.7
7/31/2019	0.973665	1.376	3.37	14.14
8/31/2019	0.988835	1.4523	2.72	20.12
9/30/2019	0.847023	1.2257	3.6	23.57
10/31/2019	0.771826	1.1589	6.66	20.68
11/30/2019	0.881736	1.1183	9.27	13.33
12/31/2019				
1/31/2020				
2/29/2020				
3/31/2020				
4/30/2020				
5/31/2020				
6/30/2020	0.72332	0.9945	4.81	14.24
7/31/2020	0.974284	1.8114	2.77	20.9
8/31/2020	1.055423	2.1404	1.02	28.22
9/30/2020	0.806397	1.1713	2.24	28.79
10/31/2020	0.717423	0.8933	1.68	24.49
11/30/2020	0.56541	0.798	6.04	14.76
12/31/2020	0.61434	0.8834	7.88	9.96
1/31/2021				
2/28/2021				
3/31/2021				
4/30/2021				
5/31/2021	0.7141	1.0573	6.47	13.65
6/30/2021	0.86377	1.1313	1.96	6.14
7/31/2021	0.662813	1.0096	1.53	4.94
8/31/2021	0.701426	1.1355	1.8	6.94
9/30/2021	0.63408	0.9819	3.07	5.71
10/31/2021	0.610648	0.9569	3.34	9.13
11/30/2021	0.46584	0.6686	6.73	8.23
12/31/2021	0.616338	1.0914	10.22	4.17

Influent Data				
Parameter	Flow	Flow	DO	Salinity
	Monthly Avg	Daily Max	Minimum	Monthly Avg
Units	MGD	MGD	mg/L	ppk
Effluent Limit	Report	Report	Report	Report
Minimum	0.46584	0.6686	0.77	4.17
Maximum	1.055423	2.1404	10.22	28.79
Median	0.79085	1.0914	3.07	13.33
No. of Violations	N/A	N/A	N/A	N/A
1/31/2022				
2/28/2022				
3/31/2022				
4/30/2022				
5/31/2022	0.783658	1.063804	3.73	
6/30/2022	0.753234	1.351656	2.17	
7/31/2022	0.941548	1.123	1.06	
8/31/2022	0.669697	1.0013	0.89	
9/30/2022	0.90257	1.2094	0.98	
10/31/2022	0.724824	1.0404	1.51	
11/30/2022	0.817847	1.314	1.55	
12/31/2022	0.748908	0.8523	7.53	
1/31/2023				
2/28/2023				
3/31/2023				
4/30/2023	0.79085	1.0379	7.12	
5/31/2023	0.858167	1.0347	2.93	
6/30/2023	0.825197	1.0755	0.77	
7/31/2023	0.826294	1.0502	1.14	
8/31/2023	0.8505	1.1816	1.1	
9/30/2023	0.950383	1.1583	1.17	
10/31/2023	0.810037	1.484	4.7	
11/30/2023	0.583687	1.0637	5.72	

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD)¹ to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA uses the upper bound effluent concentration at the 95th percentile of the dataset. For datasets of less than 10 samples, EPA uses the maximum value of the dataset.

For marine discharges, EPA uses the dilution factor, the calculated upper bound of the effluent data and a concentration representative of the parameter in the receiving water outside of the zone of influence of the discharge to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$C_s(DF-1)+C_e=C_d(DF)$$

Where:

C_s = upstream concentration¹

1 Median concentration for the receiving water outside of the zone of influence of the facility's discharge taken from all available information over the most recent 5-year period, including WET testing data, for each Permittee.

2 The 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from all available data over the most recent 5-year period, including DMR data and/or WET testing data, for each Permittee.

C_e = effluent concentration² (95th percentile or maximum of effluent concentration)

C_d = downstream concentration

DF = dilution factor (See Dilution Factor section of Fact Sheet)

Solving for the downstream concentration results in:

$$C_d = C_s(DF-1) + C_e DF$$

When both the downstream concentration (C_d) and the effluent concentration (C_e) exceed the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. See 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. See 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration (C_d) and rearranging the mass balance equation to solve for the effluent concentration (C_e). Refer to the pollutant-specific section of the Fact Sheet for a discussion of these calculations, any assumptions that must be made and other relevant permit requirements.

For any pollutant(s) with an existing WQBEL, EPA notes that the analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the pollutant(s) continue to be discharged from the facility, EPA has determined that there is still reasonable potential for the discharge of this pollutant(s) to cause or contribute to an excursion of WQS. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). For these pollutant(s), if any, the mass balance calculation is not used to determine whether there is reasonable potential to cause or contribute to an excursion of WQS, but rather is used to determine whether the existing limit needs to be more stringent in order to continue to protect WQS.

From a technical standpoint, when a pollutant is already being controlled as a result of a previously established WQBEL, EPA has determined that it is not appropriate to use new effluent data to reevaluate the need for the existing limit because the reasonable potential to cause or contribute to an excursion of WQS for the uncontrolled discharge was already established in a previous permit. If EPA were to conduct such an evaluation and find no reasonable potential for the controlled discharge to cause or contribute to an excursion of WQS, that finding could be interpreted to suggest that the effluent limit should be removed. However, the new permit without the effluent limit would imply that existing controls are unnecessary, that controls could be removed and then the pollutant concentration could rise to a level where there is, once again, reasonable potential for the discharge to cause or contribute to an excursion of WQS. This could result in an illogical cycle of applying and removing pollutant controls with each permit reissuance. EPA's technical approach on this issue is in keeping with the Act generally and the NPDES regulations specifically, which reflect a precautionary approach to controlling pollutant discharges.

APPENDIX B-REASONABLE POTENTIAL and LIMITS CALCULATION

NPDES PERMIT No.0103390

Pollutant	Conc. Units	Q _s (MGD)	C _s ¹	C _e ²		C _d		Criteria		Reasonable Potential		Limits	
				Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic
Cadmium	µg/L	9.36	0.5	0.0	0.0	0.4	0.4	33.2	7.9	N	N	N/A	N/A
Copper	µg/L	9.36	2.7	54.3	33.6	8.2	6.0	6.0	5.8	Y	N/A	31.6	N/A
Lead	µg/L	9.36	2.2	33.7	33.7	5.6	5.6	220.8	8.5	N	N	N/A	N/A
Nickel	µg/L	9.36	0	3.7	3.7	0.4	0.4	74.7	8.3	N	N	N/A	N/A
Zinc	µg/L	9.36	6	28.0	28.0	8.4	8.4	95.1	85.6	N	N	N/A	N/A
Ammonia (Warm)	mg/L	9.36	0	0.1	0.1	0	0	10.1	1.5	N	N	N/A	N/A
Bis(2 ethylhexyl) phthalate	mg/L	9.36	0	0	0	0	0	0.00037	0.00037	N	N	N/A	N/A

¹Median concentration for the receiving water upstream of the zone of influence of the facility's discharge taken from the WET testing data during the review period (see Appendix A).

²Values represent the 95th percentile (for n ≥ 10) or maximum (for n < 10) concentrations from the DMR data and/or WET testing data during the review period (see Appendix A). If the pollutant already has a limit (for either acute or chronic conditions), the value represents the existing limit.

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: **December 19, 2024, to February 3, 2025**

PERMIT NUMBER: **MA0103390**

NAME AND MAILING ADDRESS OF APPLICANT:

Swansea Water District
700 Wilbur Avenue
Swansea, MA 02777

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Swansea Water District Desalination Facility
200 Vinnicum Road
Swansea, MA 02777

RECEIVING WATER AND CLASSIFICATION:

Palmer River (Class SB)

PREPARATION OF THE DRAFT PERMIT:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Swansea Water District Desalination Facility, which discharges treated reverse osmosis (RO) brine concentrate, reject (backwash) from microfiltration (MF) systems, strainer flushings, and cleaning solutions. Sludge from this facility is transported to a sludge drying bed on Midwood Road, Swansea, MA, where it is dried and used for compost. 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 and issue a separate 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:

Betsy Davis

Telephone: (617) 918-1576

Email: davis.betsy@epa.gov

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

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 3, 2025**, 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