MODIFICATION OF 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"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

General Electric Company

is authorized to discharge from a facility located at

General Electric Aviation
1000 Western Avenue
Lynn, MA 01910

to the receiving water named

Saugus River

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

This modified permit shall become effective on the date of signature.

This modification and the underlying authorization to discharge expire at midnight, five (5) years from the last day of the month preceding effective date.

This modified permit is issued pursuant to 40 C.F.R. § 124.5, and revises and supersedes the permit modification that was issued on August 19, 2015.

This permit consists of 31 pages in Part I including effluent limitations, monitoring requirements, 10 pages in Attachment 1: Marine Acute Toxicity Test Procedure and Protocol (2012), 12 pages in Attachment 2: Marine Chronic Toxicity Test Procedure and Protocol (2013), 1 page in Attachment 3: Outfalls/Intakes Map, 1 page in Attachment 4: Approved Additives, 3 pages in Attachment 5: Standard Operating Procedures, 1 page in Attachment 6: Reporting Form for Gate Openings, 1 page in Attachment 7: Reporting Form for Dry Season Vault Elevations, and 25 pages in Part II: Standard Conditions.

Signed this 21st day of July, 2016

Ken Moraff, Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

David Ferris, Director
Massachusetts Wastewater Management Program
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

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 stormwater commingled with dry weather flows during wet weather[1] from the **Drainage System Outfalls (Outfall Serial Numbers 001, 007, 010, 019, and 027B,)** to the Saugus River.[2A] Such discharges shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[2,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type
Flow	MGD	Report	Report	Daily	Estimate
Gate Openings[5]	-	See Footnote 5 and Attachment 6		Continuous	Count
pH	S.U.	-	6.0-8.5	1/Quarter	Grab
Oil and Grease (O&G)	mg/L	10	15	1/Quarter	Grab
Total Suspended Solids (TSS)	mg/L	Report	Report	1/Quarter	Grab
Total BTEX	µg/L	Report	Report	1/Quarter	Grab
Benzene	µg/L	Report	Report	1/Quarter	Grab
Toluene	µg/L	Report	Report	1/Quarter	Grab
Ethylbenzene	µg/L	Report	Report	1/Quarter	Grab
Total Xylenes	µg/L	Report	Report	1/Quarter	Grab
Total Cyanide[7]	µg/L	Report	Report	1/Quarter	Grab
Volatile Organic Compounds (VOCs), Total	µg/L	Report	Report	1/Quarter	Grab
carbon tetrachloride	µg/L	Report	Report	1/Quarter	Grab
1,4 (or p)-dichlorobenzene (p-DCB)	µg/L	Report	Report	1/Quarter	Grab
1,2 (or o)-dichlorobenzene (o-DCB)	µg/L	Report	Report	1/Quarter	Grab
1,3 (or m)-dichlorobenzene (m-DCB)	µg/L	Report	Report	1/Quarter	Grab
1,1 dichloroethane (DCA)	µg/L	Report	Report	1/Quarter	Grab

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[2,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type
1,2 dichloroethane (DCA)	µg/L	Report	Report	1/Quarter	Grab
1,1 dichloroethylene (DCE)	µg/L	Report	Report	1/Quarter	Grab
cis-1,2 dichloroethylene (DCE)	µg/L	Report	Report	1/Quarter	Grab
dichloromethan (methylene chloride)	µg/L	Report	Report	1/Quarter	Grab
tetrachlroroethylene (PCE)	µg/L	Report	Report	1/Quarter	Grab
1,1,1 trichloroethane (TCA)	µg/L	Report	Report	1/Quarter	Grab
1,1,2 trichlororethane (TCA)	µg/L	Report	Report	1/Quarter	Grab
trichloroethylene (TCE)	µg/L	Report	Report	1/Quarter	Grab
chloroethylene (vinyl chloride)	µg/L	Report	Report	1/Quarter	Grab
Total Residual Chlorine	µg/L	Report	Report	1/Quarter	Grab
Metals[8]					
Antimony	mg/L	Report	Report	1/Quarter	Grab
Cadmium	mg/L	Report	Report	1/Quarter	Grab
Copper	mg/L	Report	Report	1/Quarter	Grab
Iron	mg/L	Report	Report	1/Quarter	Grab
Lead	mg/L	Report	Report	1/Quarter	Grab
Nickel	mg/L	Report	Report	1/Quarter	Grab
Silver	mg/L	Report	Report	1/Quarter	Grab
Zinc	mg/L	Report	Report	1/Quarter	Grab
Total Polycyclic Aromatic Hydrocarbons (PAHs)[9]	µg/L	Report	Report	1/Quarter	Grab
Group I PAHs	µg/L	Report	Report	1/Quarter	Grab
benzo(a)anthracene	µg/L	Report	Report	1/Quarter	Grab
benzo(a)pyrene	µg/L	Report	Report	1/Quarter	Grab
benzo(b)fluroanthene	µg/L	Report	Report	1/Quarter	Grab
benzo(k)fluroanthene	µg/L	Report	Report	1/Quarter	Grab

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[2,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[4]	Sample Type
chrysene	µg/L	Report	Report	1/Quarter	Grab
dibenzo(a,h)anthracene	µg/L	Report	Report	1/Quarter	Grab
indeno(1,2,3-cd)pyrene	µg/L	Report	Report	1/Quarter	Grab
Total Polychlorinated Biphenyls (PCBs)[10,11]	µg/L	Report	Report	1/Quarter	Grab
Whole Effluent Toxicity (WET)[12,13,14,15]					
LC_{50}[16]	%		Report	2/Year	Grab
pH	S.U.		Report	2/Year	Grab
Salinity	ppt		Report	2/Year	Grab
Total Solids	mg/L		Report	2/Year	Grab
Total Suspended Solids	mg/L		Report	2/Year	Grab
Ammonia	mg/L		Report	2/Year	Grab
Total Organic Carbon	mg/L		Report	2/Year	Grab
Total Residual Chlorine	mg/L		Report	2/Year	Grab
Total Cadmium	mg/L		Report	2/Year	Grab
Total Lead	mg/L		Report	2/Year	Grab
Total Copper	mg/L		Report	2/Year	Grab
Total Zinc	mg/L		Report	2/Year	Grab
Total Nickel	mg/L		Report	2/Year	Grab

See pages 5-7 for explanation of footnotes.

Footnotes:

1. For the purposes of this permit, weather conditions are considered to be either "wet weather" conditions or "dry weather" conditions. "Wet weather" is defined as any time period that begins with the first opening of any drainage system outfall gate due to the addition of stormwater from a precipitation event to the drainage system and continues until two hours after the last closing of the last drainage system outfall gate with the exception of Outfall 027B. "Wet weather" at Outfall 027B continues until forty-eight (48) hours after the last closing of the last drainage system outfall gate. "Dry weather" is defined as any period of time that does not meet the definition of "wet weather." Dry weather flow is defined as effluent that collects in the drainage system outfall vaults during dry weather, including, but not limited to, infiltrated groundwater, steam heating and air conditioner condensate, steam conduit water, non-contact cooling water, steam condensate, boiler filter backwash, and ion exchange regeneration and backwash. As stated in Part I.B.1.a of this permit, during dry weather, the discharge of dry weather flow from the Drainage System Outfalls is prohibited and the Drainage System Outfall gates shall remain closed without leaks, except for minor weeping around the bottom edge of the gate due to hydrostatic pressure.

2A. For quarterly and bi-annual monitoring requirements applicable to Outfalls 007 and 010, these outfalls shall be considered together so that sampling shall be alternated between the two outfalls from one monitoring period to the next within each sampling year. For the next following sampling year, sampling shall again be alternated between the two outfalls except that the first sample for the year shall be taken at the opposite outfall from the one sampled for the first sample during the previous year. As a result, over a 5-year period, samples will be collected in accordance with the following table:

	Order of Samples at Outfalls 007 and 010 Within Each Sampling Year				
	Sampling Year 1	Sampling Year 2	Sampling Year 3	Sampling Year 4	Sampling Year 5
Bi-Annual Sampling Requirements	1st: 007 2nd: 010	1st: 010 2nd: 007	1st: 007 2nd: 010	1st: 010 2nd: 007	1st: 007 2nd: 010
Quarterly Sampling Requirements	1st: 007 2nd: 010 3rd: 007 4th: 010	1st: 010 2nd: 007 3rd: 010 4th: 007	1st: 007 2nd: 010 3rd: 007 4th: 010	1st: 010 2nd: 007 3rd: 010 4th: 007	1st: 007 2nd: 010 3rd: 007 4th: 010

2. Samples taken in compliance with the monitoring requirements specified shall be taken from the chamber immediately preceding the outfall gate at each of the Drainage System Outfalls (Outfalls 001, 007, 010, 019, and 027B) the first time each outfall gate is opened (i.e., the first pulse of effluent) prior to mixing with the receiving water (the Saugus River). Samples shall be collected at least seventy-two (72) hours after the last closing of the last outfall gate ending the previous wet weather event (see Footnote 1). The discharge through each such outfall shall be sampled and reported separately on the monthly DMR. All samples shall be tested in accordance with the procedures in 40 CFR Part 136, unless specified otherwise elsewhere in this permit. If collection of grab sample(s) representative of the first pulse of discharge is impracticable, grab sample(s) shall be taken as soon after that as possible, and the permittee shall submit on the DMR cover letter a description of why the collection of the grab sample(s) during the first pulse was impracticable. When a permittee is unable to collect grab sample(s) due to adverse weather conditions, the permittee must submit in lieu of sampling data a description of why the grab sample(s) could not be collected, including available documentation of the event. Adverse weather conditions which may prohibit the collection of sample(s) include weather conditions that pose a danger to personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of sample(s) impracticable (drought, extended frozen conditions, specified storm

event did not occur during sampling period, etc.) A "no discharge" report shall be submitted on the monthly DMR for those sampling periods in which there is no discharge.

3. When reporting sample data at or below the minimum level (ML), see the latest EPA Region 1 NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) at https://www3.epa.gov/region1/npdes/dmr.html for guidance. The ML is the level at which the entire analytical system gives a recognizable mass spectra and acceptable calibration points. This level corresponds to the lower points at which the calibration curve is determined based on the analysis of the pollutant(s) of concern in reagent water.

4. Sampling frequency of 1/month is defined as the sampling of one (1) discharge event in each calendar month, when discharge occurs. Sampling frequency of 1/quarter is defined as the sampling of four (4) discharge events in each calendar year, when discharge occurs. Quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. Quarterly sampling shall be performed concurrently with the monthly monitoring event. The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).

5. Beginning no later than December 31, 2015, the permittee shall report the total number of gate openings each month for each Drainage System Outfall gate. The permittee shall also report the date, times, and duration that each gate is open, along with the corresponding weather conditions at the time of gate opening and during the entire time that the gate is open, the flow during the entire time that the gate is open, and the time at which the gate closes for each instance that a gate was opened, along with the corresponding weather condition at that time. This information shall be reported as an attachment to the DMRs. An example of a reporting form for this information is included as Attachment 6 to the permit.

6. *Reserved.*

7. Total cyanide must be monitored at Outfall 001 only. EPA's water quality criteria is expressed as micrograms of free cyanide per liter (ug/L). There is currently no EPA approved method for free cyanide. Therefore, total cyanide must be reported.

8. The concentration of metals shall be reported as total recoverable.

9. The minimum level (ML) for analysis of Polynuclear Aromatic Hydrocarbons (PAHs) shall be no greater than 10 µg/L. Analysis must be completed using an EPA approved method in 40 CFR Part 136, Table IC – List of Approved Test Procedures for Non-Pesticide Organic Compounds or, alternatively, using EPA approved method 8270D. Total PAHs shall be reported as the sum of Total Group I and Total Group II PAHs. Total Group I PAHs shall be reported as the sum of detectable concentrations of individual PAH compounds.

10. In the November 2002 Water Quality Criteria (WQC), EPA revised the definition of Total PCBs for aquatic life as the "sum of all homologue, all isomer, all congener, or all Aroclor analyses." The minimum level for analysis of total PCB shall be no greater than 0.065 ug/L, which is the ML of Modified Method 8082. The permittee shall provide the result of total PCBs as the sum of all Aroclors. Numeric results of individual aroclors for all quarters shall be submitted as an attachment to the December discharge monitoring report.

11. GE may request a reduction in sampling for PCBs, total BTEX, benzene, toluene, ethylbenzene, total xylenes, total cyanide, VOCs, total residual chlorine, metals, and/or PAHs after one (1) year and a minimum of four (4) consecutive samples of non-detection for the contaminant at issue. GE must receive written approval from EPA to reduce the frequency of sampling. The permittee is required to continue testing at the frequency specified in this permit until notice is received by certified mail from EPA that the testing requirement has been changed.

12. The permittee shall conduct acute toxicity tests at a frequency of two (2) per year. The permittee shall test the

inland silverside, *Menidia beryllina*, and mysid shrimp, *Americamysis bahia*. Toxicity test samples shall be collected and tests completed during the time periods of October 1st - March 31st and April 1st - September 30th, each year. Toxicity test results are to be submitted by the 15th day of the month following the end of the month sampled. The tests must be performed in accordance with test procedures and protocols specified in Attachment 1 of the permit.

13. After submitting WET test results for at least two (2) years, and a minimum of four (4) consecutive sets of WET test results demonstrating no toxicity, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from EPA that the WET testing requirement has been changed.

14. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in Attachment 1 (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the *Self-Implementing Alternative Dilution Water Guidance* which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs)*, which may be found on the EPA, Region I web site at https://www3.epa.gov/region1/npdes/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in Attachment 1. Any modification or revocation to this guidance will be transmitted to the permittee as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in Attachment 1 of the permit.

15. For each Whole Effluent Toxicity (WET) test the permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentrations of the Total Ammonia Nitrogen as Nitrogen, salinity, pH, Total Solids, Total Suspended Solids, Total Organic Carbon, Total Residual Chlorine, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Nickel, and Total Recoverable Zinc found in the 100 percent effluent sample. The permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report. Analyses conducted for WET testing may also be used to satisfy the monthly or quarterly sampling requirements as long as the timing of sampling for the parameters coincides with WET testing for selected pollutants.

16. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.

2. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge treated effluent from the Consolidated Drains Treatment System through **Outfall Serial Number 027A** to the Saugus River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Flow[4]	MGD	Report	Report	Daily	Estimate
pH	S.U.	-	6.5-8.5	1/Month	Grab
Oil and Grease (O&G)	mg/L	10	15	1/Month	Grab
Total Suspended Solids (TSS)	mg/L	30	100	1/Month	Grab
Temperature	°F	Report	85	1/Month	Grab
Total Polychlorinated Biphenyls (PCBs)[5,6]	µg/L	Report	Report	1/Month	Grab
Total Residual Chlorine (TRC)	µg/L	Report	Report	1/Month	Grab
Total Petroleum Hydrocarbons (TPH)[6A]	mg/L	Report	5	1/Month	Grab
Total BTEX	µg/L	Report	100	1/Month	Grab
Benzene	µg/L	Report	5	1/Month	Grab
Toluene	µg/L	Report	Report	1/Month	Grab
Ethylbenzene	µg/L	Report	Report	1/Month	Grab
Total Xylenes	µg/L	Report	Report	1/Month	Grab
Total Cyanide[7]	µg/L	Report	Report	1/Quarter	Grab
Volatile Organic Compounds (VOCs), Total	µg/L	Report	Report	1/Month	Grab
carbon tetrachloride	µg/L	Report	4.4	1/Month	Grab
1,4 (or p)-dichlorobenzene (p-DCB)	µg/L	Report	5.0	1/Month	Grab
1,2 (or o)-dichlorobenzene (o-DCB)	µg/L	Report	600	1/Month	Grab
1,3 (or m)-dichlorobenzene (m-DCB)	µg/L	Report	320	1/Month	Grab
1,1 dichloroethane (DCA)	µg/L	Report	70	1/Month	Grab

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
1,2 dichloroethane (DCA)	µg/L	Report	5.0	1/Month	Grab
1,1 dichloroethylene (DCE)	µg/L	Report	3.2	1/Month	Grab
cis-1,2 dichloroethylene (DCE)	µg/L	Report	70	1/Month	Grab
dichloromethan (methylene chloride)	µg/L	Report	4.6	1/Month	Grab
tetrachlroroethylene (PCE)	µg/L	Report	5.0	1/Month	Grab
1,1,1 trichloroethane (TCA)	µg/L	Report	200	1/Month	Grab
1,1,2 trichlororethane (TCA)	µg/L	Report	5.0	1/Month	Grab
trichloroethylene (TCE)	µg/L	Report	5.0	1/Month	Grab
chloroethylene (vinyl chloride)	µg/L	Report	2.0	1/Month	Grab
Metals[8]					
Antimony	mg/L	Report	Report	1/Quarter	Grab
Arsenic	mg/L	Report	Report	1/Quarter	Grab
Beryllium	mg/L	Report	Report	1/Quarter	Grab
Cadmium	mg/L	Report	Report	1/Quarter	Grab
Calcium	mg/L	Report	Report	1/Quarter	Grab
Chromium	mg/L	Report	Report	1/Quarter	Grab
Copper	mg/L	Report	Report	1/Quarter	Grab
Iron	mg/L	Report	Report	1/Quarter	Grab
Ferrous Iron	mg/L	Report	Report	1/Quarter	Grab
Lead	mg/L	Report	Report	1/Quarter	Grab
Magnesium	mg/L	Report	Report	1/Quarter	Grab
Manganese	mg/L	Report	Report	1/Quarter	Grab
Mercury	mg/L	Report	Report	1/Quarter	Grab
Nickel	mg/L	Report	Report	1/Quarter	Grab
Selenium	mg/L	Report	Report	1/Quarter	Grab
Silver	mg/L	Report	Report	1/Quarter	Grab

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Sodium	mg/L	Report	Report	1/Quarter	Grab
Thallium	mg/L	Report	Report	1/Quarter	Grab
Zinc	mg/L	Report	Report	1/Quarter	Grab
Polycyclic Aromatic Hydrocarbons (PAHs)[9]					
Total Group I PAHs	µg/L	Report	10	1/Month	Grab
Total Group II PAHs	µg/L	Report	100	1/Month	Grab
benzo(a)anthracene	µg/L	Report	Report	1/Month	Grab
benzo(a)pyrene	µg/L	Report	Report	1/Month	Grab
benzo(b)fluroanthene	µg/L	Report	Report	1/Month	Grab
benzo(k)fluroanthene	µg/L	Report	Report	1/Month	Grab
chrysene	µg/L	Report	Report	1/Month	Grab
dibenzo(a,h)anthracene	µg/L	Report	Report	1/Month	Grab
indeno(1,2,3-cd)pyrene	µg/L	Report	Report	1/Month	Grab
Whole Effluent Toxicity (WET)[10,11,13]					
LC_{50}[14]	%		Report	2/Year	Composite[12]
C-NOEC[15]	%		Report	2/Year	Composite[12]
pH	S.U.		Report	2/Year	Composite[12]
Salinity	ppt		Report	2/Year	Composite[12]
Total Solids	mg/L		Report	2/Year	Composite[12]
Total Suspended Solids	mg/L		Report	2/Year	Composite[12]
Ammonia	mg/L		Report	2/Year	Composite[12]
Total Organic Carbon	mg/L		Report	2/Year	Composite[12]
Total Residual Chlorine	mg/L		Report	2/Year	Composite[12]
Total Cadmium	mg/L		Report	2/Year	Composite[12]
Total Lead	mg/L		Report	2/Year	Composite[12]

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1,3]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Total Copper	mg/L		Report	2/Year	Composite[12]
Total Zinc	mg/L		Report	2/Year	Composite[12]
Total Nickel	mg/L		Report	2/Year	Composite[12]

See pages 12-13 for explanation of footnotes.

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at a point representative of all the discharge from the CDTS at Outfall 027A, prior to mixing with the receiving waters (the Saugus River). All samples shall be tested in accordance with the procedures in 40 CFR §136, unless specified elsewhere in the permit.

2. Sampling frequency of 1/month is defined as the sampling of one (1) discharge event in each calendar month, when discharge occurs. Sampling frequency of 1/quarter is defined as the sampling of four (4) discharge events in each calendar year, when discharge occurs. Quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. Quarterly sampling shall be performed concurrently with the monthly monitoring event. The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).

3. When reporting sample data at or below the minimum level (ML), see the latest EPA Region 1 NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) at https://www3.epa.gov/region1/npdes/dmr.html for guidance. The ML is the level at which the entire analytical system gives a recognizable mass spectra and acceptable calibration points. This level corresponds to the lower points at which the calibration curve is determined based on the analysis of the pollutant(s) of concern in reagent water.

4. Flow through Outfall 027A shall not exceed the design capacity of the treatment system.

5. In the November 2002 WQC, EPA revised the definition of Total PCBs for aquatic life as the "sum of all homologue, all isomer, all congener, or all Aroclor analyses." The minimum level for analysis of total PCB shall be no greater than 0.065 ug/L, which is the ML of Modified Method 8082. The permittee shall provide the result of total PCBs as the sum of all Aroclors. Numeric results of individual aroclors for all quarters shall be submitted as an attachment to the December discharge monitoring report.

6. GE may request a reduction in the frequency of sampling for PCBs, total BTEX, benzene, toluene, ethylbenzene, total xylenes, total petroleum hydrocarbons, VOCs, TRC, and/or PAHs after one (1) year, and a minimum of twelve (12) consecutive samples, of non-detection for the contaminant at issue. GE may request a reduction in the frequency of sampling for total cyanide and/or metals after one (1) year, and a minimum of four (4) consecutive samples of non-detection for the contaminant at issue. GE must receive written approval from EPA to reduce the frequency of sampling. The permittee is required to continue testing at the frequency specified in this permit until notice is received by certified mail from EPA that the testing requirement has been changed.

6A. Total petroleum hydrocarbons (TPH) shall be analyzed using Method 1664A.

7. EPA's water quality criteria is expressed as micrograms of free cyanide per liter (ug/L). There is currently no EPA approved method for free cyanide. Therefore, total cyanide must be reported.

8. Concentration of metals shall be reported as total recoverable.

9. The minimum level (ML) for analysis of Group I Polynuclear Aromatic Hydrocarbons (PAHs) shall be no greater than 1 µg/L. The ML for analysis of Group II Polynuclear Aromatic Hydrocarbons (PAHs) shall be no greater than 10 µg/L. Analysis must be completed using an EPA approved method in 40 CFR Part 136, Table IC – List of Approved Test Procedures for Non-Pesticide Organic Compounds or, alternatively, using EPA approved method 8270D. Total Group I PAHs and Total Group II PAHs shall be reported as the

sum of detectable concentrations of individual PAH compounds.

10. The permittee shall conduct chronic and acute toxicity tests at a frequency of 2/year. The permittee shall test the inland silverside, *Menidia beryllina*, and sea urchin, *Arbacia punctulata*, for chronic toxicity and the inland silverside and mysid shrimp, *Americamysis bahia*, for acute toxicity. Toxicity test samples shall be collected and tests completed during the time periods of October 1st - March 31st and April 1st- September 30th, each year. Toxicity test results are to be submitted by the 15th day of the month following the end of the month sampled. The tests must be performed in accordance with test procedures and protocols specified in Attachments 1 and 2 of the permit.

    After submitting WET test results for at least two (2) years, and a minimum of four (4) consecutive sets of WET test results demonstrating no toxicity, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from EPA that the WET testing requirement has been changed.

11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in Attachment 1 (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the *Self-Implementing Alternative Dilution Water Guidance* which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs),* which may be found on the EPA, Region I web site at https://www3.epa.gov/region1/npdes/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in Attachment 1. Any modification or revocation to this guidance will be transmitted to the permittee as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in Attachments 1 and 2 of the permit.

12. A composite sample shall consist of a minimum of eight (8) grab samples of equal volume collected at equal intervals during a 24-hour period and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period. In the event that the discharge does not last 24 hours, sample at hourly intervals for the length of time of the discharge, not to be less than 4 hours (i.e., no less than four samples).

13. For each Whole Effluent Toxicity (WET) test the permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentrations of the Total Ammonia Nitrogen as Nitrogen, salinity, pH, Total Solids, Total Suspended Solids, Total Organic Carbon, Total Residual Chlorine, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Nickel, and Total Recoverable Zinc found in the 100 percent effluent sample. The permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report. Analyses conducted for WET testing may also be used to satisfy monthly or quarterly sampling requirements under Part I.A.2 as long as the timing of sampling for the parameters coincides with WET testing for selected pollutants.

14. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.

15. The C-NOEC (chronic no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship.

3. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge flows consisting of NCCW from power plant generating equipment, turbine condensate, steam condensate, boiler startup/soot blower drains/boiler draining for maintenance, de-aerator storage tanks, boiler blowdown, and flows from internal Outfall 018C through **Outfall Serial Number 018A (Power Plant)** to the Saugus River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Flow	MGD	28.7	35.6	1/Month	Estimate
pH	S.U.	-	6.5-8.5	1/Month	Grab
Temperature	°F	90	95	Continuous	Recorder
Oil and Grease (O&G)	mg/L	Report	15	1/Month	Grab
Total Suspended Solids (TSS)	mg/L	Report	Report	1/Month	Grab
Whole Effluent Toxicity (WET)[3,4,6]					
LC_{50}[7]	%		Report	2/Year	Composite[5]
C-NOEC[8]	%		Report	2/Year	Composite[5]
pH	S.U.		Report	2/Year	Composite[5]
Salinity	ppt		Report	2/Year	Composite[5]
Total Solids	mg/L		Report	2/Year	Composite[5]
Total Suspended Solids	mg/L		Report	2/Year	Composite[5]
Ammonia	mg/L		Report	2/Year	Composite[5]
Total Organic Carbon	mg/L		Report	2/Year	Composite[5]
Total Residual Chlorine	mg/L		Report	2/Year	Composite[5]
Total Cadmium	mg/L		Report	2/Year	Composite[5]
Total Lead	mg/L		Report	2/Year	Composite[5]
Total Copper	mg/L		Report	2/Year	Composite[5]

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Total Zinc	mg/L		Report	2/Year	Composite[5]
Total Nickel	mg/L		Report	2/Year	Composite[5]

See pages 16-17 for explanation of footnotes.

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at a point representative of all the discharge from the site through the outfall, prior to mixing with the receiving waters. All samples shall be tested in accordance with the procedures in 40 CFR §136, unless specified elsewhere in the permit.

2. Sampling frequency of 1/month is defined as the sampling of one (1) discharge event in each calendar month, when discharge occurs. Sampling frequency of 2/Year is defined as the sampling of two (2) discharge events in each calendar year during the time periods of October 1st - March 31st and April 1st- September 30th. 2/Year sampling shall be performed concurrently with the monthly monitoring event. The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).

3. The permittee shall conduct chronic and acute toxicity tests at a frequency of 2/year. The permittee shall test the inland silverside, *Menidia beryllina*, and sea urchin, *Arbacia punctulata*, for chronic toxicity and the inland silverside and mysid shrimp, *Americamysis bahia*, for acute toxicity. Toxicity test samples shall be collected and tests completed Toxicity test results are to be submitted by the 15th day of the month following the end of the month sampled. The tests must be performed in accordance with test procedures and protocols specified in Attachments 1 and 2 of the permit.

   After submitting WET test results for at least two (2) years, and a minimum of four (4) consecutive sets of WET test results demonstrating no toxicity, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from EPA that the WET testing requirement has been changed.

4. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in Attachment 1 (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the *Self-Implementing Alternative Dilution Water Guidance* which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of *NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs),* which may be found on the EPA, Region I web site at https://www3.epa.gov/region1/npdes/dmr.html. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in Attachment 1. Any modification or revocation to this guidance will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in Attachments 1 and 2 of the permit.

5. A composite sample shall consist of a minimum of eight (8) grab samples of equal volume collected at equal intervals during a 24-hour period and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period. In the event that the discharge does not last 24 hours, sample at hourly intervals for the length of time of the discharge, not to be less than 4 hours (i.e., no less than four samples).

6. For each Whole Effluent Toxicity (WET) test the permittee shall report on the appropriate Discharge Monitoring Report (DMR), the concentrations of the Total Ammonia Nitrogen as Nitrogen, salinity, pH, Total Solids, Total Suspended Solids, Total Organic Carbon, Total Residual Chlorine, Total Recoverable Cadmium, Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Nickel, and Total Recoverable Zinc found in the 100 percent effluent sample. The permittee should note that all chemical parameter results must still be reported in the appropriate toxicity report.

7. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.

8. The C-NOEC (chronic no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction, based on a statistically significant difference from dilution control, at a specific time of observation as determined from hypothesis testing. As described in EPA WET Method Manual EPA 821-R-02-013, Section 10.2.6.2, all test results are to be reviewed and reported in accordance with EPA guidance on the evaluation of the concentration-response relationship.

4. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge flows consisting of boiler startup/soot blower drains/boiler draining for maintenance, boiler filter backwash and ion exchange regeneration and backwash, de-aerator storage tanks, and boiler blowdown through **Internal Outfall Serial Number 018C (Power Plant)** to the Saugus River. Such discharge shall be limited and monitored by the permittee as specified below.

Effluent Characteristic	Units	Discharge Limitation		Monitoring Requirements[1]	
		Average Monthly	Maximum Daily	Measurement Frequency[2]	Sample Type
Flow	MGD	Report	Report	1/Month	Estimate
pH	S.U.	Report		1/Month	Grab
Oil and Grease (O&G)	mg/L	15	20	1/Month	Grab
Total Suspended Solids (TSS)	mg/L	30	100	1/Month	Grab

Footnotes:

1. Samples taken in compliance with the monitoring requirements specified above shall be taken at a point representative of the boiler blowdown prior to mixing with any other discharge through Outfall 018A. All samples shall be tested in accordance with the procedures in 40 CFR §136, unless specified elsewhere in the permit

2. Sampling frequency of 1/month is defined as the sampling of <u>one</u> (1) discharge event in each calendar month. The permittee shall submit the results to EPA of any additional testing done to that required herein, if it is conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR §122.41(l)(4)(ii).

Part I.A (continued)

5. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge unused intake water, to which no pollutants have been added by GE, through Outfall Serial Number 020 to the Saugus River.

6. Discharges through Outfalls 003 and 005 are prohibited.

7. The permittee is authorized to use non-toxic, biodegradable dyes during dry weather, in minimal amounts, in accordance with good engineering practice, with prior notification to EPA and MassDEP.

8. Building 64-A sump water and test cell washdown water shall be discharged to the LWSC municipal sewer system.

9. Discharge of wash water containing detergents is prohibited.

10. The use of detergents and/or solvents in Drainage System Cleaning process is prohibited.

11. The pH shall be in the range of 6.5 through 8.5 standard units unless these values are exceeded due to natural causes. The pH of the effluent also shall not be more than 0.2 units outside of the natural background range and shall not cause a change from natural background conditions in the receiving water that would impair any use assigned to Class SB waters.

12. 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.

13. 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.

14. The use of oil-based anti-foam agents, such as Foamtrol AF2290, is prohibited.

15. The discharge shall not contain materials in concentrations or combinations which are hazardous or toxic to human health, aquatic life of the receiving surface waters or which would impair the uses designated by its classification.

16. EPA may modify and/or revoke and reissue this permit in accordance with EPA regulations at 40 C.F.R. §122.62 and §122.63.

17. All existing manufacturing, commercial, mining and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

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

   i. One hundred micrograms per liter (100 µg/l);

   ii. Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrite; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

   iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R.§ 122.21(g)(7); or

   iv. Any other notification level established by the Director in accordance with 40 C.F.R.§122.44(f).

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

   i. Five hundred micrograms per liter (500 µg/l);

   ii. One milligram per liter (1 mg/l) for antimony;

   iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 C.F.R. § 122.21(g)(7).

   iv. Any other notification level established by the Director in accordance with 40 C.F.R. § 122.44(f).

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

18. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

B. BEST MANAGEMENT PRACTICES (BMPs)

1. Dry Weather Flows from Drainage System Outfalls (Outfall Serial Numbers 001, 007, 010, 019, 027B)

   a. The Drainage System Outfall gates shall remain closed without leaks, except for minor weeping around the bottom edge of the gate due to hydrostatic pressure, during all periods of dry weather.

   b. During the periods from March 15 to June 15 and from September 15 to December 15, the permittee shall operate the drainage system outfall vaults at the "wet season" pump elevation set points as defined below and in Attachment 5 to this permit. During the remaining periods, except as provided in Part I.B.1.c, below, the permittee shall operate the vaults at the "dry season" pump elevation set points as defined below and in Attachment 5.

Outfall	Wet Season Elevation (ft)		Dry Season Elevation (ft)	
	Pump On	Pump Off	Pump On	Pump Off
001	8.50	8.22	8.72	8.22
007	6.30	6.05	6.55	6.05
010	6.30	6.00	6.50	6.00
019	7.60	7.10	8.10	7.10
027	4.60	4.25	5.00	4.25

   c. The permittee shall operate the drainage system vaults at the "wet season" pump elevations during the "dry season" whenever the water table is high. The level of the water table shall be determined by comparing the volume of water treated at the CDTS on the previous day to the "average volume of water treated at the CDTS." The "average volume of water treated at the CDTS" shall be calculated as a "rolling" average based on the daily volume of water treated during the previous sixty (60) days that occurred during the "dry season" as defined in Part I.B.1.b. For the purpose of calculating the rolling average, the previous sixty "dry season" days can be non-consecutive. A high water table occurs when the volume of water treated at the CDTS on the previous day is more than twenty (20) percent greater than the rolling average volume of water treated.

   d. Each time during the dry season that the drainage system vault elevations are lowered to the wet season set points, the permittee shall report the date, the volume of water treated at the CDTS on the previous day, and the rolling average volume of water treated at the CDTS over the previous sixty (60) dry season days. These parameters shall be reported for each month that occurs during the dry season as an attachment to that month's discharge monitoring report. An example of a reporting form for these parameters is included as Attachment 7 to the permit.

e. Develop and implement a written schedule for inspection and cleaning of all oil/water separators at each Drainage System Outfall vault on a regular basis.

f. *Requirements Pertaining to the Drainage System at Building 7 on the Former Gear Plant Property:* In order to limit or characterize the potential for contaminated groundwater to infiltrate the drainage system at the Building 7 site on the former Gear Plant property and be discharged through Outfall 031, the permittee must either:

i. Within one year from the effective date of this modified permit, line the storm drainage pipes on the Building 7 property that discharge to Building 7 Catch Basin CB-243 on the former Gear Plant property to eliminate the potential for infiltrated groundwater to enter the drainage system; *or*

ii. For one year from the effective date of this modified permit, collect and analyze grab samples twice per quarter for Group I Polynuclear Aromatic Hydrocarbons (PAHs) from either groundwater sampling location B7-MW01S or groundwater sampling location B7-MW05S, as described in the *Site Assessment for the Class A-3 Partial Response Action Outcome Statement for the Former Gear Plant and Saugus River Areas* (October 2013). For the purposes of this monitoring requirement, quarters are defined as the interval of time between the months of: January through March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. The twice quarterly samples shall be collected a minimum of 30 days apart. The minimum level (ML) for analysis of Group I PAHs shall be no greater than 0.1 µg/L. Analysis must be completed using an EPA approved method in 40 CFR Part 136, Table IC – List of Approved Test Procedures for Non-Pesticide Organic Compounds or, alternatively, using EPA approved method 8270D. When an analyte is not detected above the ML, the permittee shall report using the data qualifier signifying less than the ML for that analyte (*i.e.*, <0.1 µg/L). Total Group I PAHs shall be reported as the sum of detectable concentrations of individual PAH compounds. Results shall be reported as an attachment to the Discharge Monitoring Report (DMR) submitted during the last month of the quarter as described in Part I.F.1.a. of this modified permit. Hard copies of the monitoring results for Building 7 shall be mailed to MassDEP at the address provided in Part I.F.1.c. of this modified permit.

iii. After complying for one year with the sampling and reporting requirements for the groundwater monitoring wells specified immediately above, the permittee may cease such sampling and reporting.

2. Storm Water Pollution Prevention Plan (SWPPP)

The permittee shall develop, implement, and maintain a Stormwater Pollution Prevention Plan (SWPPP) designed to reduce, or prevent, the discharge of pollutants in stormwater to the receiving waters identified in this permit. The SWPPP shall be a written document

that is consistent with the terms of this permit. Additionally, the SWPPP shall serve as a tool to document the permittee's compliance with the terms of the permit. The recommended format for the SWPPP is available on the EPA website for the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities (http://cfpub.epa.gov/npdes/stormwater/msgp.cfm).

The SWPPP shall be completed or updated and certified by the permittee within 90 days after the effective date of this permit. The permittee shall certify that the SWPPP has been completed or updated, that it meets the requirements of the permit, and that it reduces the pollutants discharged in stormwater to the extent practicable. The certification shall be signed in accordance with the requirements identified in 40 CFR §122.22. A copy of this initial certification shall be sent to EPA and MassDEP within one hundred and twenty (120) days of the effective date of the Permit.

a. The SWPPP shall be prepared in accordance with good engineering practices and shall be consistent with the general provisions for SWPPPs included in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), the general SWPPP provisions are included in Part 5. Specifically, the SWPPP shall document the selection, design, and installation of control measures and contain the elements listed below:

    i. A pollution prevention team comprised of qualified facility personnel with collective and individual responsibilities for developing, implementing, maintaining, revising and ensuring compliance with the SWPPP.

    ii. A site description which includes the activities at the facility; a general location map showing the facility (including Building 7 and jet fuel farm on the former Gear Plant Property), receiving waters, and outfall locations; and a site map showing the extent of significant structures and impervious surfaces, directions of stormwater flows, and locations of all existing structural control measures, stormwater conveyances, pollutant sources (identified in Part 3.c. below), stormwater monitoring points, stormwater inlets and outlets, and industrial activities exposed to precipitation such as, storage, disposal, material handling.

    iii. A summary of all pollutant sources which includes a list of activities exposed to stormwater, the pollutants associated with these activities, a description of where spills have occurred or could occur, a description of non-stormwater discharges, and a summary of any existing stormwater discharge sampling data.

    iv. A description of all stormwater controls, both structural and non-structural.

    v. A schedule and procedure for implementation and maintenance of the control measures described above and for the quarterly inspections and best management practices (BMPs) described below.

b. The SWPPP shall include best management practices (BMPs) appropriate for the facility (including Building 7 on the former Gear Plant Property) that will minimize the discharge of pollutants in stormwater to waters of the United States. At a minimum, these BMPs shall be consistent with the control measures described in the most current version of the MSGP. In the current MSGP (effective May 27, 2009), these control measures, which are non-numeric technology-based effluent limitations, are described in Part 2. Specifically, BMPs must include the following elements:

   i. Minimizing exposure of manufacturing, processing, and material storage areas to stormwater discharges.

   ii. Good housekeeping measures designed to maintain areas that are potential sources of pollutants.

   iii. Preventative maintenance programs to avoid leaks, spills, and other releases of pollutants in stormwater discharged to receiving waters.

   iv. Spill prevention and response procedures to ensure effective response to spills and leaks if or when they occur.

   v. Erosion and sediment controls designed to stabilize exposed areas and contain runoff using structural and/or non-structural control measures to minimize onsite erosion and sedimentation, and the resulting discharge of pollutants.

   vi. Runoff management practices to divert, infiltrate, reuse, contain, or otherwise reduce stormwater runoff.

   vii. Proper handling procedures for salt or materials containing salt that are used for deicing activities.

c. In addition, the permittee shall perform the following site-specific BMPs for the facility to minimize the discharge of pollutants in stormwater:

   i. All stormwater collected within the secondary containment areas at the jet fuel farm shall be discharged to the CDTS for treatment, or disposed of offsite. GE shall record the date and volume of each such discharge of stormwater to the CDTS for treatment, and the date and volume of each such quantity of stormwater that is disposed of offsite (as well as providing the location of such offsite disposal). This information regarding stormwater discharges and offsite disposal shall be reported on a quarterly basis. This quarterly report shall be submitted to EPA as an electronic attachment to the discharge monitoring report (DMR) according to Part I.F.1.a of this permit, below, and to MassDEP in hard copy according to Part I.F.1.c of this permit, below.

ii. Perform regular cleaning of the Drainage System pipelines. The term "regular cleaning" shall be defined based on site-specific factors and described in the facility's SWPPP, which shall include requirements for the disposal of all solids offsite which are accumulated as a result of the cleaning, the minimization of the amount of solids left behind in the storm drains, the disposal of all collected solids off-site in a manner that complies with federal, state and local laws, regulations and ordinances, and ensuring that all drainage system cleaning water is disposed of offsite or goes directly to the CDTS for treatment.

iii. Prior to washing roof mounted air conditioner (AC) units, inspect each AC unit for the presence of any visible oil and grease spots or spills. If any such oil and grease is found, manually remove according to normal spill clean-up protocol before any spray washing begins.

iv. Containerize any wash water containing detergent and remove offsite for subsequent treatment or disposal.

v. Discharge of any water containing non-approved additives directly to the receiving water is prohibited. Approved additives are listed in Attachment 4. The permittee must submit a written request for any addition to and/or change in its use of additives at least thirty (30) days in advance of implementing any such change or addition. A request for any new additives shall include a Material Safety Data Sheet for all proposed changes. The permittee must continue to use only the approved additives listed in Attachment 4 until written notice is received from EPA authorizing the requested change(s).

vi. Minimize contamination of precipitation or surface runoff from fuel oil unloading areas. Consider using containment curbs in unloading areas, having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up, and using spill and overflow protection devices (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).

vii. Minimize contamination of surface runoff from large bulk fuel storage tanks. Consider containment berms (or their equivalent). You must also comply with applicable State and Federal laws, including Spill Prevention, Control and Countermeasure (SPCC) Plan requirements.

viii. Minimize the potential for an oil or chemical spill, or reference the appropriate part of your SPCC plan. Visually inspect as part of your routine facility inspection the structural integrity of all above-ground tanks, pipelines, pumps, and related equipment that may be exposed to stormwater, and make any necessary repairs immediately.

ix. Continue to test water generated from the dewatering of excavations. Based on the test results, the flow shall be either 1) discharged to the CDTS equalization tanks for treatment; 2) discharged to the LWSC municipal sewer system with permission; or 3) shipped offsite for disposal.

d. All areas identified in the SWPPP shall be inspected at a minimum on a quarterly basis. Inspections shall begin during the 1st full quarter after the effective date of the permit. EPA considers quarters as follows: January to March; April to June; July to September; and October to December.

e. The permittee shall amend and update the SWPPP within thirty (30) days of any changes at the facility that result in a significant effect on the potential for the discharge of pollutants to the waters of the United States. Such changes may include, but are not limited to: a change in design, construction, operation, or maintenance, materials storage, or activities at the facility; a release of a reportable quantity of pollutants as described in 40 CFR Part 302; or a determination by the permittee or EPA that the SWPPP appears to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with industrial activity. Any amended or new versions of the SWPPP shall be re-certified and signed by the permittee in accordance with the requirements identified in 40 CFR §122.22

f. The permittee shall certify at least annually that the previous year's inspections and maintenance activities were conducted, results were recorded, records were maintained, and that the facility is in compliance with the SWPPP. If the facility is not in compliance with any aspect of the SWPPP, the annual certification shall state the non-compliance and the remedies which are being undertaken. Such annual certifications also shall be signed in accordance with the requirements identified in 40 CFR §122.22. The permittee shall keep a copy of the current SWPPP and all SWPPP certifications (the initial certification, re-certifications, and annual certifications) signed during the effective period of this permit at the facility and shall make it available for inspection by EPA and MassDEP. In addition, the permittee shall document in the SWPPP any violation of numerical or non-numerical wet weather effluent limits with a description of the corrective actions taken.

C. COOLING WATER INTAKE STRUCTURE REQUIREMENTS TO MINIMIZE ADVERSE IMPACTS FROM IMPINGEMENT AND ENTRAINMENT

The permittee's facility covered by this permit is comprised of a number of different industrial operations, including the Power Plant (*see* Part I.A.3 of this permit, above). The permittee owns and operates a cooling water intake structure (CWIS) as part of the Power Plant's cooling system. Section 316(b) of the CWA, 33 U.S.C. § 1326(b), dictates that this permit must require that the CWIS's design, location, construction, and capacity reflect the best technology available for minimizing adverse environmental impact (BTA), including the CWIS's entrainment and impingement of various life stages of fish (*e.g.*, eggs, larvae, juveniles, adults). Accordingly,

EPA has determined the BTA for the Power Plant's CWIS and has specified requirements reflecting this BTA below in Parts I.C.1 and I.C.2 of this permit.

Permit requirements under CWA § 316(b) must be complied with as soon as practicable. In this case, the permittee needs a period of time to achieve such compliance. As a result, this permit includes a compliance schedule (set forth below in Part I.C.4) according to which the permittee shall attain compliance with the permit's CWIS requirements.

The permittee has informed EPA and MassDEP that it will terminate withdrawals of water from the Saugus River through its Power Plant CWIS. Terminating water withdrawals through the CWIS will comply with the permit's CWIS requirements for the Power Plant. Therefore, consistent with 40 C.F.R. § 122.47(b)(3)(i), the compliance schedule below specifies a schedule for achieving the termination of Power Plant CWIS withdrawals. As part of this schedule, the permittee is required to install and operate variable frequency drives to achieve a reduction in cooling water flows, and therefore reduce impingement and entrainment mortality, during the interim period from the effective date of the permit until full compliance.

1. *Power Plant CWIS BTA Requirements*

    a. The permittee shall terminate water withdrawals at the Power Plant CWIS by no later than the "Final Compliance Deadline" specified in Part I.C.4.k of this permit.

    b. Prior to termination of water withdrawals at the Power Plant CWIS, the permittee shall minimize impingement mortality and entrainment, by maintaining a year-round monthly average intake flow of 28.7 MGD through the CWIS, commensurate with a 20% reduction in average monthly flow from the amount authorized by the permittee's 1993 NPDES permit.

2. Any change in the location, design, or capacity of any CWIS must be approved in advance and in writing by the EPA and MassDEP.

3. *Compliance Schedule.*

    In order to comply with the permit's BTA requirements, as specified in Part I.C.1 of this permit, the permittee will need to terminate water withdrawals through the Power Plant's CWIS. Compliance with the permit's BTA requirements shall be achieved as soon as practicable, but by no later than required by the schedule of milestones set forth below.

    The schedule below provides time at the beginning of the permit term within which the permittee will select the technology and design to comply with the requirement to terminate water withdrawals through the Power Plant CWIS.

    Compliance Schedule Reporting: The permittee shall notify EPA and MassDEP in writing of compliance or non-compliance with the requirements for each milestone no later than fourteen (14) days following each specified deadline.

a. By no later than July 31, 2016 the permittee shall select an engineering bid for termination of water withdrawals from the Power Plant CWIS.

b. The permittee shall install and commence operation of variable frequency drives for the Power Plant CWIS condenser pumps by July 31, 2016, and comply with the intake volume requirements of Part I.C.1.b of this permit, above.

c. The permittee shall complete a preliminary engineering design and begin permitting no later than December 31, 2016.

d. The permittee shall complete a final engineering design for the selected option no later than June 30, 2017.

e. The permittee shall obtain all necessary permits or approvals for the construction of the selected design no later than March 31, 2018, including any permits or approvals needed from the U.S. Army Corps of Engineers, MassDEP, Massachusetts Division of Coastal Zone Management, local conservation commissions, and/or others (See paragraph I.C.4.l below).

f. No later than January 31, 2018, the permittee shall select contractors for the construction of the selected engineering design.

g. The permittee shall procure all materials necessary for the construction of the selected engineering design no later than May 31, 2018.

h. The permittee shall provide EPA and MassDEP with two reports updating the progress of construction of the selected engineering design. Each report shall include a projected completion date. The first report shall be submitted no later than November 30, 2018 and the second shall be submitted no later than April 30, 2019.

i. The permittee shall complete construction of the selected engineering design no later than September 30, 2019.

j. The permittee shall begin commissioning and startup of the selected engineering design no later than January 31, 2020.

k. *Final Compliance Deadline*: No later than March 31, 2020, the permittee shall terminate water withdrawals at the Power Plant CWIS in compliance with Part I.C.1 of this permit.

l. Where any compliance obligation requires the permittee to obtain one or more permits or approvals from another government agency, as mentioned above, the permittee shall take all actions reasonably necessary to obtain all such permits or approvals, including, without limitation, submitting timely and complete applications for permits or approvals and submitting timely and complete responses to requests for information from the permitting entity.

i. The permittee may seek relief for any delay in the performance of an obligation under the compliance schedule that results from its failure to obtain, or delay in its obtaining, a permit or approval from a government agency if the permittee has taken all actions reasonably necessary to obtain that permit or approval in a timely way, including having submitted timely and complete applications for the permit or approval along with any necessary supporting information. In such a case, the remaining compliance schedule milestones in this permit shall be extended by the minimum amount needed to address the delay in issuance of the permit or approval in question.

D. REOPENER CLAUSES

1. This permit shall be modified, or alternately, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

   a. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

   b. Controls any pollutants not limited in the permit.

E. MONITORING AND REPORTING

1. **For a period of one year from the effective date of the permit**, the permittee may either submit monitoring data and other reports to EPA in hard copy form or report electronically using NetDMR, a web-based tool that allows permittees to electronically submit discharge monitoring reports (DMRs) and other required reports via a secure internet connection. **Beginning no later than one year after the effective date of the permit**, the permittee shall begin reporting using NetDMR, unless the facility is able to demonstrate a reasonable basis that precludes the use of NetDMR for submitting DMRs and reports. Specific requirements regarding submittal of data and reports in hard copy form and for submittal using NetDMR are described below:

   a. Submittal of Reports Using NetDMR

   NetDMR is accessed from: http://www.epa.gov/netdmr. **Within one year of the effective date of this permit**, the permittee shall begin submitting DMRs and reports required under this permit electronically to EPA using NetDMR, unless the facility is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for submitting DMRs and reports ("opt out request").

   DMRs shall be submitted electronically to EPA no later than the 15th day of the month following the completed reporting period. All reports required under the permit shall be submitted to EPA, including the MassDEP Monthly Operations and Maintenance Report,

as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to EPA and will no longer be required to submit hard copies of DMRs to MassDEP. However, permittees shall continue to send hard copies of reports other than DMRs (including Monthly Operation and Maintenance Reports) to MassDEP until further notice from MassDEP.

b. Submittal of NetDMR Opt Out Requests

Opt out requests must be submitted in writing to EPA for written approval at least sixty (60) days prior to the date a facility would be required under this permit to begin using NetDMR. This demonstration shall be valid for twelve (12) months from the date of EPA approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to EPA unless the permittee submits a renewed opt out request and such request is approved by EPA. All opt out requests should be sent to the following addresses:

Attn: NetDMR Coordinator
U.S. Environmental Protection Agency, Water Technical Unit
5 Post Office Square, Suite 100 (OES04-4)
Boston, MA 02109-3912

and

Massachusetts Department of Environmental Protection
Wastewater Management Program
1 Winter Street, 5th Floor
Boston, Massachusetts 02108

c. Submittal of Reports in Hard Copy Form

Monitoring results shall be summarized for each calendar month and reported on separate hard copy Discharge Monitoring Report Form(s) (DMRs) postmarked no later than the 15th day of the month following the completed reporting period. MassDEP Monthly Operation and Maintenance Reports shall be submitted as an attachment to the DMRs. Signed and dated originals of the DMRs, and all other reports or notifications required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Water Technical Unit (OES04-SMR)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Duplicate signed copies of all reports or notifications required above shall be submitted to the State at the following addresses:

Massachusetts Department of Environmental Protection - NERO
Bureau of Air and Waste
205B Lowell Street
Wilmington, MA 01887

Any verbal reports, if required in **Parts I** and/or **II** of this permit, shall be made to both EPA and to MassDEP.

F. STATE PERMIT CONDITIONS

1. This authorization to discharge includes two separate and independent permit authorizations. The two permit authorizations are (i) a federal National Pollutant Discharge Elimination System permit issued by the U.S. Environmental Protection Agency (EPA) pursuant to the Federal Clean Water Act, 33 U.S.C. §§1251 et seq.; and (ii) an identical state surface water discharge permit issued by the Commissioner of MassDEP pursuant to the Massachusetts Clean Waters Act, MGL c. 21, §§ 26-53, and 314 CMR 3.00. All of the requirements contained in this authorization, as well as the standard conditions contained in 314 CMR 3.19, are hereby incorporated by reference into this state surface water discharge permit.

2. This authorization also incorporates the state water quality certification issued by MassDEP under § 401(a) of the Federal Clean Water Act, 40 CFR 124.53, MGL c. 21, § 27 and 314 CMR 3.07. All of the requirements (if any) contained in MassDEP's water quality certification for the permit are hereby incorporated by reference into this state surface water discharge permit as special conditions pursuant to 314 CMR 3.11.

3. Each agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as a NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

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:

http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#methods

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

III. SAMPLE COLLECTION

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

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

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

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

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

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

IV. DILUTION WATER

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

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

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

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

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

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

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

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

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 most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

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

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

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

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

Footnotes:

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

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

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

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

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

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

Footnotes:

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

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

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

V.1. Test Acceptability Criteria

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

V.2. Use of Reference Toxicity Testing

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

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

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

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

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

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

VI. CHEMICAL ANALYSIS

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

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

Superscript:

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

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

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

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration

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

Methods of Estimation:

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

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

No Observed Acute Effect Level (NOAEL)

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

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

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

Please note: The NPDES Permit Program Instructions for the Discharge Monitoring Report Forms (DMRs) are available on EPA's website at http://www.epa.gov/NE/enforcementandassistance/dmr.html

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:

http://water.epa.gov/scitech/swguidance/methods/wet/index.cfm#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^{o} 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 must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

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 most current annual DMR instructions, which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcementandassistance/dmr.html for further 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 TEST[1]

1. Test type	Static, non-renewal
2. Salinity	30 o/oo ± 2 o/oo by adding dry ocean salts
3. Temperature	20 ± 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 TEST[1]

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 Artemia nauplii less than 24 hr old
14. Feeding regime	Feed once a day 0.10 g wet wt Artemia nauplii per replicate on days 0 – 2 feed 0.15 g wet wt Artemia 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	$\geq$ 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. $\geq$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.

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

Superscript:

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

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

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

VII. TOXICITY TEST DATA ANALYSIS 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 http://water.epa.gov/scitech/methods/cwa/wet/upload/2007_07_10_methods_wet_disk1_ctm.pdf.

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-00-003, June 2002, Section 6.4.2. The document can be located under Guidance Documents

at the following website location http://water.epa.gov/scitech/methods/cwa/wet/index.cfm#guidance. 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 that 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:

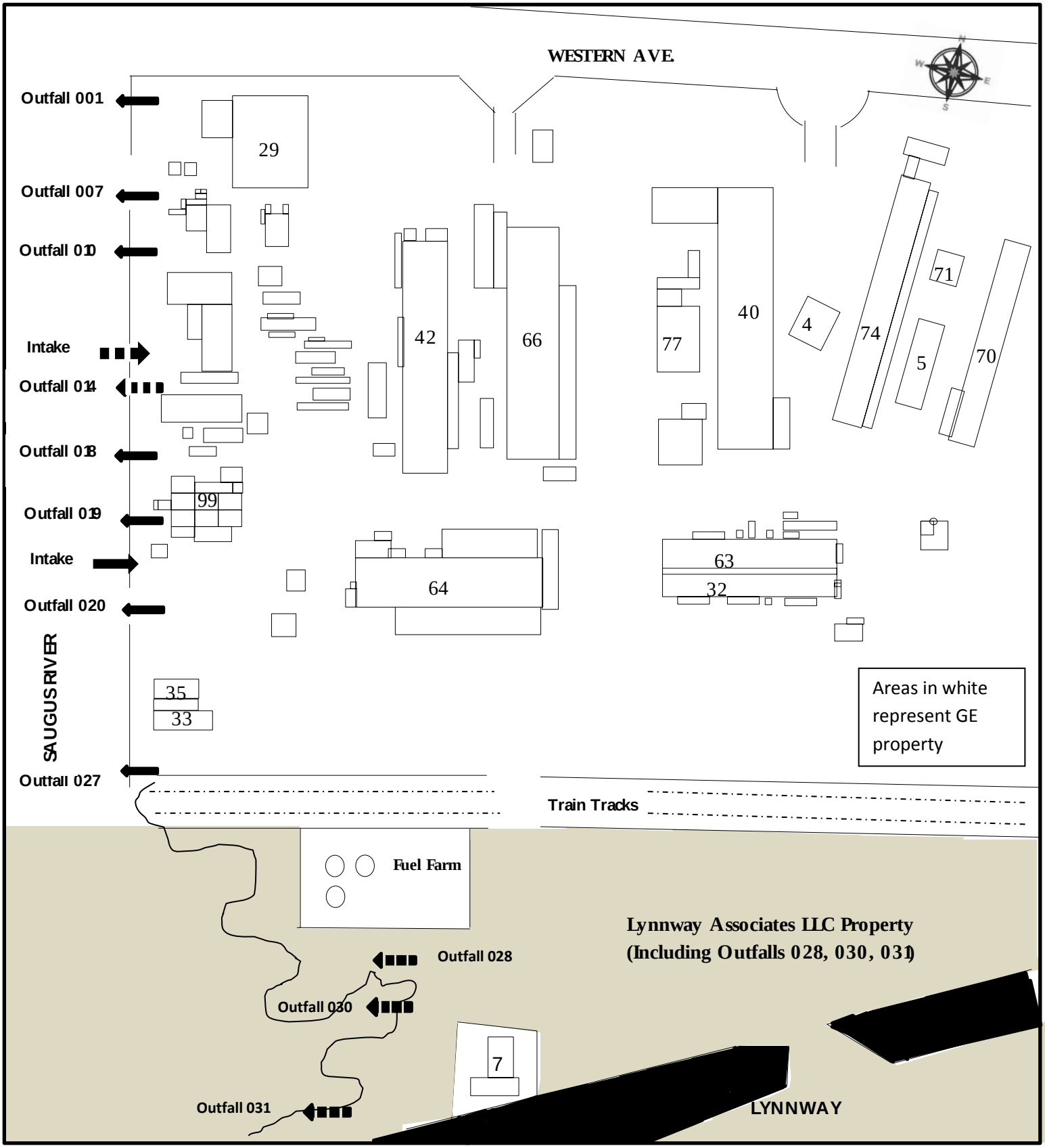
- Toxicity Test summary sheet(s) (Attachment F to the DMR Instructions) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type 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 http://www.epa.gov/NE/enforcementandassistance/dmr.html

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.

Attachment 3
GE Aviation Final NPDES Permit No. MA0003905
River Works NPDES Outfall/Intake Sketch (not to scale)



Attachment 4
Final Permit for GE Aviation NPDES Permit No. MA0003905
List of Approved Chemical Additives

Name of Additive	Equipment	Application
CORTROL IS3000	Boilers	Inorganic oxygen scavenger
OPTISPERSE ADJ560	Boilers	Alkalinity builder/caustic
OPTISPERSE AP0500	Boilers	General dispersant polymer
OPTISPERSE CL361	Boilers	Chelant
OPTISPERSE HP78626	Boilers	Iron dispersant polymer
STEAMATE NA0540	Boilers	Steam treatment
OPTISPERSE ADJ575	Boilers	Boiler antifoam
FOAMTROL AF3561	Boilers	River antifoam
CORTROL IS104	Boilers	Inorganic oxygen scavenger
KLARAID IC1172	WWTP	Coagulant
POLYFLOC AE1138	WWTP	Flocculent
POLYFLOC AP1138	WWTP	Flocculent
DIANODIC DN310	Cooling Towers	Inhibitor Package
SPECTRUS OX909	Cooling Towers	Oxidizing biocide
SPECTRUS NX114	Cooling Towers	Non-oxidizing biocide
GENGUARD GN7112	Cooling Towers	Inhibitor package
INHIBITOR VCS2000	Cooling Towers	Lay-up inhibitor
SPECTRUS OX103	Sumps	Oxidizing biocide pucks
CORRSHIELD NT402	Closed Loops	Inhibitor package
INHIBITOR AZ660	Closed Loops	Yellow metal inhibitor
CORRSHIELD NT4201	Closed Loops	Inhibitor package
CORRSHIELD MD4103	Closed Loops	Inhibitor package
INHIBITOR AZ8104	Closed Loops	Yellow metal inhibitor

Attachment 5

GE Aviation LYNN, MASS

CONSOLIDATED DRAINS COLLECTION AND TREATMENT SYSTEM (CDTS)

STANDARD OPERATING PROCEDURES

Title

Pump station operating set points for wet seasons at outfalls 001, 007, 010, 019, and 027

Purpose

This SOP provides an alternative group of set points to be used during defined "wet seasons" or when the licensed wastewater operator determines that the water table is elevated. This SOP is to guide Operators through the sequence of adjusting the operating set points at each outfall during seasons of wet weather conditions or high water table.

Definitions

For the purpose of this SOP, "wet season" is defined as the time period from March 15th through June 15th and September 15th through December 15th.

The "average volume of water treated at the CDTS" shall be calculated as a "rolling" average based on the daily volume of water treated during the previous sixty (60) days that occurred during the "dry season". A high water table occurs when the volume of water treated at the CDTS on the previous day is more than twenty (20) percent greater than the rolling average volume of water treated.

Operating Objective

Maximize the volume of dry weather flow that is treated prior to a rain event. Assure that when the gates open, there will be less comingled dry weather flow in the vault.

Procedure Summary

During defined wet seasons, or when the water table is elevated, set points will be changed to the "wet season on" and "wet season off" set points to maximize the volume of dry weather flow that can be treated prior to a rain event. The lower "wet season on" setting will assure that during the initial gate opening during a rain storm, there will be less comingled dry weather flow in the vault by pumping down more frequently and never recharging to the full capacity of the dry weather settings.

Wet Season set points will be used during the Dry weather season, if the operator determines that the water table is high. A high water table will be determined by comparing the previous days flow to the calculated "rolling" 60 day average. (See Definitions)

During shifts that the operator is onsite, the operator will operate using best judgment based on the weather, avoiding unnecessary taxing of equipment during dry weather or minimizing the volume of dry weather flows in the vault prior to wet weather.

Outfall	Dry Weather On (ft)	Dry Weather Off (ft)	Wet Season On (ft)	Wet Season Off (ft)
001	**8.72**	**8.22**	**8.5**	**8.22**
007	**6.55**	**6.05**	**6.30**	**6.05**
010	**6.5**	**6.00**	**6.30**	**6.00**
019	**8.10**	**7.10**	**7.60**	**7.10**
027	**5.0**	**4.25**	**4.60**	**4.25**

***All set points are in feet of elevation based on United States Geodetic Survey (USGS)**

Vault set points for outfalls

Outfall	Floor elevation (ft)	Vault bottom elevation (ft)	Baffle Elevation (ft)	Inlet Invert elevation (ft)
001	16.59	5.22	6.47	6.68
007	17.75	1.05	3.30	3.70
010	16.10	1.03	3.11	3.13
019	16.00	3.60	N/A*	5.60
027	15.92	1.22	2.02	3.52

*** Baffle elevation could not be confirmed without entering the vault due to position of the baffle**

001 The baffle elevation is at 6.47. The low alarm is set at elevation 7.47, 1' above the baffle elevation. The pump off is set at elevation 8.22 or 9'' above the low. The skimmer requires 12'' for floatation which will place the bottom of the skimmer at elevation 7.22 or 3'' below the pump low elevation. The pump size is 1.5 hp. A vortex condition is not anticipated

007 The baffle elevation is at 3.30. The low alarm is set at elevation 4.30, 1' above the baffle elevation. The pump off is set at 6.05 or 1.75' above the low. The skimmer requires 12'' for floatation which will place the bottom of the skimmer at elevation 5.05 or .75' above the pump low elevation. The pump size is 7 hp. Settings should eliminate vortex conditions.

010 The baffle elevation is at 3.11. The low alarm is set at elevation 4.11, 1' above the baffle elevation. The pump off is set at 6.03 or 1.92' above the low. The skimmer requires 12'' for floatation which will place the bottom of the skimmer at elevation 5.03 or 0.92' above the pump low elevation. The pump size is 5 hp. Settings should eliminate vortex conditions.

019 The invert elevation of the suction line is approximately 5.6. The low alarm is set at elevation 6.0. The pump off is set at 7.10 or 1.10' above the low. The skimmer requires 12'' for floatation which will place the bottom of the skimmer at elevation 6.10. This clears the top of the bench by 5''. The pump size is 5 hp. Settings should eliminate vortex conditions.

027 The baffle elevation is at elevation 2.02. The low alarm is set at elevation 3.0 or 1' above the baffle. The pump off is set at 4.75 or 1.75' above the low. The skimmer requires 12'' for floatation which will place the bottom of the skimmer at elevation 3.75. The pump size is 5hp. Settings should eliminate vortex conditions.

Estimated volume of additional water pumped each pump cycle at each vault

outfall	Square feet of vault (ft^2)	Difference between Dry weather on vs. Wet season on (ft)	Cubic feet of treated water (ft^3)	Potential additional gallons of dry weather flow treated each pump cycle; Volume of potential dry weather flow not comingled with storm water. (gallons)
001	40	.22	9	68
007	110	.25	28	210
010	115	.2	23	172
019	78	.5	39	292
027	110	.4	44	329

*** Calculations are estimated based on the outfall dimensions provided in Table 1 of Attachment G in the December 5, 2014 letter from GE to the EPA.**

To change the operating set points of the outfalls from the computer screens:

- Select MENU at the top of the screen
- Select the desired drain outfall (001, 007, 010, 019, 027)
- Move curser to the block that is displaying set points and click. Drain set points box appears
- Move curser to pump on value and click to high light current setting
- Type in new desired pump on setting and hit enter. Box appears showing your new value asking if you wish to change to this new value? (ok, skip, cancel)
- Move curser to OK and click
- Box appears displaying your new pump on setting
- If your new pump on setting appears you may click "X" OUT

Cautions and vulnerabilities
It is not recommended to lower "pump off" and "low alarm" levels below the set points. These set points have been established to prevent the following consequences from taking place.

- Hanging up the floating skimmer unit, causing it to stop skimming water and drawing air, which will cause the skimmer pump to stop being effective, run dry and damage the pump.
- Creating a vortex condition on inlet line of transfer pumps, causing pump to draw air and cavitate, which will cause it to underperform, heat up and become damaged.
- Creating a vortex condition at inlet of suction line, drawing in surface particles, clogging impellers and lines and damaging the pump.
- Pumping down below the baffle allowing any light phase to go under and get trapped in the secondary vault outside the skimming vault, then leaving the system when there's wet weather flow and the gate opens.

Dry weather flow is pumped from the vaults to the CDTS through overhead lines. During cold winter months, the overhead lines rely on an insulated heat trace system to prevent freezing. This design makes the system vulnerable to long stretches of cold and harsh winter conditions. If the heat trace stops working and freezing occurs, vault set points could be turned off and water will not be pumped from the vault until the line is thawed. The operator will continue to monitor the condition of the overhead line and attempt to pull water through the system when possible. It is necessary for the

operator to closely monitoring pump conditions to limit any additional damage to the pumps or overhead pipes.

During a wet weather event that occurs while the overhead line to the CDTS is frozen, the level of the dry weather flow may be above the “pump on” set point. It may become necessary to allow storm water comingled with dry weather flow to pass through the gates in order to prevent flooding at the upstream catch basins. In such event, GE will provide telephone notice to the Environmental Protection Agency and the Department of Environmental Protection within 24 hours.

Attachment 6:

Discharge Monitoring Reporting Form for Gate Openings

The permittee shall report the total number of gate openings at each of the Drainage System Outfalls 001, 007, 010, 019, and 027B. For each gate opening, the permittee shall report the date, the time the gate opened, the time the gate closed, the duration of the gate opening. The permittee shall also report the corresponding weather conditions at the time of opening, during the time that the gate is open, and at the time of gate closing. The permittee shall also estimate the total flow discharged while the gate was open. This Discharge Monitoring Reporting Form shall be submitted as an attachment to the discharge monitoring form for each month. See Part I.F.1 for instructions on submitting reports using NetDMR.

Outfall	Date	Time of Gate Opening	Time of Gate Closing	Duration of Gate Opening (minutes)	Corresponding Weather Conditions			Total Volume Discharged (gallons)
					Open	During	Closing	
ex: 001	*1/1/16*	*13:30*	*14:30*	*60*	*Rain*	*Rain*	*Cloudy*	*1,462*

Attachment 7:

Discharge Monitoring Reporting Form for Dry Season Vault Elevations

For each date during the dry season that drainage system vault elevations are lowered to the wet season set points due to a high water table, report the date, the volume of water treated at the CDTS on the previous day, and the average volume of water treated at the CDTS over the previous sixty (60) dry weather days. This Discharge Monitoring Reporting Form shall be submitted as an attachment to the discharge monitoring form for each month during the dry season. See Part I.F.1 for instructions on submitting reports using NetDMR.

Date	Prior Day Volume Treated at CDTS (gallons)	60-Day Average Volume Treated (gallons)
Ex: 07/29/15	*98,450*	*73,450*

NPDES PART II STANDARD CONDITIONS
(January, 2007)

TABLE OF CONTENTS

PART II. 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) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

a. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the 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, even if the permit has not yet been modified to incorporate the requirements.

b. The CWA provides that any person who violates Section 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any of such sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Section 402 (a)(3) or 402 (b)(8) of the CWA is subject to a civil penalty not to exceed $25,000 per day for each violation. Any person who negligently violates such requirements is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates such requirements 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.

c. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318, or 405 of the CWA, or any permit condition or limitation implementing any of such sections in a permit issued under Section 402 of the CWA. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

Note: See 40 CFR §122.41(a)(2) for complete “Duty to Comply” regulations.

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 notifications of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The permittee shall furnish to the Regional Administrator, within a reasonable time, any information which the Regional Administrator 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 Regional Administrator, upon request, copies of records required to be kept by this permit.

4. Reopener Clause

The Regional Administrator reserves the right to make appropriate revisions to this permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the CWA in order to bring all discharges into compliance with the CWA.

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Regional Administrator or Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under Section 405 (d) of the CWA. The Regional Administrator or Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or contains a pollutant or practice not limited in the permit.

Federal regulations pertaining to permit modification, revocation and reissuance, and termination are found at 40 CFR §122.62, 122.63, 122.64, and 124.5.

5. 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).

6. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges.

7. Confidentiality of Information

a. In accordance with 40 CFR 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 CFR 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 as defined in 40 CFR §2.302(a)(2).

c. Information required by NPDES application forms provided by the Regional Administrator under 40 CFR §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.

8. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after its expiration date, 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 Regional Administrator. (The Regional Administrator shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

9. State Authorities

Nothing in Part 122, 123, or 124 precludes more stringent State regulation of any activity covered by these regulations, whether or not under an approved State program.

10. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, or local laws and regulations.

PART II. 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 and with the requirements of storm water pollution prevention plans. 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 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 be reasonably 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 provision of Paragraphs B.4.c. and 4.d. of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (Twenty-four hour reporting).

d. Prohibition of bypass

Bypass is prohibited, and the Regional Administrator may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(2) 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
(3) i) The permittee submitted notices as required under Paragraph 4.c. of this section.
ii) The Regional Administrator may approve an anticipated bypass, after considering its adverse effects, if the Regional Administrator determines that it will meet the three conditions listed above in paragraph 4.d. of this section.

5. Upset

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

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph B.5.c. of this section are met. No determination made during

administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

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

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated;
(3) The permittee submitted notice of the upset as required in paragraphs D.1.a. and 1.e. (Twenty-four hour notice); and
(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.

PART II. 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 for 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 five years (or longer as required by 40 CFR Part 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 except for the information concerning storm water discharges which must be retained for a total of 6 years. This retention period may be extended by request of the Regional Administrator 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 results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

e. 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.

2. Inspection and Entry

The permittee shall allow the Regional Administrator 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 CWA, any substances or parameters at any location.

PART II. D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. Planned Changes. The permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required 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 CFR§122.29(b); or
(2) The alteration or addition could significantly change the nature or increase the quantities of the pollutants discharged. This notification applies to pollutants which are subject neither to the effluent limitations in the permit, nor to the notification requirements at 40 CFR§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 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 Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Regional Administrator. The Regional Administrator 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 CWA. (See 40 CFR Part 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.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of the 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 submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission 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.

(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 CFR §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 Regional Administrator in the permit to be reported within 24 hours. (See 40 CFR §122.44(g).)

(3) The Regional Administrator may waive the written report on a case-by-case basis for reports under Paragraph D.1.e. if the oral report has been received within 24 hours.

f. Compliance Schedules. Reports of compliance or noncompliance with, 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.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, it shall promptly submit such facts or information.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Regional Administrator shall be signed and certified. (See 40 CFR §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 noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under Paragraph A.8. 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 Regional Administrator. 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.

PART II. E. DEFINITIONS AND ABBREVIATIONS

1. Definitions for Individual NPDES Permits including Storm Water Requirements

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 to, 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 and disposal” under Sections 301, 302, 303, 304, 306, 307, 308, 403, and 405 of the CWA.

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

Average means the arithmetic mean of values taken at the frequency required for each parameter over the specified period. For total and/or fecal coliforms and Escherichia coli, the average shall be the geometric mean.

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" measured during the calendar week divided by the number of "daily discharges" measured during the 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.

Best Professional Judgment (BPJ) means a case-by-case determination of Best Practicable Treatment (BPT), Best Available Treatment (BAT), or other appropriate technology-based standard based on an evaluation of the available technology to achieve a particular pollutant reduction and other factors set forth in 40 CFR §125.3 (d).

Coal Pile Runoff means the rainfall runoff from or through any coal storage pile.

Composite Sample means a sample consisting of a minimum of eight grab samples of equal volume collected at equal intervals during a 24-hour period (or lesser period as specified in the section on Monitoring and Reporting) and combined proportional to flow, or a sample consisting of the same number of grab samples, or greater, collected proportionally to flow over that same time period.

Construction Activities - The following definitions apply to construction activities:

(a) Commencement of Construction is the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction activities.

(b) Dedicated portable asphalt plant is a portable asphalt plant located on or contiguous to a construction site and that provides asphalt only to the construction site that the plant is located on or adjacent to. The term dedicated portable asphalt plant does not include facilities that are subject to the asphalt emulsion effluent limitation guideline at 40 CFR Part 443.

(c) Dedicated portable concrete plant is a portable concrete plant located on or contiguous to a construction site and that provides concrete only to the construction site that the plant is located on or adjacent to.

(d) Final Stabilization means that all soil disturbing activities at the site have been complete, and that a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

(e) Runoff coefficient means the fraction of total rainfall that will appear at the conveyance as runoff.

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) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117; 33 USC §§1251 et seq.

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

Director normally means the person authorized to sign NPDES permits by EPA or the State or an authorized representative. Conversely, it also could mean the Regional Administrator or the State Director as the context requires.

Discharge Monitoring Report Form (DMR) means the EPA standard 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 (See "Point Source" definition).

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 Regional Administrator 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".

EPA means the United States "Environmental Protection Agency".

Flow-weighted composite sample means a composite sample consisting of a mixture of aliquots where the volume of each aliquot is proportional to the flow rate of the discharge.

Grab Sample – An individual sample collected in a period of less than 15 minutes.

Hazardous Substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Indirect Discharger means a non-domestic discharger introducing pollutants to a publicly owned treatment works.

Interference means a discharge 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 (CWA), 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 which is not a land application unit, surface impoundment, injection well, or waste pile.

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

Large and Medium municipal separate storm sewer system means all municipal separate storm sewers that are either: (i) located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (these cities are listed in Appendices F and 40 CFR Part 122); or (ii) located in the counties with unincorporated urbanized

populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships, or towns within such counties (these counties are listed in Appendices H and I of 40 CFR 122); or (iii) owned or operated by a municipality other than those described in Paragraph (i) or (ii) and that are designated by the Regional Administrator as part of the large or medium municipal separate storm sewer system.

Maximum daily discharge limitation means the highest allowable "daily discharge" concentration that occurs only during a normal day (24-hour duration).

Maximum daily discharge limitation (as defined for the Steam Electric Power Plants only) when applied to Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) is defined as "maximum concentration" or "Instantaneous Maximum Concentration" during the two hours of a chlorination cycle (or fraction thereof) prescribed in the Steam Electric Guidelines, 40 CFR Part 423. These three synonymous terms all mean "a value that shall not be exceeded" during the two-hour chlorination cycle. This interpretation differs from the specified NPDES Permit requirement, 40 CFR § 122.2, where the two terms of "Maximum Daily Discharge" and "Average Daily Discharge" concentrations are specifically limited to the daily (24-hour duration) values.

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 tribe organization, or a designated and approved management agency under Section 208 of the CWA.

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 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 rig 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 Regional Administrator 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 Regional Administrator shall consider the factors specified in 40 CFR §§125.122 (a) (1) through (10).

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

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

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

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

NPDES means "National Pollutant Discharge Elimination System".

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

Pass through means a Discharge 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).

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved" State.

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

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 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §§2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

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

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

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operation is not the operator of the treatment works or (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 any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality".

This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

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

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

Section 313 water priority chemical means a chemical or chemical category which:

(1) is listed at 40 CFR §372.65 pursuant to Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986);

(2) is present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and

(3) satisfies at least one of the following criteria:

(i) are listed in Appendix D of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols), or Table V (certain toxic pollutants and hazardous substances);
(ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR §116.4; or
(iii) are pollutants for which EPA has published acute or chronic water quality criteria.

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, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, Type III Marine Sanitation Device pumpings (33 CFR 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 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, 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 EPCRA Section 313, 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 CFR §110.10 and §117.21) or Section 102 of CERCLA (see 40 CFR § 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 CFR §122.1(b)(3).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands.

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 which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. (See 40 CFR §122.26 (b)(14) for specifics of this definition.

Time-weighted composite means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.

Toxic pollutants 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 wastewater 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 wastewater 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 Regional Administrator may designate any person subject to the standards for sewage sludge use and disposal in 40 CFR 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 CFR Part 503.

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

Waters of the United States 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 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 the CWA (other than cooling ponds as defined in 40 CFR §423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration 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. (See Abbreviations Section, following, for additional information.)

2. Definitions for NPDES Permit Sludge Use and Disposal Requirements.

Active sewage sludge unit is a sewage sludge unit that has not closed.

Aerobic Digestion is the biochemical decomposition of organic matter in sewage sludge into carbon dioxide and water by microorganisms in the presence of air.

Agricultural Land is land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture.

Agronomic rate is the whole sludge application rate (dry weight basis) designed:

(1) To provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land; and

(2) To minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

Air pollution control device is one or more processes used to treat the exit gas from a sewage sludge incinerator stack.

Anaerobic digestion is the biochemical decomposition of organic matter in sewage sludge into methane gas and carbon dioxide by microorganisms in the absence of air.

Annual pollutant loading rate is the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period.

Annual whole sludge application rate is the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period.

Apply sewage sludge or sewage sludge applied to the land means land application of sewage sludge.

Aquifer is a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs.

Auxiliary fuel is fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of the sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel.

Base flood is a flood that has a one percent chance of occurring in any given year (i.e. a flood with a magnitude equaled once in 100 years).

Bulk sewage sludge is sewage sludge that is not sold or given away in a bag or other container for application to the land.

Contaminate an aquifer means to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR §141.11 to be exceeded in ground water or that causes the existing concentration of nitrate in the ground water to increase when the existing concentration of nitrate in the ground water exceeds the maximum contaminant level for nitrate in 40 CFR §141.11.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 CFR §501.2, required to have an approved pretreatment program under 40 CFR §403.8 (a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR §403.10 (e) and any treatment works treating domestic sewage, as defined in 40 CFR § 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 sewage sludge use or disposal practice to affect public health and the environment adversely.

Control efficiency is the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator.

Cover is soil or other material used to cover sewage sludge placed on an active sewage sludge unit.

Cover crop is a small grain crop, such as oats, wheat, or barley, not grown for harvest.

Cumulative pollutant loading rate is the maximum amount of inorganic pollutant that can be applied to an area of land.

Density of microorganisms is the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge.

Dispersion factor is the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack.

Displacement is the relative movement of any two sides of a fault measured in any direction.

Domestic septage is either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receives either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant.

Domestic sewage is waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works.

Dry weight basis means calculated on the basis of having been dried at 105 degrees Celsius (°C) until reaching a constant mass (i.e. essentially 100 percent solids content).

Fault is a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to the strata on the other side.

Feed crops are crops produced primarily for consumption by animals.

Fiber crops are crops such as flax and cotton.

Final cover is the last layer of soil or other material placed on a sewage sludge unit at closure.

Fluidized bed incinerator is an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas.

Food crops are crops consumed by humans. These include, but are not limited to, fruits, vegetables, and tobacco.

Forest is a tract of land thick with trees and underbrush.

Ground water is water below the land surface in the saturated zone.

Holocene time is the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present.

Hourly average is the arithmetic mean of all the measurements taken during an hour. At least two measurements must be taken during the hour.

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

Industrial wastewater is wastewater generated in a commercial or industrial process.

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 with a high potential for public exposure is land that the public uses frequently. This includes, but is not limited to, a public contact site and reclamation site located in a populated area (e.g., a construction site located in a city).

Land with low potential for public exposure is land that the public uses infrequently. This includes, but is not limited to, agricultural land, forest and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area).

Leachate collection system is a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit.

Liner is soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} centimeters per second or less.

Lower explosive limit for methane gas is the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 degrees Celsius and atmospheric pressure.

Monthly average (Incineration) is the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month.

Monthly average (Land Application) is the arithmetic mean of all measurements taken during the month.

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.

Other container is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

Pasture is land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover.

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

Permitting authority is either EPA or a State with an EPA-approved sludge management program.

Person is 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; a measure of the acidity or alkalinity of a liquid or solid material.

Place sewage sludge or sewage sludge placed means disposal of sewage sludge on a surface disposal site.

Pollutant (as defined in sludge disposal requirements) is an organic substance, an inorganic substance, a combination or organic and inorganic substances, or pathogenic organism that, after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food chain, could on the basis on information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction) or physical deformations in either organisms or offspring of the organisms.

Pollutant limit (for sludge disposal requirements) is a numerical value that describes the amount of a pollutant allowed per unit amount of sewage sludge (e.g., milligrams per kilogram of total solids); the amount of pollutant that can be applied to a unit of land (e.g., kilograms per hectare); or the volume of the material that can be applied to the land (e.g., gallons per acre).

Public contact site is a land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

Qualified ground water scientist is an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in ground water hydrology and related fields, as may be demonstrated by State registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding ground water monitoring, pollutant fate and transport, and corrective action.

Range land is open land with indigenous vegetation.

Reclamation site is drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites.

Risk specific concentration is the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of a site where the sewage sludge incinerator is located.

Runoff is rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off the land surface.

Seismic impact zone is an area that has 10 percent or greater probability that the horizontal ground level acceleration to the rock in the area exceeds 0.10 gravity once in 250 years.

Sewage sludge is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to:, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in treatment works.

Sewage sludge feed rate is either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located.

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

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR §122.2.

Sewage sludge unit boundary is the outermost perimeter of an active sewage sludge unit.

Specific oxygen uptake rate (SOUR) is the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in sewage sludge.

Stack height is the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 meters. When the difference is greater than 65 meters, stack height is the creditable stack height determined in accordance with 40 CFR §51.100 (ii).

State is one of the United States of America, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, and an Indian tribe eligible for treatment as a State pursuant to regulations promulgated under the authority of section 518(e) of the CWA.

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.

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

Total hydrocarbons means the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane.

Total solids are the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 degrees Celsius.

Treat or treatment of sewage sludge is the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge.

Treatment works is either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature.

Unstable area is land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement.

Unstabilized solids are organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

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

Volatile solids is the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 degrees Celsius in the presence of excess air.

Wet electrostatic precipitator is an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

Wet scrubber is an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack.

3. 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)	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen
kg/day	Kilograms per day
lbs/day	Pounds per day
mg/l	Milligram(s) per liter
ml/l	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
pH	A measure of the hydrogen ion concentration. A measure of the acidity or alkalinity of a liquid or material
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)
ug/l	Microgram(s) per liter
WET	"Whole effluent toxicity" is the total effect of an effluent measured directly with a toxicity test.
C-NOEC	"Chronic (Long-term Exposure Test) – No Observed Effect Concentration". 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.
A-NOEC	"Acute (Short-term Exposure Test) – No Observed Effect Concentration" (see C-NOEC definition).
LC_{50}	LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.
ZID	Zone of Initial Dilution means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100 BOSTON, MASSACHUSETTS 02109-3912

STATEMENT OF BASIS FOR:

Draft Modification to National Pollutant Discharge Elimination System (NPDES) Permit to Discharge to Waters of the United States Pursuant to the Clean Water Act

NPDES PERMIT NUMBER:

MA0003905

PUBLIC NOTICE START AND END DATES:

June 2, 2016 – July 1, 2016

NAME AND MAILING ADDRESS OF APPLICANT:

General Electric Company, 1000 Western Avenue, Lynn, MA 01910

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

General Electric Aviation, 1000 Western Avenue, Lynn, MA 01910

RECEIVING WATER(S) and SOURCE WATER FOR COOLING WATER WITHDRAWALS:

Saugus River
(USGS Hydrologic Code #01070002 – North Coastal River Basin)

RECEIVING WATER CLASSIFICATION(S):

Class SB -Warm water fishery

SIC CODE(S): 3724, 3566

CURRENT PERMIT - ISSUED: September 30, 2014;

MODIFICATIONS: August 19, 2015; November 2, 2015.

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I. Introduction

The United States Environmental Protection Agency's (EPA) Region 1 office (Region 1 or the Region) and the Massachusetts Department of Environmental Protection (MassDEP) (collectively the Regulatory Agencies) are proposing modifications to the Modified National Pollutant Discharge Elimination System (NPDES) permit issued to the General Electric Aviation (GE or the Permittee) facility in Lynn, MA (the Facility) on August 19, 2015 (the 2015 Modified Permit). The modifications in the 2015 Modified Permit were issued to address a number of changes in GE's operations at the Facility that occurred or were identified after the Regulatory Agencies issued a Final Permit to GE on September 30, 2014 (the 2014 Final Permit), which GE appealed to EPA's Environmental Appeals Board (EAB) in Washington, D.C on October 30, 2014. After GE and the Regulatory Agencies agreed upon the modifications in the 2015 Modified Permit,

GE voluntarily requested dismissal of its appeal. The EAB dismissed the appeal on September 29, 2015.

II. Background

A. The Facility

GE owns and operates a facility in Lynn, Massachusetts, at which GE Aviation manufactures, tests, and assembles jet turbine engines and associated components (the Facility). The facility site is comprised of approximately 223 acres and includes 45 building complexes with associated storage areas, parking areas, and traffic ways. *See* Attachment A for a site map. The GE Aviation facility is a large, complex industrial site with a complicated array of wastewater discharges to the Saugus River involving numerous outfalls and a wide range of contaminants. As a result, a variety of regulatory standards apply to the facility and the Regulatory Agencies have undertaken numerous analyses to determine the appropriate NPDES permit requirements.

B. The Current Permit

As stated above, the Regulatory Agencies issued a Final NPDES permit for the Facility on September 30, 2014. The 2014 Final Permit did not take effect, however, because on October 30, 2014, GE appealed various conditions in the NPDES permit to the EAB. As a result of this appeal, the 2014 Final Permit was stayed in its entirety.

In response to the permit appeal, the Regulatory Agencies and GE (collectively, the Parties) requested a stay of the appeal proceeding so that they could undertake settlement negotiations and determine whether resolution of the permit appeal without further litigation was possible. The EAB granted the stay and Parties began settlement negotiations. As a result of these negotiations, and in light of new factual developments, the Parties were able to resolve the appeal by agreeing that certain provisions in the 2014 Final Permit that had been challenged in the appeal would be modified while others would be retained. Some of the agreed-upon modifications identified by the Parties in the permit appeal negotiations qualified as minor modifications under federal and state regulations, *see* 40 C.F.R. § 122.63 and 314 CMR 3.13(3) (the 2015 Minor Modifications), while others were "non-minor" modifications. *Compare* 40 C.F.R. § 122.62, *with* 40 C.F.R. § 122.63. In accordance with 40 C.F.R. §§ 122.62, 124.5 and 124.6, the Regulatory Agencies issued a draft permit modification on July 13, 2015, which included a Statement of Basis that explained each of the "non-minor" modifications for public comment. No comments were received during the comment period and the Modified Permit was issued and became effective on August 19, 2015. At that time, the Regulatory Agencies immediately incorporated the 2015 Minor Modifications into the Final Permit, *as modified*, consistent with 40 C.F.R. § 122.63 and 314 CMR 3.13(3) (regulations concerning the effective date of minor modifications). *See also* 40 C.F.R. § 122.62 (introductory paragraph).

The current permit, which became effective on August 19, 2015, authorizes and regulates the Facility's withdrawal of water *from* the Saugus River for cooling uses and its discharges of pollutants *to* the Saugus River in a variety of wastewater streams. These wastewater streams include non-contact cooling water (NCCW), contact cooling water, steam condensate, boiler blowdown, hydrant testing water, wash waters, stormwater, contaminated groundwater, and other miscellaneous wastewaters. The current permit, as modified, regulates these wastewater discharges from Outfalls 001, 007, 010, 018, 019, 020, 027, 028, 030, and 031. *See* Attachment B for outfall and intake locations.

III. Permit Modifications

The facts concerning the Facility that are relevant for the purpose of NPDES permitting are discussed in detail in the Fact Sheet that EPA issued in 2011 together with the draft NPDES permit for the Facility (the 2011 Fact Sheet and the 2011 Draft Permit, respectively), the Responses to Comments issued by EPA in conjunction with the 2014 Final Permit (the 2014 RTC), and the Statement of Basis issued with the draft permit modification in July 2015 (the 2015 Statement and 2015 Draft Modification, respectively). These records also discuss the essential legal underpinnings of the 2014 Final Permit and 2015 Modified Permit. These documents are incorporated herein by reference for purposes of providing additional background information concerning the Facility, the 2014 Final Permit, the 2015 Modified Permit, and the relevant law. Finally, EPA also incorporates by reference a minor modification issued to GE on November 2, 2015, which corrected a typographical error in the 2015 Modified Permit.

This Statement of Basis discusses a proposed modification to the 2015 Permit Modification. In addition to the proposed modification explained in Section A (below), the Regulatory Agencies are proposing several minor modifications to the 2015 Permit Modification. GE has consented to the minor modifications described in Section B (below) and they are incorporated into the draft modified permit discussed in this Statement of Basis. In accordance with 40 C.F.R. § 122.63, minor modifications may be made without following the procedures of 40 C.F.R. Part 124 requiring draft permit and public notice. Therefore, the Agencies are accepting comments only on the proposed modification described in Section A and shown in the draft permit modification.

A. <u>Proposed Modifications to Parts I.C and I.D of the Permit</u>

Part I.C of the 2015 Modified Permit includes requirements pertaining to the cooling water intake structure (CWIS) servicing the facility's Power Plant. These CWIS requirements include a compliance schedule according to which GE must complete certain steps to comply with the Best Technology Available (BTA) standard under CWA § 316(b), including the installation of variable frequency drives (VFDs) for the CWIS pumps and a fine-mesh wedgewire screen intake system.

In negotiations over GE's 2014 permit appeal, the company informed the Regulatory Agencies that it was considering terminating the operation of the Power Plant and all water withdrawals through its CWIS. The Agencies identified that terminating the operation of the Power Plant would eliminate the adverse environmental effects of GE's cooling water withdrawals (*i.e.,* entrainment and impingement). The Agencies also recognized that a new technology (such as wedgewire screens) would take several years to install before any benefits from minimizing impingement and entrainment would be realized. The limited benefits that would accrue during the limited operational period before termination of withdrawals from the Power Plant CWIS is not likely to warrant the expenditure. Therefore, the agencies provided GE with a reasonable amount of time to determine its plans for the Power Plant in a compliance schedule included in Part I.C. of the 2015 Modified Permit. For its part, GE agreed that, once provided with time to make its decision about the Power Plant, it would either comply with the 2014 Final Permit's CWIS requirements according to the compliance schedule in the 2015 Modified Permit or complete the termination of water withdrawals through the Power Plant's CWIS according to a new schedule that it would propose to the Regulatory Agencies.

Thus, the Parties worked out an appropriate schedule for GE's decision-making about the operation of the Power Plant, and for GE's implementation of whichever approach it chose. Part I.C.4.a of the 2015 Modified Permit required GE to inform the Regulatory Agencies in writing of its decision regarding continued operation of the Power Plant by January 31, 2016. The permit also directed the permittee to request a permit modification in light of any decision to terminate water withdrawals at the Power Plant. GE also agreed to install the VFDs in either case, if the Power Plant would still be in operation after January 31, 2016.

On January 28, 2016, GE informed EPA and MassDEP in writing of its intent to terminate withdrawals from the Saugus River through the Power Plant CWIS in lieu of installing wedgewire screens to meet the requirements of the 2015 Modified Permit. GE proposed a compliance schedule to eliminate water withdrawals from the Saugus River by March 31, 2020. EPA and MassDEP agree that terminating water withdrawals from the Saugus River will eliminate adverse impacts to the aquatic community from both impingement and entrainment mortality due to the withdrawal of water from the Saugus River. Indeed, the termination of the Power Plant CWIS withdrawals will also lead to the reduction or elimination of cooling water discharges to the river. While the Regulatory Agencies did not mandate termination of Power Plant operations – instead, the agencies developed permit conditions to properly control the Power Plant's environmental effects – the agencies recognize that termination of water withdrawals for the Power Plant will do even more to reduce adverse effects to aquatic life than the conditions in the 2014 Final Permit would be capable of doing. The Regulatory Agencies have agreed to the schedule proposed by GE in its January 28, 2016 letter, finding it to be a reasonable timeline for completing the tasks necessary to terminate Power Plant operations.

Thus, pursuant to 40 C.F.R. §§ 122.62(a)(1) and 122.47(b)(1)(i), the Regulatory Agencies are proposing modifications to Part I.C of the 2015 Modified Permit to amend the requirements, including the compliance schedule, for the Power Plant's CWIS. Ultimately, the permit requires GE to eliminate water withdrawals from the Saugus River no later than March 31, 2020. The requirement to eliminate withdrawals from the Saugus River from the Power Plant's CWIS is a substantial alteration to the facility and justifies the modification at issue here. Consistent with 40 C.F.R. § 122.47(b)(3)(i), the compliance schedule specifies interim requirements that demonstrate progress towards compliance with the permit requirement. This schedule also provides for relief for GE if compliance is delayed due to delays in the issuance of necessary permits through no fault of GE's.

The final compliance deadline at Part I.C.4.j of the 2015 Modified Permit (now I.C.3.k) has been extended by an additional 7 months. The Regulatory Agencies have concluded that this is reasonable to accommodate the up-front selection of a final technology and engineering design to achieve termination of the Power Plant CWIS withdrawals. As part of the interim requirements, GE must install and operate variable frequency drives and meet the requirement at Part I.C.1.b.i of the 2015 Modified Permit, which requires the permittee to maintain a monthly average intake flow of 28.7 MGD through the Power Plant CWIS, commensurate with a 20% reduction in average monthly flow as compared to the amount authorized in the previous permit from 1993.

Finally, the Regulatory Agencies are also proposing to modify the biological monitoring requirements of Part I.D.1 of the 2015 Modified Permit. Under the Modified Permit, the biological monitoring requirements were to take effect only after both wedgewire screens and variable frequency drives are fully operable. In other words, this monitoring was only required if GE decided to continue Power Plant CWIS operations. Because GE has opted instead to terminate withdrawals at the Power Plant's CWIS, the proposed biological monitoring requirements have been eliminated from the draft permit modification.

B. Minor Modifications

1. Correction of Typographical Errors in Permit Attachment 4 (Approved Chemical Additives)

EPA has modified Attachment 4 to the 2015 Modified Permit (List of Approved Chemical Additives) to correct a typographical error to replace "Optisperse ADJ050" with "Optisperse AP0500." The Regulatory Agencies are also authorizing GE to use Foamtrol AF3561 in place of Foamtrol AF3351 and will replace "Foamtrol AF3351" with "Foamtrol AF3561" in Attachment 4. GE, in compliance with Part I.B.2.c.v of the 2015 Modified Permit, has requested this change in approved additives because Foamtrol AF3351 is no longer being produced.

2. Change to WET Testing Parameters in Parts I.A.1 and footnote 15, I.A.2 and footnote 13, and I.A.3 and footnote 6

Each iteration of the facility's NPDES permit since the 2011 Draft Permit has included whole effluent toxicity (WET) testing requirements and/or limits for wastewater discharges. EPA has referenced and included as an attachment to the permit the Marine Chronic and Acute Toxicity Test Procedure and Protocol in every draft and final permit from the initial public notice of the 2011 Draft Permit through the 2015 Modified Permit. The draft and final permits, as well as the draft and final permit modifications, all list the appropriate marine test organisms as the inland silverside (*Menidia beryllina*) and the mysid shrimp (*Americamysis bahia*) for acute toxicity testing, and the inland silverside and the sea urchin (*Arbacia punctulata*) for chronic toxicity testing. However, the tables and footnotes in the permit inadvertently list the parameters from the freshwater protocol chemical analysis in place of the marine protocol chemical analysis included in Part VI of the freshwater and marine toxicity protocol. In the 2015 Modified Permit, Part I.A.1 and footnote 15, Part I.A.2 and footnote 13, and Part I.A.3 and footnote 6 also list the freshwater parameters in place of the marine parameters.

GE discharges to the Saugus River, which is an estuarine waterway classified as a Class SB water in the Massachusetts Surface Water Quality Standards at 314 CMR 4.06. Therefore, the marine toxicity protocol is the appropriate test for the receiving water, and it is clear from the record that EPA intended for the marine toxicity test protocols to be used in WET monitoring at GE. Although substantially similar, there are a few differences in the test parameters for marine and fresh waters. EPA lists the required testing parameters from the freshwater and marine protocols below.

Freshwater Protocol	Marine Protocol
Hardness	---
Dissolved Oxygen	---
Total Residual Chlorine	Total Residual Chlorine
Alkalinity	Salinity
pH	pH
Specific Conductance	---
Total Solids	Total Solids
Total Dissolved Solids	Total Suspended Solids
Ammonia	Ammonia
Total Organic Carbon	Total Organic Carbon
Total Metals	Total Metals
Cadmium (Cd)	Cadmium (Cd)
Lead (Pb)	Lead (Pb)
Copper (Cu)	Copper (Cu)
Zinc (Zn)	Zinc (Zn)

Nickel (Ni)	Nickel (Ni)
Aluminum (Al)	---

As stated, the record, from the initial 2011 Public Notice through issuance of the 2015 Modified Permit, is clear that the marine toxicity protocol is the intended procedure. Essentially, the substitution of the freshwater chemical analysis for the intended marine analysis requirements is a typographical error. The Regulatory Agencies have proposed modifications to the tables and footnotes in Parts I.A.1, I.A.2, and I.A.3 of the permit to add parameters specific to the marine protocol chemical analysis and eliminate parameters specific to the freshwater protocol chemical analysis. These modifications are being made pursuant to 40 C.F.R. § 122.63(a).[1]

3. Minor Modification to Eliminate Requirements for Outfalls 028, 030, and 031 in Part I.A.6

The Regulatory Agencies modified the 2014 Final Permit pursuant to 40 C.F.R. §§ 122.62(a)(1) and (2) which resulted in changes to both the monitoring requirements and best management practices for Outfalls 028, 030 and 031 in Parts I.A and I.B, respectively, of the permit. These proposed modifications were initiated due to changes in the ownership and operational control of these outfalls, as well as changes activities at the Facility that changed the nature of any possible discharges from these outfalls. After the Regulatory Agencies issued the 2014 Final Permit, GE completed the sale of the "Gear Plant" portion of the GE Facility, including Outfalls 028, 030 and 031 and their associated "outfall vaults," to Lynnway Associates, LLC (Lynnway).

The property sale conveyed the entire Gear Plant property to Lynnway, except that GE retained ownership and control of the jet fuel "tank farm" facility and the "Building 7" facility (including associated utility easements) within the Gear Plant property. Although ownership of Outfalls 028, 030 and 031 was transferred to Lynnway with the sale of the property, GE continued to co-operate the discharges in that it owned and operated the pump houses and associated equipment at each outfall. During permit appeal negotiations for the 2014 Final Permit, GE indicated to the Regulatory Agencies that it intended to dismantle, disable and/or cease to operate the pump houses and associated equipment used to convey dry weather flow from Outfalls 028, 030, and 031 to the CDTS. GE agreed to continue meeting the specified requirements for Outfalls 028, 030, and 031 at

[1] The regulatory agencies cite to the indicated regulations for the authority to make this particular minor permit modification despite the fact that these regulations refer to modifications to correct "typographical errors." In this case, the Regulatory Agencies would be making the modification solely to clarify the permit's pre-existing intent. Thus, as with corrections to typographical errors, the meaning and intent of the permit is not being changed. There is no specific mention of modifications solely to clarify a permit in either 40 C.F.R. § 122.63 (minor modifications) or 40 C.F.R. § 122.62 (non-minor modifications). Therefore, the Regulatory Agencies are citing to the regulations pertaining to the correction of typographical errors because such corrections are analogous to the clarifying modifications at issue here.

Part I.A.6 of the 2015 Modified Permit until it disconnected the pump houses and associated piping from, and no longer controlled the tide gates for, these outfalls. GE also agreed to disconnect and dismantle the equipment no sooner than August 15, 2015.

Shortly after issuance of the 2015 Modified Permit, GE disconnected and dismantled the pump houses and associated piping from Outfalls 028, 030, and 031. At this time, GE no longer owns, operates, or discharges pollutants from its property through, Outfalls 028 or 030, nor does it retain any operational control over these two outfalls. GE has also disconnected and dismantled the pump house and associated piping at Outfall 031 and has conveyed ownership of this outfall to Lynnway. GE retains ownership of Building 7 on the Gear Plant property, however, and uses it for storage. GE continues to discharge stormwater from the Building 7 parcel through Outfall 031 to the Saugus River. The discharge of stormwater from Building 7 via Outfall 031 is currently covered in the Stormwater Pollution Prevention Plan (SWPPP) requirements of Part I.B.2 of the 2015 Modified Permit. GE continues to take the appropriate affirmative steps spelled out in Part I.B.2 of the permit to ensure that it is applying best management practices to the discharge of stormwater from Building 7.

In light of the fact that GE no long owns, and has terminated its operational control of, the point sources at Outfalls 028, 030, 031 by disconnecting and dismantling the pump houses and associated piping, the Regulatory Agencies propose to make minor modifications to the Facility's permit to eliminate the effluent limitations and monitoring requirements at Part I.A.6 that pertain to these outfalls. The minor modifications will be issued pursuant to 40 C.F.R. § 122.63(e)(2).

IV. Endangered Species Act (ESA)

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority to, and imposes requirements on, Federal agencies regarding the conservation of endangered and threatened species of fish, wildlife, and plants ("listed species"), and the habitat of such species that has been designated as critical ("critical habitat"). The ESA requires Federal agencies, in consultation with, and with the assistance of, the Secretary of Interior, to insure that any action that they authorize, fund, or carry 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) typically administers Section 7 consultations for birds and terrestrial and freshwater aquatic species, while the National Marine Fisheries Service (NMFS) typically administers Section 7 consultations for marine species and anadromous fish.

EPA has reviewed the listing of federal endangered or threatened species of fish, wildlife, and plants to see if any such listed species might potentially be impacted by the proposed modifications to the 2015 Modified Permit. EPA has determined that Atlantic sturgeon

(*Acipenser oxyrinchus oxyrichus*) may potentially inhabit the Saugus River in the vicinity of the outfalls or CWIS. The NMFS listed the Gulf of Maine distinct population segment of Atlantic sturgeon as a threatened species. *See* 78 Fed. Reg. 69,310 (November 9, 2013).

Spawning activity occurs upstream and EPA does not expect Atlantic sturgeon eggs to be present in the action area. Post-yolk sac larvae migrate downstream to rearing grounds and eventually transition to juveniles, which become residents in estuarine waters for months or years. The 2007 Status Review does not list Atlantic sturgeon as occurring in the Saugus River; however, habitat suitable for juvenile, subadult and adult Atlantic sturgeon occurs in the Saugus River and, as a result, these life stages could potentially be present in the action area.[2][3]

Shortnose sturgeon (*Acipenser brevirostrum*) are currently listed as endangered through their range along the east coast of the United States. *See* 39 Fed. Reg. 41,370 (November 27, 1974). Shortnose sturgeon generally prefer the estuarine and riverine habitat of large river systems and most shortnose sturgeon adults remain in their natal river or estuary. This species, unlike other anadromous species in the region, such as shad or salmon, does not appear to make long distance offshore migrations. The 2010 Biological Assessment does not list shortnose sturgeon as occurring in the Saugus River; however, habitat suitable for juvenile, subadult and adult shortnose sturgeon occurs in the Saugus River.[4] Therefore, EPA has considered the potential for the proposed modifications to impact shortnose sturgeon because juvenile, subadult, and adult life stages of this species could potentially be present in the action area.

The proposed modifications to correct typographical errors and remove requirements for eliminated outfalls 028, 030, and 031 will not affect listed species. The proposed modifications to the CWIS requirements at Parts I.C and I.D of the permit are expected to improve conditions for Atlantic sturgeon and shortnose sturgeon because the modifications will require GE to eliminate withdrawals from the Saugus River by 2020, and to reduce the average monthly withdrawal of water as an interim measure.

EPA has determined that the proposed modifications to the CWIS requirements, which are more stringent than the 2015 Modified Permit and will lead to reduced environmental effects, will not adversely affect any listed species in the action area. Therefore, EPA has determined that formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NMFS regarding this determination through the information presented in this Statement of Basis. During the public comment period, EPA has provided a copy of the draft permit modifications and Statement of Basis to both NMFS and USFWS. Re-initiation of consultation will take place: (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical

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[2] Atlantic Sturgeon Status Review Team. 2007. Status Review of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). Report to National Marine Fisheries Service, Northeast Regional Office. February 23, 2007.
[3] pp.
[4] Shortnose Sturgeon Status Review Team. 2010. Biological Assessment of Shortnose Sturgeon (*Acipenser brevirostrum*). Report to National Marine Fisheries Service, Northeast Regional Office. November 1, 2010. 417 pp.

habitat that was not considered in the consultation; or (c) if a new species is listed or critical habitat is designated that may be affected by the identified action.

V. Essential Fish Habitat (EFH)

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 Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact essential fish habitat such as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910(a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

EFH is only designated for 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. The following is a list of the EFH species and applicable life stage(s) for Massachusetts Bay, to which the Saugus River discharges:

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (*Gadus morhua*)	X	X	X	X
haddock (*Melanogrammus aeglefinus*)	X	X		
Pollock (*Pollachius virens*)	X	X	X	X
Whiting (*Merluccius bilinearis*)	X	X	X	X
Red hake (*Urophycis chuss*)	X	X	X	X
white hake (*Urophycis tenuis*)	X	X	X	X
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X
yellowtail flounder (*Pleuronectes ferruginea*)	X	X	X	X
windowpane flounder (*Scopthalmus aquosus*)	X	X	X	X
American plaice (*Hippoglossoides platessoides*)	X	X	X	X
ocean pout (*Macrozoarces americanus*)	X	X	X	X

Atlantic halibut (*Hippoglossus hippoglossus*)	X	X	X	X
Atlantic sea scallop (*Placopecten magellanicus*)	X	X	X	X
Atlantic sea herring (*Clupea harengus*)		X	X	X
Long finned squid (*Loligo pealei*)	n/a	n/a	X	X
Short finned squid (*Illex illecebrosus*)	n/a	n/a	X	X
Atlantic butterfish (*Peprilus triacanthus*)	X	X	X	X
Atlantic mackerel (*Scomber scombrus*)	X	X	X	X
summer flounder (*Paralicthys dentatus*)				X
Scup (*Stenotomus chrysops*)	n/a	n/a	X	X
black sea bass (*Centropristus striata*)	n/a		X	X
Surf clam (*Spisula solidissima*)	n/a	n/a	X	X
bluefin tuna (*Thunnus thynnus*)			X	X

A review of past studies indicates that multiple life stages of several of the species listed in the table above are present in the Saugus River in the vicinity of the discharge. EPA determined that this facility's operation has the potential to affect EFH species in the Saugus River. These effects may be direct or indirect. For example, entrainment or impingement of an EFH species by the facility would be a direct effect. Harm to species that are not EFH species themselves, but serve as prey species for EFH species, could indirectly harm the EFH species. Here, anadromous fish species such as alewife and American shad enter the Saugus River from Massachusetts Bay and move past the facility to spawn upstream. These fish may be affected by the facility's cooling water intake operations. They are not EFH species, but may be selected as prey by EFH species. If facility operations affect these prey species, they may also indirectly affect EFH species through loss of prey.

Based on the available information, EPA has concluded that the limits and conditions contained in the draft permit modifications will minimize adverse effects to EFH species. These conditions are discussed in detail above. They include the following: interim requirements for reduced intake flow to minimize potential adverse impacts from entrainment and impingement and elimination of water withdrawals from the Saugus River no later than March 31, 2020.

EPA believes the draft permit modifications will protect all aquatic life, including those with designated EFH in the Saugus River, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NMFS will be notified and an EFH consultation will be initiated. During the public comment period, EPA has provided a copy of the draft permit modifications and Statement of Basis to both NMFS and USFWS.

VI. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving waters 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 State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit modifications and the Statement of Basis and advised EPA that the proposed limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 C.F.R. § 124.53 and expects that the permit modifications will be certified.

VII. Administrative Record, Public Comment Period, Hearing Requests, and Procedures for Final Decision

All persons, including applicants, who believe any condition of the draft permit modifications 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 Danielle Gaito, U.S. EPA, Office of Ecosystem Protection**,** Industrial Permits Branch, 5 Post Office Square, Suite 100 (OEP06-4), Boston, Massachusetts 02109-3912. Any person, prior to such date, may submit a request in writing to EPA and the State Agency for a public hearing to consider the draft permit modifications. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the proposed permit modifications, EPA will respond to all significant comments and make these responses available to the public on EPA's website and at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a decision regarding the proposed permit modifications and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

VIII. EPA & MassDEP Contacts

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays, from the EPA and MassDEP contacts below:

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_____ Kenneth Moraff,
Director

Date Office of Ecosystem Protection
U.S. Environmental Protection Agency

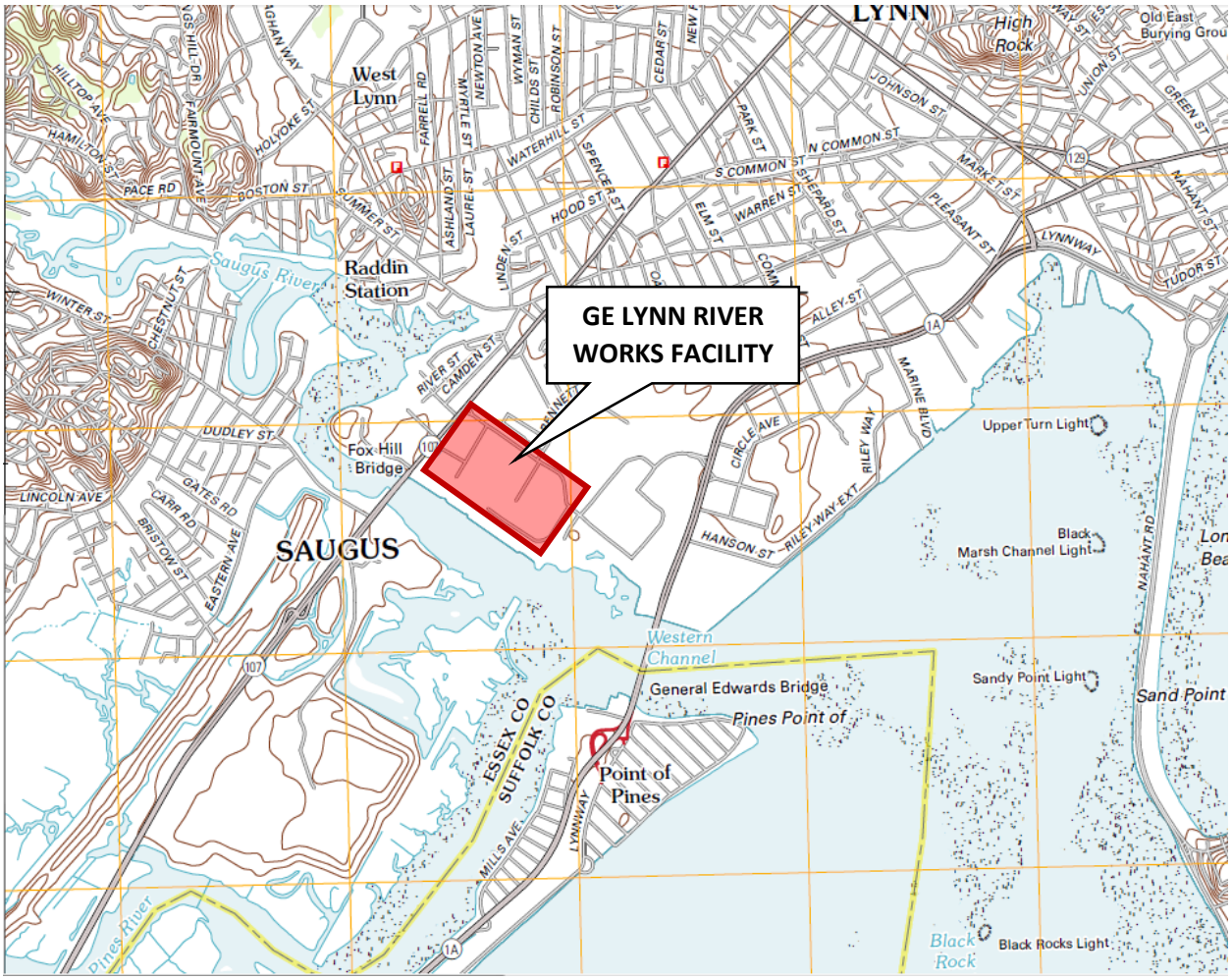
IX. Attachments

A. Location of GE Lynn River Works Facility (site map)

B. River Works NPDES Outfalls/Intakes

Attachment A

Location of GE Lynn River Works Facility



Attachment B

River Works NPDES Outfalls/Intakes