AUTHORIZATION TO DISCHARGE UNDER THE
RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 46-12 of the Rhode Island General Laws, as amended,

Burrillville Sewer Commission
P.O. Box 71
Harrisville, RI 02830

is authorized to discharge from a facility located at the

Burrillville Wastewater Treatment Facility
141 Clear River Drive
Harrisville, Rhode Island 02830

to receiving waters named

Clear River [RI0001002R-05D]

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

This permit shall become effective July 1, 2020.

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on July 1, 2012.

This permit consists of 17 pages in Part I including effluent limitations, monitoring requirements, etc., 38 pages in the Fact Sheet including attachments, and 10 pages in Part II including General Conditions.

Signed this 28th day of February, 2020.a

Angelo S. Liberti, PE, Administrator of Surface Water Protection
Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

PART I
A.e**EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

1.eDuring the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall seriale number(s) 001A.e
Such discharges shall be limited and monitored by the permittee as specified below:e

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
Flow	1.5 MGD	--- MGD				Continuous	Recorder
BOD_5 (May - Oct)	125.1 lb/day	212.7 lb/daye	10 mg/L	15 mg/L	17 mg/L	3/Week	24-Hr. Comp.e
BOD_5 (Nov - April)	375.3 lb/day	625.5 lb/daye	30 mg/L	45 mg/L	50 mg/L	3/Week	24-Hr. Comp.e
BOD_5 - % Removal			85%			1/Month	Calculated
TSS (May - Oct)	187.7 lb/daye	312.8 lb/day	15 mg/L	20 mg/L	25 mg/L	3/Week	24-Hr. Comp.e
TSS (Nov - April)	375.3 lb/daye	625.5 lb/day	30 mg/L	45 mg/L	50 mg/L	3/Week	24-Hr. Comp.e
TSS - % Removal			85%			1/Month	Calculated
Settleable Solids			--- mL/L	--- mL/L	--- mL/L	1/Day	Grab

--- Signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

Sampling for BOD and TSS shall be performed Tuesday, Thursday and either Saturday or Sunday. All BOD_5 and TSS samples shall be taken on the influent and effluent with appropriate allowances for hydraulic detention (flow-through) time.

Sampling for Flow and Settleable Solids shall be performed Sunday-Saturday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at: Outfall 001A. (Final Discharge After Dechlorination).

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2.eDuring the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall seriale number(s) 001A. Such discharges shall be limited and monitored by the permittee as specified below:e

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs./day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly *(Minimum)	Average Weekly *(Average)	Maximum Daily *(Maximum)	Measurement Frequency	Sample Type
Enterococci			54 cfu[1] 100 mL		175 cfu[1] 100 mL	3/Week[1]	Grab
Total Residual Chlorine (TRC)			22 µg/L		39 µg/L	Daily[2] and Continuous[3]	Grab[2] Recorder[3]
pH			(6.0 SU)		(9.0 SU)	2/Day	Grab

--- signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

[1]Two (2) of the three (3) Enterococci samples are to be taken on Tuesday and Thursday at the same time as one of the TRC grab samples (TRC in the final effluent after dechlorination). The Geometric Mean shall be used to obtain the "monthly average" for Enterococci.

[2]Compliance with these limitations shall be determined by taking three (3) grab samples, Monday - Friday (except holidays), equally spaced over one (1) eight-hour working shift with a minimum of three (3) hours between grabs, and on Saturdays, Sundays, and Holidays by taking at least two (2) grab samples each day with a minimum of two (2) hours between grabs. The maximum daily and average monthly values are to be computed from the averaged grab sample results for each day. The following methods may be used to analyze the grab samples: (1) Low Level Amperometric Titration, Standard Methods (18th Edition) No. 4500-Cl E; and (2) DPD Spectrophotometric, EPA No. 330.5 or Standard Methods (18th Edition) No. 4500-Cl G.

[3]The use of a continuous TRC recorder after chlorination and prior to dechlorination is required to provide a record that proper disinfection was achieved at all times. These records are to be maintained on site and made available to DEM upon request.

*Values in parentheses ( ) are to be reported as Minimum/Maximum for the reporting period rather than Average Monthly/Maximum Daily.

Sampling for TRC and pH shall be performed Sunday-Saturday.

Samples taken in compliance with the monitoring requirements specified above shall be taken at: Outfall 001A. (Final Discharge After Dechlorination).

PART I

A.e**EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

3.eDuring the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall seriale number(s) 001A.e
Such discharges shall be monitored by the permittee as specified below:e

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs. per day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Phosphorus, Total							
(November-March)			1.0 mg/L		--- mg/L	1/Week	24-Hr. Comp.e
(April-October)			0.1 mg/L		--- mg/L	1/Week	24-Hr. Comp.e
Orthophosphorus (November – March)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
TKN (as N)							
(November-April)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
(May-October)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
Nitrate, Total (as N)							
(November-April)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
(May-October)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
Nitrite, Total (as N)							
(November-April)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
(May-October)			--- mg/L		--- mg/L	1/Week	24-Hr. Comp.e
Ammonia, Total (as N)							
(November – April)			20.0 mg/L		103 mg/L	1/Week	24-Hr. Comp.e
(May – October)			5.1 mg/L		42.6 mg/L	1/Week	24-Hr. Comp.e
Nitrogen, Total (TKN + Nitrate + Nitrite, as N)							
(November-April)			--- mg/L		--- mg/L	1/Week	Calculated
(May-October)			--- mg/L[1]		--- mg/L	1/Week	Calculated

--- signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

[1] The permittee shall operate the treatment facility to reduce the discharge of Total Nitrogen to the maximum extent possible using all available treatment equipment in place at the facility.

Samples taken in compliance with the monitoring requirements specified above shall be taken Tuesday, Thursday and either Saturday or Sunday at: Outfall 001A. (Final Discharge after Dechlorination).

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

4. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number(s) 001A.

   Such discharges shall be monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs. per day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Copper, Total			5.3 µg/L		7.1 µg/L	1/ Week	24-Hr. Comp.
Lead, Total			1.1 µg/L		27.5 µg/L	1/ Week	24-Hr. Comp.
Zinc, Total			68.3 µg/L		68.3 µg/L	1/ Week	24-Hr. Comp.
Iron, Total			--- µg/L		--- µg/L	1/ Month	24-Hr. Comp.
Cyanide			--- µg/L		--- µg/L	1/ Quarter	Composite[1]
Cadmium, Total			--- µg/L		--- µg/L	1/ Quarter	24-Hr. Comp.
Nickel, Total			--- µg/L		--- µg/L	1/ Quarter	24-Hr. Comp.
Aluminum, Total			--- µg/L		--- µg/L	1/ Quarter	24-Hr. Comp.

--- signifies a parameter which must be monitored and data must be reported; no limit has been established at this time.

[1] Compliance with these limitations shall be determined by taking three (3) grab samples per day with a minimum of three (3) hours between grabs and preserved immediately upon collection. All three (3) samples shall be composited then analyzed for available cyanide.

Samples taken in compliance with the monitoring requirements specified above shall be taken Monday through Friday at: Outfall 001A. (Final Discharge after Dechlorination).

PART I

A. **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

5. During the period beginning on the effective date and lasting through permit expiration, the permittee is authorized to discharge from outfall serial number(s) 001A.

   Such discharges shall be monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations					Monitoring Requirement	
	Quantity - lbs. per day		Concentration - specify units				
	Average Monthly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type
Ceriodaphnia sp							
LC50[1]					100% or Greater[2]	1/Quarter	24-Hr. Comp.
C-NOEC[3]					55% or Greater[4]	1/Quarter	24-Hr. Comp.
IC25[5]					Report[6]	1/Quarter	24-Hr. Comp.

[1]LC_{50} is defined as the concentration of wastewater that causes mortality to 50% of the test organisms.

[2]The 100% or greater limit is defined as a sample which is composed of 100% effluent.

[3]C-NOEC is defined as the highest concentration of toxicant or effluent at which no adverse effects are observed.

[4]The 55% or greater limit is defined as a sample which is composed of 55% effluent.

[5]IC_{25} is defined as the concentration of wastewater that causes a 25% reduction in growth or reproduction of test organisms.

[6]A numeric limit is not associated with this parameter, but the IC_{25} must be reported as part of the test results from any chronic WET tests.

Samples taken in compliance with the monitoring requirements specified above shall be taken at: Outfall 001A (Final Discharge after Dechlorination) in accordance with I.B. of the permit.

6. a. The pH of the effluent shall not be less than 6.0 nor greater than 9.0 standard units at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.

b.e The discharge shall not cause visible discoloration of the receiving waters.e

c.e The effluent shall contain neither a visible oil sheen, foam, nor floating solids at anye time.e

d.e The permittee's treatment facility shall maintain a minimum of 85 percent removal ofe both total suspended solids and 5-day biochemical oxygen demand. The percente removal shall be based on monthly average values.e

e.e When the effluent discharged for a period of 90 consecutive days exceeds 80e percent of the design flow, the permittee shall submit to the permitting authorities ae projection of loadings up to the time when the design capacity of the treatment facilitye will be reached, and a program for maintaining satisfactory treatment levelse consistent with approved water quality management plans.e

7.e The permittee shall analyze its effluent annually for the EPA Priority Pollutants as listed in 40e CFR 122, Appendix D, Tables II and III. The results of these analyses shall be submitted toe the Department of Environmental Management by January 15th of each year for the previouse calendar year's sample. If the priority pollutant scan is to be used to satisfy part I.B.7, thee scan must be submitted with the 3rd quarter bioassay by October 15th. All sampling ande analysis shall be done in accordance with EPA Regulations, including 40 CFR, Part 136;e grab and composite samples shall be taken as appropriate.e

8.e This permit serves as the State's Water Quality Certificate for the discharges describede herein.e

B. BIOMONITORING REQUIREMENTS AND INTERPRETATION OF RESULTS

1.e Generale

Beginning on the effective date of the permit, the permittee shall perform four (4) chronice toxicity tests per year on samples collected from discharge outfall 001A. The permittee shalle conduct the tests during dry weather periods (no rain within forty-eight (48) hours prior to ore during sampling unless approved by RIDEM) according to the following test frequency ande protocols. Chronic and acute toxicity data shall be reported as outlined in Section 8. Thee chronic daphnid tests shall be used to calculate the acute LC_{50} at the forty-eight (48) houre exposure interval. Test results will be interpreted by the State. The State may requiree additional screening, range finding, definitive acute or chronic bioassays as deemede necessary based on the results of the initial bioassays required herein. Indications of toxicitye could result in requiring a Toxicity Reduction Evaluation (TRE) to investigate the causes ande to identify corrective actions necessary to eliminate or reduce toxicity to an acceptable level.e

2.e Test Frequencye

For four sampling events, (one each calendar quarter) the permittee will conduct seven daye chronic toxicity tests on the species listed below, for a total of four (4) chronic toxicity testse per year. This requirement entails performing one-species testing as follows:e

Species	Test Type One Species Test (Four Times Annually)	Frequency
Daphnid (Ceriodaphnia sp.)	Survival and Reproduction	Quarterly

A sampling event is defined as three 24-hour composites collected over the seven-day test period (see Section 4).

3.e Testing Methodse

Toxicity testing shall be conducted in accordance with the protocols listed in 40 CFR Parte 136.e

4. Sample Collectione

For each sampling event a twenty-four- (24) hour flow proportioned composite final effluent,e after dechlorination, sample shall be collected during a dry weather period (no rain 48 hourse prior to or during sampling unless approved by RIDEM). For each sampling event, the effluente samples shall be collected on days 0, 3 and 5 of the 7-day exposure period. The first samplee is used for test initiation, Day 1, and for test solution renewal on Day 2. The second samplee would be used for test solution renewal on Days 3 and 4. The third sample would be usede for test solution renewal on Days 5, 6 and 7.e

To eliminate the problem of potential rainfall interference during the five-day sampling periode for the chronic tests, RIDEM suggests collecting enough sample on Day 0 to properly storee and use one-third on both Days 3 and 5 if rain has occurred since Day 0. In addition, if noe rainfall has occurred since Day 3, enough sample should also be collected on Day 3 to usee for Day 5 if necessary.e

In the laboratory, the initial sample (Day 0) will be split into two (2) subsamples, after thoroughe mixing, for the following:e

A: Chemical Analysis
B: Chronic Toxicity Testing

Day 3 and 5 samples will be held until test completion. If either the Day 3 or 5 renewal sample is of sufficient potency to cause lethality to 50% or more test organisms in any of the dilutions for either species, then a chemical analysis shall be performed on the appropriate samples as well.

All samples held overnight shall be refrigerated at 4°C.

5.e Dilution Watere

Dilution water used for freshwater chronic toxicity analyses should be of sufficient quality toe meet minimum acceptability of test results (see Section 6). For each species, naturale freshwater shall be used as the dilution water. This water shall be collected from thee Pawtucket Reservoir. If this natural freshwater diluent is found to be, or suspected to be toxice or unreliable, an alternate or laboratory source of water of known quality with a hardness ande pH similar to that of the receiving water may be substituted AFTER RECEIVING WRITTENe APPROVAL FROM RIDEM.e

6.e Effluent Toxicity Test Conditions for the Daphnide (Ceriodaphnia sp.) Survival and Reproduction Test[1]

1.	Test Typee	Static Renewal

2.e	Temperature (C)e	25° ± 1° C
3.	Light Qualitye	Ambient laboratory illumination
4.	Photoperiode	16 hours light, 8 hours dark
5.e	Test Chamber Sizee	30 ml
6.e	Test Solution Volumee	15 ml
7.e	Renewal of Test Solutionse	Daily, using most recently collected sample.
8.e	Age of Test Organismse	Less than twenty-four (24) hours and all released within an eight (8) hour period of each other.
9.e	Number of Neonates Per Teste Chambere	1
10.e	Number of Replicate Test Chamberse Per Treatmente	10
11.e	Number of Neonates Per Teste Concentratione	10
12.e	Feeding Regimee	Feed 0.1 ml each of YTC and algal suspension per exposure chamber daily.
13.e	Aeratione	None
14.e	Dilution Watere	Pawtucket Reservoir, see Section 5.
15.e	Effluent Concentrationse	Six (6) dilutions plus a control: 100%, 75%, 55%, 50%, 25%, 12.5%, and 0% effluent.
16.e	Test Duratione	Until 60% of control females have three (3) broods (may require seven (7) days).e
17.e	End Pointse	Survival and reproduction.
18.e	Test Acceptabilitye	80% or greater survival and an average of fifteen (15) or more young per female in the control solutions. At least 60% of surviving females in controls should have produced third brood.
19.e	Sampling Requirementse	For off-site tests, a minimum of three (3)esamples are collected (i.e., Days 0,e 3 & 5) and used for renewal (seee Section 4). Off-site test samplese must be first used within forty-eighte (48)ehours of collection.e

20.e Sample Volume Requirede Minimum 2 liters/day

[1]Adapted from EPA-821-R-02-013e

7.e Chemical Analysise

The following chemical analysis shall be performed for every one-species samplinge event.e

Parameter	Effluent	Diluent	Detection Limit (mg/l)
Hardness[1]	X	X	0.5
Alkalinity	X	X	2.0
pH	X	X	---
Specific Conductance	X	X	---
Total Solids and Suspended Solids	X	X	---
Ammonia	X	X	0.1
Total Organic Carbon	X		0.5
Cyanide	X		0.005

[1]Method 314A (Hardness by Calculation) from APHA (1985) Standard Methods for the Examination of Water and Wastewater. 16th Edition

During the first, second, and fourth calendar quarter bioassay sampling events the following chemical analyses shall be performed:

Total Metals	Effluent	Diluent	Minimum Detection Limit (ug/l)
Cu	X	X	1.0
Pb	X	X	1.0
Zn	X	X	5.0
Cd	X	X	0.1
Ni	X	X	1.0
Al	X	X	20.0

The above metal analyses may be used to fulfill, in part or in whole, monthly monitoring requirements in the permit for these specific metals.

During the third calendar quarter bioassay sampling event, the final effluent sample collected during the same twenty-four (24) hour period as the bioassay sample, shall be analyzed for priority pollutants (as listed in Tables II and III of Appendix D of 40 CFR 122). The bioassay priority pollutant scan shall be a full scan and may be coordinated with other permit conditions

to fulfill any priority pollutant scan requirements.

In addition, the following chemical analyses shall be performed as part of each daily renewal procedures on each dilution and the controls.

Parameter	Beginning of 24-Hour Exposure Period	End of 24-Hour Exposure Period
Dissolved Oxygen	X	X
Temperature	X	
pH	X	
Specific Conductance	X	
Alkalinity	X[1]	
Hardness	X[1]	

[1]These are performed on the 100% effluent and control samples only.e

8.e Toxicity Test Report Elementse

A report of results will include the following:e

- Description of sample collection procedures and site description.
- Names of individuals collecting and transporting samples, times, and dates of sample collection and analysis.
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests (quality assurance); light and temperature regime; dilution water description; other information on test conditions if different than procedures recommended.
- Raw data and laboratory sheets.
- Any other observations or test conditions affecting test outcome.
- Results of required chemical and physical analyses.

Toxicity test data shall include the following:

Chronic

- Daily survival of test organisms in the controls and all replicates in each dilution. Survival data should be analyzed by Fisher's Exact Test prior to analysis of reproduction data.
- Young per female for all replicates in each dilution for Ceriodaphnia and weight for minnow larvae.
- Dissolved oxygen, pH, specific conductance and temperature for each dilution.
- Results of Dunnett's Procedure and/or other EPA recommended or approved methods for analyzing the data.

- C-NOEC = Chronic No Observed Effect Concentratione
- LOEC = Lowest Observed Effect Concentration
- MATC = Maximum Allowable Toxicant Concentration
- IC25 = Inhibition Concentration (the statistical calculation of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms)

Acute - (These data points are to be obtained 48 hours into the chronic test).

- Survival for each concentration and replication at time 24 and 48 hours.
- Dissolved oxygen, pH and specific conductance for each concentration.
- LC_{50} and 95% confidence limits using one of the following methods in order of preference: Probit, Trimmed Spearman Karber, Moving Average Angle, or the graphical method; printout or copy of these calculations. The Probit, Trimmed Spearman Karber and Moving Average Angle methods of analyses can only be used when mortality of some of the test organisms are observed in at least two (2) of the (% effluent) concentrations tested (i.e., partial mortality). If a test results in a 100% survival and 100% mortality in adjacent treatments ("all or nothing" effect), a LC_{50} may be estimated using the graphical method.

9.e Reporting of Bioassay Testinge

Bioassay Testing shall be reported as follows:e

Quarter Testing to be Performed	Report Due No Later Than	Results Submitted on DMR for
January 1 - March 31	April 15	March
April 1 - June 30	July 15	June
July 1 - September 30	October 15	September
October 1 - December 31	January 15	December

Bioassay testing following the protocol described herein shall commence during the 1st quarter following the effective date of the permit.

A signed copy of these reports, required herein, shall be submitted electronically in accordance with Part I.F.2.b.

C.e OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the Generale Requirements of Part II of this permit and the following terms and conditions:e

1.e Maintenance Staffe

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

2.e Infiltration/Inflowe

The permittee shall minimize infiltration/inflow to the sewer system. A summary report of alle actions taken to minimize infiltration/inflow during the previous two (2) years shall bee

submitted to RIDEM, Office of Water Resources, by the 15th day of January of odd numbered years. The first report is due January 15, 2021.

3. Resiliency Planning

Within one year of the effective date of this permit, the permittee shall submit a Resiliency Plan and schedule of short and long-term actions that will be taken to maintain operation and protect key collection and treatment system assets. The plan shall be consistent with the DEM's Guidance for the Consideration of Climate Change Impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure and include consideration of the findings of the 2017 DEM report Implications of Climate Change for Rhode Island Wastewater Collection and Treatment Infrastructure. The Resiliency Plan shall include, but not be limited to: (i) an assessment of current and projected impacts from natural hazards on critical components within the collection and treatment systems, as well as on the systems themselves; (ii) a plan to adapt and protect vulnerable components and systems; (iii) an analysis that provides justification for selected adaptation methods. The analysis must consider component and system design life and sea-level rise projections. For the purposes of this Resiliency Plan, critical components are considered those necessary to ensure the forward flow and treatment of wastewater in accordance with the limits set forth in this permit. The Resiliency Plan shall also consider impacts on the WWTF from neighboring facilities during high hazard events. This Plan shall be subject to DEM review and approval. If DEM determines that modifications need to be made to the Plan, DEM shall notify the permittee in writing which elements of the Plan need to be modified and the reason for the needed modification. This notification shall include a schedule for making the changes. After such notification from the DEM, the permittee shall make changes to the Plan and submit the revisions to the DEM for their approval.

D.a **SLUDGE**

The permittee shall conform and adhere to all conditions, practices and regulations as contained in the State of Rhode Island Rules and Regulations for the Treatment, Disposal, Utilization and Transportation of Sewage Sludge. The permittee shall comply with its Order of Approval for the disposal of sludge.

E.a **DETECTION LIMITS**

The permittee shall assure that all wastewater testing required by this permit is performed ina conformance with the method detection limits listed below, and with the following terms anda conditions:a

1.a All analyses of parameters under this permit must comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting* rule. Only sufficiently sensitive test methods may be used for analyses ofa parameters under this permit. The permittee shall assure that all testing required by this permita is performed in conformance with methods listed in 40 CFR Part 136 In accordance with 40 CFRa 136, EPA approved analysis techniques, quality assurance procedures and quality controla procedures shall be followed for all reports required to be submitted under the Rhode Islanda Pollutant Discharge Elimination System (RIPDES) program. These procedures are described ina "Methods for the Determination of Metals in Environmental Samples" (EPA/600/4-91/010) anda "Methods for Chemical Analysis of Water and Wastes" (EPA/600/4-79/020).a

If after conducting the complete Method of Standard Additions analysis, the laboratory is unable to determine a valid result, the laboratory shall report "could not be analyzed". Documentation supporting this claim shall be submitted along with the monitoring report. If valid analytical results are repeatedly unobtainable, DEM may require that the permittee determine a method detection limit (MDL) for their effluent or sludge as outlined in 40 CFR 136, Appendix B.

2.e When calculating sample averages for reporting on discharge monitoring reports (DMRs):e

a.e "could not be analyzed" data shall be excluded, and shall not be considered as failure toe comply with the permit sampling requirements;e

b.e results reported as less than the MDL shall be reported as zeros in accordance with thee DEM's DMR Instructions.e

Therefore, all sample results shall be reported as: an actual value, "could not be analyzed", or zero. The effluent or sludge specific MDL must be calculated using the methods outlined in 40 CFR Part 136, Appendix B. Samples which have been diluted to ensure that the sample concentration will be within the linear dynamic range shall not be diluted to the extent that the analyte is not detected. If this should occur the analysis shall be repeated using a lower degree of dilution.

LIST OF TOXIC POLLUTANTS

The following list of toxic pollutants has been designated pursuant to Section 307(a)(1) of the Clean Water Act. The Method Detection Limits (MDLs) listed below represent the required Rhode Island DEM MDLs for sampling and reporting purposes.

Volatiles - EPA Method 624.1		MDL µg/L (ppb)
1V	acrolein	10.0
2V	acrylonitrile	5.0
3V	benzene	1.0
5V	bromoform	1.0
6V	carbon tetrachloride	1.0
7V	chlorobenzene	1.0
8V	chlorodibromomethane	1.0
9V	chloroethane	1.0
10V	2-chloroethylvinyl ether	5.0
11V	chloroform	1.0
12V	dichlorobromomethane	1.0
14V	1,1-dichloroethane	1.0
15V	1,2-dichloroethane	1.0
16V	1,1-dichloroethylene	1.0
17V	1,2-dichloropropane	1.0
18V	1,3-dichloropropylene	1.0
19V	ethylbenzene	1.0
20V	methyl bromide	1.0
21V	methyl chloride	1.0
22V	methylene chloride	1.0
23V	1,1,2,2-tetrachloroethane	1.0
24V	tetrachloroethylene	1.0
25V	toluene	1.0
26V	1,2-trans-dichloroethylene	1.0
27V	1,1,1-trichloroethane	1.0
28V	1,1,2-trichloroethane	1.0
29V	trichloroethylene	1.0
31V	vinyl chloride	1.0

Acid Compounds - EPA Method 625.1		MDL µg/L (ppb)
1A	2-chlorophenola	1.0
2A	2,4-dichlorophenol	1.0
3A	2,4-dimethylphenol	1.0
4A	4,6-dinitro-o-cresol	1.0
5A	2,4-dinitrophenol	2.0
6A	2-nitrophenola	1.0
7A	4-nitrophenola	1.0
8A	p-chloro-m-cresola	2.0
9A	pentachlorophenola	1.0
10A	phenola	1.0
11A	2,4,6-trichlorophenola	1.0

Pesticides - EPA Method 608.3		MDL µg/L (ppb)
1P	aldrin	0.059
2P	alpha-BHC	0.058
3P	beta-BHC	0.043
4P	gamma-BHC	0.048
5P	delta-BHC	0.034
6P	chlordane	0.211
7P	4,4 ' -DDTa	0.251
8P	4,4 ' -DDE	0.049
9P	4,4 ' -DDD	0.139
10P	dieldrin	0.082
11P	alpha-endosulfan	0.031
12P	beta-endosulfan	0.036
13P	endosulfan sulfate	0.109
14P	endrin	0.050
15P	endrin aldehyde	0.062
16P	heptachlor	0.0029
17P	heptachlor epoxide	0.040a

Pesticides - EPA Method 608.3		MDL µg/L (ppb)
18P	PCB-1242	0.289
19P	PCB-1254	0.289
20P	PCB-1221	0.723
21P	PCB-1232	0.387
22P	PCB-1248	0.283
23P	PCB-1260	0.222
24P	PCB-1016	0.494
25P	toxaphene	1.670

Base/Neutral - EPA Method 625.1		MDL µg/L (ppb)
1B	acenaphthene *	1.0
2B	acenaphthylene *	1.0
3B	anthracene *	1.0
4B	benzidine	4.0
5B	benzo(a)anthracene *	2.0
6B	benzo(a)pyrene *	2.0
7B	3,4-benzofluoranthene *	1.0
8B	benzo(ghi)perylene *	2.0
9B	benzo(k)fluoranthene *	2.0
10B	bis(2-chloroethoxy)methane	2.0
11B	bis(2-chloroethyl)ether	1.0
12B	bis(2-chloroisopropyl)ether	1.0
13B	bis(2-ethylhexyl)phthalate	1.0
14B	4-bromophenyl phenyl ether	1.0a
15B	butylbenzyl phthalate	1.0
16B	2-chloronaphthalenea	1.0
17B	4-chlorophenyl phenyl ether	1.0a
18B	chrysene *	1.0
19B	dibenzo (a,h)anthracene *	2.0
20B	1,2-dichlorobenzene	1.0
21B	1,3-dichlorobenzene	1.0
22B	1,4-dichlorobenzene	1.0
23B	3,3 ' -dichlorobenzidine	2.0
24B	diethyl phthalate	1.0
25B	dimethyl phthalate	1.0
26B	di-n-butyl phthalatea	1.0
27B	2,4-dinitrotoluenea	2.0
28B	2,6-dinitrotoluenea	2.0
29B	di-n-octyl phthalatea	1.0
30B	1,2-diphenylhydrazine (as azobenzene)	1.0
31B	fluoranthene *	1.0
32B	fluorene *	1.0
33B	hexachlorobenzene	1.0
34B	hexachlorobutadiene	1.0
35B	hexachlorocyclopentadiene	2.0
36B	hexachloroethane	1.0
37B	indeno(1,2,3-cd)pyrene *	2.0
38B	isophorone	1.0
39B	naphthalene *	1.0
40B	nitrobenzene	1.0
41B	N-nitrosodimethylaminea	1.0
42B	N-nitrosodi-n-propylaminea	1.0
43B	N-nitrosodiphenylaminea	1.0
44B	phenanthrene *a	1.0
45B	pyrene *a	1.0
46B	1,2,4-trichlorobenzenea	1.0

OTHER TOXIC POLLUTANTS

	MDL µg/L (ppb)
Antimony, Total	3.0
Arsenic, Total	1.0
Beryllium, Total	0.2
Cadmium, Total	0.1
Chromium, Total	1.0
Chromium, Hexavalent	20.0
Copper, Total	1.0
Lead, Total	1.0
Mercury, Total	0.2
Nickel, Total	1.0
Selenium, Total	2.0
Silver, Total	0.5
Thallium, Total	1.0
Zinc, Total	2.0
Asbestos	**
Cyanide, Total	5.0
Phenols, Total***	50.0
Aluminum, Total	20.0
TCDD	**
MTBE (Methyl Tert Butyl Ether)	1.0

* Polynuclear Aromatic Hydrocarbons
** No Rhode Island Department of Environmental Management (RIDEM) MDL

NOTE:

The MDL for a given analyte may vary with the type of sample. MDLs which are determined in reagent water may be lower than those determined in wastewater due to fewer matrix interferences. Wastewater is variable in composition and may therefore contain substances (interferents) that could affect MDLs for some analytes of interest. Variability in instrument performance can also lead to inconsistencies in determinations of MDLs.

To help verify the absence of matrix or chemical interference the analyst is required to complete specific quality control procedures. For the metals analyses listed above the analyst must withdraw from the sample two equal aliquots; to one aliquot add a known amount of analyte, and then dilute both to the same volume and analyze. The unspiked aliquot multiplied by the dilution factor should be compared to the original. Agreement of the results within 10% indicates the absence of interference. Comparison of the actual signal from the spiked aliquot to the expected response from the analyte in an aqueous standard should help confirm the finding from the dilution analysis. (Methods for Chemical Analysis of Water and Wastes EPA-600/4-79/020).

For Methods 624.1 and 625.1 the laboratory must on an ongoing basis, spike at least 5% of the samples from each sample site being monitored. For laboratories analyzing 1 to 20 samples per month, at least one spiked sample per month is required. The spike should be at the discharge permit limit or 1 to 5 times higher than the background concentration determined in Section 8.3.2, whichever concentration would be larger. (40 CFR Part 136 Appendix B Method 624.1 and 625.1 subparts 8.3 and 8.3.1).

F. MONITORING AND REPORTING

1.e Monitoringe

All monitoring required by this permit shall be done in accordance with sampling and analytical testing procedures specified in Federal Regulations (40 CFR Part 136).

2.e Submittal of DMRs Using NetDMRe

a.e The permittee shall continue to submit its monthly monitoring data in Dischargee Monitoring Reports (DMRs) to DEM no later than the 15th day of the month electronicallye using NetDMR. When the permittee submits DMRs using NetDMR, it is not required toe submit hard copies of DMRs to DEM.e

b.e Submittal of Reports as NetDMR Attachments - Unless otherwise specified in thise permit, the permittee must submit electronic copies of documents in NetDMR that aree directly related to the DMR. These include the following:e

- •e DMR Cover Letterse
- •e Below Detection Limit summary tablese
- •e Monthly Operating Reportse
- •e Priority Pollutant Scan results for Outfall 001e
- •e Bioassay testing (Part I.B.9)e

3.e Submittal of Reports in Hard Copy Forme

The following notifications and reports shall be submitted as hard copy with a cover letter describing the submission. These reports shall be signed and dated originals when submitted to DEM.

- •e Written notifications required under Part IIe
- •e Notice of unauthorized discharges, including Sanitary Sewer Overflow (SSO) reportinge
- •e Infiltration/Inflow Reportse

This information shall be submitted to DEM at the following address:

Rhode Island Department of Environmental Management
RIPDES Program
235 Promenade Street
Providence, Rhode Island 02908

4.e Verbal Reports and Verbal Notificationse

Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to DEM. This includes verbal reports and notifications which require reporting within 24 hours. (See Part II(1)(5) General Requirements for 24-hour reporting). Verbal reports and verbal notifications shall be made to DEM at (401) 222-4700 or (401) 222-3070 at night.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 PROMENADE STREET
PROVIDENCE, RHODE ISLAND 02908-5767

FACT SHEET

RHODE ISLAND POLLUTANT DISCHARGE ELIMINATION SYSTEM (RIPDES) PERMIT TO DISCHARGE TO WATERS OF THE STATE

RIPDES PERMIT NO. **RI0100455**

NAME AND ADDRESS OF APPLICANT:

Burrillville Sewer Commission
P.O. Box 71
Harrisville, RI 02830

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Burrillville Wastewater Treatment Facility
141 Clear River Drive
Oakland, Rhode Island 02858

RECEIVING WATER: **Clear River**
WBID: RI0001002R-05D

CLASSIFICATION: **B1**

I. Proposed Action, Type of Facility, and Discharge Location

The above-named applicant has applied to the Rhode Island Department of Environmental Management for reissuance of a RIPDES Permit to discharge into the designated receiving water. The facility is engaged in the treatment of domestic sewage. The discharge is from the treatment of domestic wastewater. Site layout and process diagrams of the facility are shown in Attachment B.

II. Description of Discharge

A quantitative description of the discharge in terms of significant effluent parameters based on DMR data from October 2013 through September 2018 is shown on Attachment A-1. Based on a review of available effluent data submitted with the most recent permit application, Priority Pollutant Scans, and historical Discharge Monitoring Report (DMR) data, the facility may not be able to comply with its final permit limits at outfall 001A for Total Copper. It is anticipated that a Consent Agreement will be necessary in order to establish interim limits and a schedule that will provide time for Burrillville to bring the discharge into compliance with these limitations.

III. Permit Limitations and Conditions

The final effluent limitations and monitoring requirements may be found in the draft permit.

IV. Permit Basis and Explanation of Effluent Limitation Derivation

Facility Description

The Town of Burrillville owns and operates the Wastewater Treatment Facility located on 141 Clear River Drive, Oakland, Rhode Island. The discharge to the Clear River consists of treated sanitary sewage contributed by the municipality of Burrillville. Treatment consists of Preliminary Treatment, Primary Settling, Activated Sludge, Secondary Clarification, Phosphorous Removal, Chlorination/ Dechlorination and Effluent Re-Aeration. Ferrous sulfate is added prior to the aerated grit chambers in preliminary treatment and an alternative injection site for sodium sulfide also exists prior to the aerated grit chambers. Sodium sulfide is typically added to wastewater after the final settling tanks and prior to the filter influent pumps wet well. Ferric chloride is added between the filter influent pumps and absorptive filters. After passing through the absorptive filters, wastewater flows to the chlorine contact tanks, where sodium hypochlorite is added for disinfection and sodium bisulfite is used for dechlorination prior to final effluent discharge. A process flow diagram is attached as Attachment B.

Burrillville WWTF's most recent RIPDES permit, authorizing discharges from the above-mentioned facility, was issued on March 29, 2012. This permit became effective on July 1, 2012 and expired on July 1, 2017. The facility submitted an application for permit reissuance to the DEM on December 8, 2016. On March 10, 2017, the DEM issued an application complete letter to the facility. In accordance with 250-RICR-150-10-1 §13 of the Regulations for the Rhode Island Pollutant Discharge Elimination System, the facility's July 1, 2012 permit remains in effect since the DEM has determined that a timely and complete permit application was submitted. Once this permit is reissued, it will supersede the July 1, 2012 permit.

The Burrillville WWTF does not have an industrial pretreatment program.

Receiving Water Description

The water body segment for the Clear River is RI0001002R-05D and is located in Oakland, Rhode Island. This segment is delineated by the Clear River from the Burrillville WWTF discharge point to the confluence with the Chepachet River. This segment is listed on DEM's 2016 303(d) impaired waters list for not supporting Fish and Wildlife habitat due to cadmium, copper, lead and non-native aquatic plants. Additionally, this segment is listed for not supporting Primary Contact Recreation or Secondary Contact Recreation due to enterococcus. This segment has a TMDL for enterococcus approved as of September 22, 2011. The TMDL indicates that the Burrillville WWTF is not a source of the bacterial contamination to this segment of the Clear River. Permit limits for the Burrillville WWTF were developed to be consistent with water quality regulations and the wasteload allocation, including an enterococci limit for Class B1 waters as the listed enterococci criterion in the RI Water Quality Regulations (250-RICR-150-05-1.10(D)). This enterococci limit for Class B1 waters is a geometric mean concentration of 54 colonies per 100 mL.

This segment of the Clear River is designated as a warmwater habitat for fisheries and has a Waterbody Classification of B1; B1 waters are designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquacultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

Permit Limit Development

The requirements set forth in this permit are from the State's Water Quality Regulations and the State's Regulations for the Rhode Island Pollutant Discharge Elimination System, both filed pursuant to RIGL Chapter 46-12, as amended. RIDEM's primary authority over the permit comes from EPA's delegation of the program in September 1984 under the Federal Clean Water Act (CWA).

Development of RIPDES permit limitations is a multi-step process consisting of: determining if Federal

effluent guidelines apply; calculation of allowable water quality-based discharge levels based on background data and available dilution; assigning appropriate Best Professional Judgement (BPJ) based limits; comparing existing and proposed limits; comparing discharge data to proposed limits; performing an antidegradation/antibacksliding analysis to determine the final permit limits; and developing interim limits as appropriate.

Water quality criteria are comprised of numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or the State for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal. A technology-based limit is a numeric limit, which is determined by examining the capability of a treatment process to reduce or eliminate pollutants.

WWTF Conventional Pollutant Permit Limitations

BOD_5, TSS, and pH

The November-April "Average Monthly" and "Average Weekly" BOD_5 and TSS limitations as well as the pH limitations contained in this permit are based upon the secondary treatment requirements of Section 301 (b)(1)(B) of the CWA as defined in 40 CFR 133.102 (a) - (c). The "Maximum Daily" BOD_5 and TSS limits are based on Rhode Island requirements for Publicly Owned Treatment Works (POTW's) under Section 401 (a)(1) of the CWA and in 40 CFR 124.53 and 124.56. The "Average Monthly", "Average Weekly", and "Daily Maximum" BOD_5 and TSS limitations, for May through October, were reduced consistent with the reductions which will be experienced with nutrient removal.

Settleable Solids

Settleable Solids monitoring has been included as a process-control parameter that can aid in the assessment of the operation of the plant but need not have an effluent limit.

BOD_5 and TSS % Removal

The "Percent Removal" requirements for BOD_5 and TSS are assigned in accordance with 40 CFR 133.102(a) and (b) respectively.

Bacteria

The Rhode Island Water Quality Regulations include Enterococci criteria for primary contact/swimming of a geometric mean of 54 colonies/100mL and a single sample maximum of 61 colonies/100mL. The "single sample maximum" value is only used to evaluate swimming advisories at designated public beaches and does not apply to the receiving water in the area of the outfall. EPA's November 12, 2008 memorandum regarding "Initial Zones of Dilution for Bacteria in Rivers and Streams Designated for Primary Contact Recreation" clarifies that it is not appropriate to use dilution for bacteria criteria in receiving waters that are designated for primary contact recreation. Therefore, because the receiving water is designated for primary contact recreation, the DEM has assigned a monthly average Enterococci limit of 54 colonies/100mL. The daily maximum enterococci limit has been set at the 90% upper confidence level value for "lightly used full body contact recreation" of 175 colonies/100mL.

WWTF Toxic Pollutant Limits

Water Quality-Based Limit (WQBEL) Calculations

The allowable effluent limitations were established on the basis of acute and chronic aquatic life criteria and human health criteria using the following: available instream dilution; an allocation factor; and background concentrations when available and/or appropriate. The aquatic life and human health criteria are specified in the Rhode Island Water Quality Regulations (250-RICR-150-

05-1). Aquatic life criteria have been established to ensure the protection and propagation ofe aquatic life while human health criteria represent the pollutant levels that would not result in ae significant risk to public health from ingestion of aquatic organisms. The more stringent of the twoe criteria was then used in establishing allowable effluent limitations. Details concerning thee calculation of potential permit limitations, selection of factors, which influence their calculation, ande the selection of final permit limitations are included below or in the attached documents. Thee Burrillville WWTF 2012 permit also contained WQBELs. The town's first permit to contain WQBELse was issued in 1991.e

Mixing Zones and Dilution Factors

Mixing for the Burrillville WWTF discharge to the Clear River is assumed to be instantaneous and complete. Therefore, the whole flow of the river at critical flow conditions is used when calculating limits and accounting for dilution.

The Rhode Island Water Quality Regulations at 250-RICR-150-05-1.18(N)(1) require in-stream concentrations of discharged pollutants to be determined by specific formulas, or other methods which may be found to be acceptable. These formulas require the use of the seven-day, 10 year, low flow of the receiving stream immediately upstream of the discharge to be used in calculating the concentrations of discharged pollutants for the purpose of developing RIPDES permit conditions. This 7Q10 value is protective of water quality standards under critical flow conditions.

Previous permit issuances determined a 7Q10 flow based on a comparison of the nearest USGS gauging station along the Branch River, located downstream of the Burrillville facility at the Forestdale Gauging Station. Specifically, the receiving water flow upstream of the wastewater discharge was calculated by subtracting the plant's average wastewater flow from the flow at the Forestdale Gauging Station and multiplying this number by the ratio of the drainage area at the wastewater treatment facility and the drainage area at the Forestdale Gauging Station.

Estimating 7Q10 at a river location with no streamflow data is an inherently uncertain process. Research to predict low streamflow statistics at ungauged locations has evolved from simple drainage area ratio techniques to regional regression equations to information transfer techniques such as baseflow correlation.

Hirsch, 1979[1] first examined the drainage area ratio to predict low streamflow statistics. This method worked relatively well when the index gage was influenced by the same low streamflow drivers, there was a relatively homogeneous in watershed characteristics between the ungauged and gaged location, and the low streamflow statistics are highly correlated to drainage area. However, watershed characteristics are generally unknown at the ungauged location and the drainage area ratio does not capture all low streamflow characteristics.

The improved method of predicting 7Q10 at the partial record USGS Station 01111330, Clear River at Oakland, RI, that DEM employs is the baseflow correlation method which was first developed by Stedinger and Thomas, 1985[2] and expanded by Reilly and Kroll, 2003[3]. We see an improvement by utilizing baseflow measurements at the ungauged location from other methods to predict low streamflow statistics such as drainage area ratio, regional regression, and regional regression with estimated low streamflow indices (Stagnitta et al., 2018[4]).

---

[1] Hirsch, R.M. (1979). An evaluation of some record reconstruction techniques. Water Resources Research, 15, 1781–1790.

[2] Stedinger, J.R., & Thomas, W. (1985). Low-flow frequency estimation using base-flow measurements. U.S. Geological Survey Open-File Report 85–95

[3] Reilly, C.F., & Kroll, C.N. (2003). Estimation of 7-day, 10-year low streamflow statistics using baseflow correlation. Water Resources Research, 39. https://doi.org/10.1029/2002WR001740.

[4] Stagnitta T.J., Kroll C.N., Zhang Z. (2018). A comparison of methods for low streamflow estimation from spot measurements. Hydrological Processes. 32(4): 480–492. https://doi.org/10.1002/hyp.11426

7Q10 or the average annual 7-day minimum flow that is expected to be exceeded once every ten years is estimated using the log Pearson Type 3 (LP3) distribution. The baseflow correlation method utilizes an index streamflow gauge with at least 10 years of continuous streamflow measurements to calculate a 7Q10 value and relate information to the partial record gauge to estimate a 7Q10. The equation to calculate 7Q10 at the partial record gauge is

$$\ln(\hat{Q}_{7,10}) = \hat{\mu}_y + K_y\hat{\sigma}_y$$

where $\hat{\mu}_y$ is the estimator for the log-space mean, and $\hat{\sigma}_y$ is the estimator for the log-space variance of the annual average 7-day minimums at the partial record site. K_y is the estimated skew coefficient of the LP3 at the partial record site and is assumed to be the same value as the index gauge. $\hat{\mu}_y$ and $\hat{\sigma}_y$ are calculated by utilizing concurrent baseflow measurements at the partial and index gauge and equations for these parameters are in Reilly and Kroll, 2003. In addition, it's assumed that the annual average 7-day minimums are correlated to the baseflow measurements (Zhang and Kroll, 2007[1]).

The index gauge 01111500, Branch River at Forestdale, RI, has a continuous record from 1940 – 2018 and a calculated 7Q10 of 11.44 cfs. The partial record gauge 01111330 has a total of 16 baseflow measurements during the years 1993, 1994, and 2003. To remove any possible influence from precipitation events a 5-day drop in streamflow at the index gauge before each baseflow measurements is required to include a baseflow measurement in this analysis (Table 1).

Table 1: Concurrent summer baseflow measurements at the index gauge and partial gauge. For a baseflow measurement to be included in this analysis there needed to be at least a 5-day drop in streamflow measurements at the index gauge before the concurrent baseflow measurement.

Baseflow Measurement Date	**01111500 Index Gauge Streamflow (cfs)**	**01111330 Partial Gauge Streamflow (cfs)**
7/16/1993	23	5.48
8/2/1993	20	3.32
6/22/1994	35	12.6
7/6/1994	24	8.41
8/2/1994	21	8.91
8/12/1994	18	7.47
8/30/1994	41	19
7/8/2003	54.3	26.5
8/22/2003	42.5	14.4

The log correlation coefficient between the index gauge and partial gauge is 0.878, and in general a correlation coefficient of greater than 0.7 is considered a suitable for baseflow correlation (Reilly and Kroll, 2003[2]; Zhang and Kroll, 2007[1]; Stagnitta et al., 2018[3]). Thus, the estimated 7Q10 at the partial record gauge 01111330, which is approximately 1 mile downstream from the facility is 2.4 cfs.

Using the upstream 7Q10 river flow of 2.4 cfs (for aquatic life criteria) and a mean harmonic flow of 31.15 cfs (for human health criteria) the appropriate dilution factors were determined. Using the facility's design flow of 1.5 MGD (2.32 cfs), a water quality dilution factor of 2.03 for acute and chronic criteria and a human health dilution factor of 14.4 were calculated using the following equation:

[1] Zhang, Z. and Kroll, C.N. (2007). A Closer Look at Baseflow Correlation, Journal of Hydrologic Engineering, ASCE,s 12(2): 190-196.
[2] Reilly, C.F., & Kroll, C.N. (2003). Estimation of 7-day, 10-year low streamflow statistics using baseflow correlation.s Water Resources Research, 39. https://doi.org/10.1029/2002WR001740.
[3] Stagnitta T.J., Kroll C.N., Zhang Z. (2018). A comparison of methods for low streamflow estimation from spots measurements. Hydrological Processes. 32(4): 480–492. https://doi.org/10.1002/hyp.11426

$$DF = \frac{Q_D + Q_U}{Q_D}$$

Where: DF = Dilution Factor
Q_D = Design Flow
Q_U = Flow upstream of the WWTF (Receiving Water Flow)

An exception to these dilution factors was made for Ammonia limitations. Ammonia removal is strongly dependent on temperature (nitrification rate decreases as temperature decreases). Since Ammonia does not bioaccumulate or accumulate in sediment, seasonal dilution factors and historical pH and temperature background data were used to determine the appropriate Ammonia limitations. A winter 7Q10 river flow of 5.35 cfs was used to yield a dilution factor of 3.31 and a summer 7Q10 of 2.4 cfs used to give a dilution factor of 2.03.

Hardness

It has been observed that there is generally a strong inverse correlation between river flow and hardness. This is due to the fact that major components of hardness (Mg, Ca) are more prevalent in groundwater rather than surface water. Therefore, during low flow periods, when the majority of flow in the river or stream is groundwater, hardness will be higher.

A lognormal-lognormal relationship was developed between flow and hardness from data collected at the Branch River - Forestdale US Geological Survey gauging station to establish aquatic life criteria for metals (which are based on hardness). Based on this relationship, a hardness of 28.6 mg/L was determined for the 7Q10 flow of 2.4 cfs to determine the appropriate metals criteria. Details of the relationship are presented in Attachment C.

Using the above dilution factors and hardness, the allowable discharge limits were calculated as follows:

Background concentration unknown or available data is impacted by sources that have not yet achieved water quality-based limits.

$$Limit_1 = (DF) * (Criteria) * (80\%)$$

Where: DF = acute or chronic dilution factor, as appropriate

Available background data was not used for the Clear River upstream of the Burrillville Wastewater Treatment Facility due to the fact that the available data may be impacted by the discharge from the Zambarano Memorial Hospital WWTF.

Reference Attachment D for calculations of allowable limits based on Aquatic Life and Human Health Criteria.

The formulas and data noted above were applied with the following exceptions

A)a Pollutants that, based on the acute and chronic dilution factors, have a higher allowable chronica limit than allowable acute limit. For this situation, both the "Monthly Average" and "Dailya Maximum" limits were set at the allowable acute limit.a

B)a Total residual chlorine. The limits for total residual chlorine (TRC) were established ina accordance with the RIDEM Effluent Disinfection Policy. The "Monthly Average" and "Dailya Maximum" were based on a 100% allocation, a zero background concentration, and thea appropriate dilution factor(s). The 100% allocation factor for TRC was used due to the non-conservative nature of chlorine and the improbability of the receiving water having a detectablea background TRC concentration.a

c)a Pollutants with water quality based monthly average limits in the previous RIPDES permit. Thea relaxation of monthly average limits from the previous permit was restricted in accordance witha the antibacksliding provisions of the Clean Water Act and the Policy on the Implementation ofa the Antidegradation Provisions of the Rhode Island Water Quality Regulations.a

Wasteload Allocation

Based on the above dilution factors and the freshwater aquatic life and non-Class A human health criteria, from the Rhode Island Water Quality Regulations, allowable discharge concentrations were established using 80% allocation and 100% allocation of total residual chlorine (TRC) due to the fact that Chlorine is not expected to be found in ambient water and it is a non-conservative pollutant.

In accordance with 40 CFR Part 122.4(d)(1)(iii), it is only necessary to establish limitations for those pollutants in the discharge which have the reasonable potential to cause or contribute to the exceedance of the in-stream criteria. In order to evaluate the need for permit limitations, the allowable discharge levels (permit limits) were compared to Discharge Monitoring Report (DMR) data, Priority Pollutant Scan data, and data provided in the permit application. An assessment was made to determine if limits were necessary, using the data collected during the previous five (5) years. Based on these comparisons, water quality limitations have been deemed necessary for Total Residual Chlorine, Ammonia, Copper, and Lead. In addition, monitoring for Cyanide, Cadmium, Zinc, Nickel, and Aluminum has been included in the permit as part of the bioassay requirements.

Cyanide

Based on the average DMR data collected by the Burrillville Wastewater Treatment facility between October 2013 and September 2018, the mean of monthly average concentrations of cyanide was 0.4 µg/L, compared to the calculated monthly average limit of 8.5 µg/L. Furthermore, the mean of daily maximum concentration of cyanide reported in the DMRs was 7.6 µg/L, compared to the calculated daily maximum limit of 35.8 µg/L. Most data collected by the Burrillville WWTF was at or below the minimum detection limit (MDL) of 10 µg/L. Because the new calculated limits are below the previous MDL of cyanide (where the monthly average limit would be 8.5 µg/L and the quantitation level was 10 µg/L), Burrillville WWTF must continue to monitor for cyanide on a quarterly basis with an improved quantitation level of 5 µg/L, which is achievable with current methods (such as EPA Method 335.4). Collection of this data with the lower quantitation level will allow DEM to determine if cyanide limits will be necessary.

Lead

Background concentrations of lead are available, as the receiving water segment of the Clear River and upstream segment are both listed as impaired for lead in the 2016 303(d) list. However, due to the presence of the Zambarano Memorial Hospital discharge from its wastewater treatment facility into the Clear River upstream of the Burrillville WWTF, the background concentrations cannot be applied to the calculations in Burrillville's WWTF limits. Therefore, the water quality criteria for lead and an 80% allocation are used with the dilution factor to calculate the final limits in this permit.

Phosphorous

Applicable regulations are found in the Rhode Island Water Quality Regulations. 250-RICR-150-1.10(D)(1) contains a water quality-based numeric standard of 25 µg/L that applies to any discharges to impoundments (i.e. lakes, ponds, kettleholes, or reservoirs) that have a retention time of 14 days or greater and is applicable to the river at the point where it enters the impoundment. Attachment G contains a summary of the calculations conducted to determine the applicable phosphorus limits that should be assigned to the Burrillville WWTF to meet the 25 µg/L criteria. The Upper Slatersville Reservoir, which is the first large impoundment downstream of the Burrillville WWTF, has a retention time much larger than 14 days at 7Q10 flows. Therefore, the limits for the

WWTF must be assigned such that the river, at the point where it enters the Reservoir, will not exceed 25 µg/L total phosphorus. By following the RIPDES procedures for assigning permit limits when background data is available (i.e., 90% of the water quality criteria is allocated), the total phosphorus permit limit for the WWTF was calculated to be 0.1 mg/L. This limit will ensure that the in-stream concentration of the river, at the point where it discharges into the Upper Slatersville Reservoir, will not exceed 25 µg/L. Using a WWTF discharge limit of 0.1 mg/L will result in an in-stream total phosphorus concentration of 44.9 µg/L at the outfall. EPA has produced several guidance documents that contain recommended total phosphorous criteria for flowing water bodies. The 1986 Quality Criteria of Water ("the Gold Book") recommends in-stream phosphorous concentrations of 0.1 mg/L for any stream not discharging directly to lakes or impoundments. The DEM reviewed the flow characteristics of the Clear River to determine if the river is impounded. Based upon this analysis, the DEM has determined that the Clear River is not impounded. Therefore, the recommended total phosphorous criteria that would apply to the Clear River from the Gold Book is 0.1 mg/L. In addition, in December 2000, EPA published updated nutrient guidelines, which vary by eco-region. The recommended EPA criteria applicable to Rhode Island waters are described in the document titled *Ambient Water Quality Criteria Recommendations: Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion XIV (EPA 822-B-00-022, December 2000*). This document identifies the EPA recommended guidelines applicable to Rhode Island Waters as 23.75 µg/L in rivers. However, these recommended guidelines do not substitute for the CWA or EPA's regulations, nor are the documents themselves regulations. Thus, they cannot impose legally binding requirements on EPA, States, Indian tribes or the regulated community. The calculated in-stream total phosphorous concentration of 44.9 µg/L at the outfall falls between the Gold Book value and Ecoregion value for applicable recommended total phosphorous criteria.

250-RICR-150-05-1.10(D)(1) also requires that "phosphates shall be removed from existinga discharges to the extent that such removal is or may become technically and reasonably feasible".a The Environmental Protection Agency Region 10's April 2007 document titled *Advanced Wastewater Treatment to Achieve Low Concentration of Phosphorus, EPA 910-R-07-002* indicatesa that total phosphorus levels of 0.1 mg/L are both technically and reasonably achievable usinga existing treatment technologies. Specifically, the report indicated that "chemical addition toa wastewater with aluminum- or iron-based coagulants followed by tertiary filtration can reduce totala phosphorus concentrations in the final effluent to very low levels...consistently near or below 0.01a mg/L" and that the "cost of applying tertiary treatment for phosphorus removal is affordable, whena measured by the monthly residential sewer fees charged... from as low as $18 to the highest feea of $46." Based on the information presented in this report, the DEM has made a determination thata a total phosphorus limit of 0.1 mg/L is "technically and reasonably feasible".a

Using the WWTF's design flows and the 7Q10 of the Clear River, the DEM determined that by assigning a total phosphorous limit of 0.1 mg/L the water quality-based numeric standard that apply to any discharges to impoundments would be met. Additionally, the in-stream phosphorous concentration of the Clear River would fall between the Gold Book and Ecoregion criteria. The total phosphorous limit is therefore protective of water quality and is technically and reasonably feasible. Therefore, the DEM made a determination that a total phosphorous limit of 0.1 mg/L is appropriate.

In addition to the 0.1 mg/L Total Phosphorus limit in effect from April through October, the permit also contains a Total Phosphorus limit of 1.0 mg/L during November through March. The November – March limit is necessary to ensure that the levels of phosphorus discharged in the winter period do not result in the accumulation of phosphorus in the sediments. This limitation assumes that the dissolved fraction of the Total Phosphorus will pass through the system. To verify that the particulate fraction is low (i.e., the Total Phosphorus being discharged is in the dissolved form), a monitoring requirement for orthophosphorus has been included for the November – March period in order to determine the particulate fraction.

Priority Pollutants

The required priority pollutant scans are to be performed annually for the EPA Priority Pollutants as listed in 40 CFR 122, Appendix D, Tables II and III. The priority pollutant scans are typically performed during the third calendar quarter bioassay sampling event.

WET Testing

The biomonitoring requirements are set forth in 40 CFR 131.11 and in the State's Water Quality Regulations, containing narrative conditions at 250-RICR-150-05-1.10(B) that state, at a minimum, all waters shall be free of pollutants in concentrations or combinations or from anthropogenic activities subject to these regulations that: adversely affect the composition of fish and wildlife; adversely affect the physical, chemical, or biological integrity of the habitat; interfere with the propagation of fish and wildlife; adversely alter the life cycle functions, uses, processes, and activities of fish and wildlife; or adversely affect human health. In order to determine compliance with many of these conditions, WET testing is required.

RIDEM's toxicity permitting policy is based on past toxicity data and the level of available dilution. The bioassay requirements in the permit consist of chronic toxicity tests, where the chronic data can be used to calculate the acute LC_{50}, and an acute LC_{50} toxicity limit of $\geq$ 100% effluent. Calculation of the chronic C-NOEC with a chronic toxicity limit of $\geq$ 55% effluent is also required. If recurrent toxicity is demonstrated, then toxicity identification and reduction will be required. Details on the calculations regarding WET limits can be found in Appendix F.

Nutrients

The effluent monitoring requirements have been specified in accordance with the RIPDES regulations as well as 40 CFR 122.41 (j), 122.44 (i), and 122.48 to yield data representative of the discharge. The requirement of testing for nutrients; phosphorus, nitrogen, and ammonia, is necessary to make a determination on nutrient loadings in the receiving water. The latest Rhode Island Water Quality Regulations lists Water Quality Classifications (250-RICR-150-05-1.25), and lists the segment of the Clear River that the facility discharges to as a warmwater habitat. Therefore, salmonids are assumed absent, and ammonia criteria from the RIDEM Ambient Water Quality Criteria and Guidelines for Toxic Pollutants (250-RICR-150-05-1.26(L)) are used based on that designation.

Sludge Requirements

The permit contains requirements for the permittee to comply with the State's Sludge Regulations and RIDEM's Order of Approval for sludge disposal in accordance with the requirements of Section 405(d) of the Clean Water Act (CWA). Permits must contain sludge conditions requiring compliance with limits, state laws, and applicable regulations as per Section 405(d) of the CWA and 40 CFR 503. The RIDEM Sludge Order of Approval sets forth the conditions to ensure this compliance.

Resiliency Planning Requirements

On March 30, 2017, DEM's Office of Water Resources issued *Guidance for the Consideration of Climate Change Impacts in the Planning and Design of Municipal Wastewater Collection and Treatment Infrastructure*. This guidance built on and clarified existing studies, resources, and coastal efforts, including the "TR-16" *Guide for the Design of Waste Treatment Works* that was issued by the New England Interstate Water Pollution Control Commission and the DEM report *Implications of Climate Change for RI Wastewater Collection and Treatment Infrastructure*. DEM's goal with Resiliency Plan requirements is to protect systems from interruptions in operations, damages to structural and electrical integrity, and achievement of these protections to the maximum extent practicable. Therefore, DEM determined that the requirement for the submission of a Resiliency Plan per Part I.C.3 of the permit was appropriate.

Antibacksliding

Provided below is a brief introduction to Antibacksliding and Antidegradation; as well as a discussion on how the two policies were used to calculate water quality-based limits.

Antibacksliding restricts the level of relaxation of water quality-based limits from the previous permit. Section 303(d)(4) of the Clean Water Act addresses antibacksliding as the following:

Section 303(d)(4)

1.a Standards not attained – For receiving waters that have not attained the applicable water qualitya standards, limits based on a TMDL or WLA can only be revised if the water quality standards willa be met. This may be done by (i) determining that the cumulative effect of all such revised limitsa would assure the attainment of such water quality standards; or (ii) removing the designated usea which is not being attained in accordance with regulations under Section 303.a

2.a Standards attained – For receiving waters achieving or exceeding applicable water qualitya standards, limits can be relaxed if the revision is consistent with the State's Antidegradationa Policy.a

Therefore, in order to determine whether backsliding is permissible, the first question that must be asked is whether or not the receiving water is attaining the water quality standard. The Office has determined the most appropriate evaluation of existing water quality is by calculating pollutant levels, which would result after the consideration of all currently valid RIPDES permit limits or historic discharge data (whichever is greater), background data (when available), and any new information (i.e., dilution factors).

Antidegradation

The DEM's "*Policy on the Implementation of the Antidegradation Provisions of the Rhode Island Water Quality Regulations July 2006*" (the Policy) established four tiers of water quality protection:

Tier 1. In all surface waters, existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Tier 2. In waters where the existing water quality criteria exceeds the levels necessary to support the propagation of fish and wildlife and recreation in and on the water, that quality shall be maintained and protected except for insignificant changes in water quality as determined by the Director and in accordance with the Antidegradation Implementation Policy, as amended. In addition, the Director may allow significant degradation, which is determined to be necessary to achieve important economic or social benefits to the State in accordance with the Antidegradation Policy.

Tier 2½. Where high quality waters constitute Special Resource Protection Waters SRPWs[1], there shall be no measurable degradation of the existing water quality necessary to protect the characteristics which cause the waterbody to be designated a SRPW. Notwithstanding that all public drinking water supplies are SRPWs, public drinking water suppliers may undertake temporary and short-term activities within the boundary perimeter of a public drinking water supply impoundment for essential maintenance or to address emergency conditions in order to prevent adverse effect on public health or safety. These activities must comply with the requirements set forth in Tier 1 and Tier 2.

Tier 3. Where high quality waters constitute an Outstanding Natural Resource ONRWs[2], that water quality shall be maintained and protected. The State may allow some limited activities that result in temporary or short-term changes in the water quality of an ONRW. Such activities must not permanently degrade water quality or result in water quality lower than necessary to protect the existing uses in the ONRW.

[1] SRPWs are surface waters identified by the Director as having significant recreational or ecological uses.
[2] ONRWs are a special subset of high-quality water bodies, identified by the State as having significant recreational or ecological water uses.

The formulas previously presented ensure that permit limitations are based upon water quality criteria and methodologies established to ensure that all designated uses will be met.

In terms of the applicability of Tier 2 of the Policy, a water body is assessed as being high quality on a parameter-by-parameter basis. In accordance with Part II of the Policy, "Antidegradation applies to all new or increased projects or activities which may lower water quality or affect existing water uses, including but not limited to all 401 Water Quality Certification reviews and any new, reissued, or modified RIPDES permits." Part VI.A of the Policy indicates that it is not applicable to activities which result in insignificant (i.e., short-term minor) changes in water quality and that significant changes in water quality will only be allowed if it is necessary to accommodate important economic and social development in the area in which the receiving waters are located (important benefits demonstration). Part VI.B.4 of the Policy states that: "Theoretically, any new or increased discharge or activity could lower existing water quality and thus require the important benefits demonstration. However, DEM will: 1) evaluate applications on a case-by-case basis, using BPJ and all pertinent and available facts, including scientific and technical data and calculations as provided by the applicant; and 2) determine whether the incremental loss is significant enough to require the important benefits demonstration described below. [If not then as a general rule DEM will allocate no more than 20%.] Some of the considerations which will be made to determine if an impact is significant in each site specific decision are: 1) percent change in water quality parameter value and their temporal distribution; 2) quality and value of the resource; 3) cumulative impact of discharges and activities on water quality to date; 4) measurability of the change; 5) visibility of the change; 6) impact on fish and wildlife habitat; and 7) impact on potential and existing uses. As a general guide, any discharge or activity which consumes greater than 20% of the remaining assimilative capacity may be deemed significant and invoke full requirements to demonstrate important economic or social benefits."

In terms of a RIPDES permit, an increased discharge is defined as an increase in any limitation, which would result in an increased mass loading to a receiving water. The baseline for this comparison would be the monthly average mass loading established in the previous permit. It would be inappropriate to use the daily maximum mass loading since the Policy is not applicable to short-term changes in water quality.

For the purposes of ensuring that the revised limit is consistent with the requirements of antidegradation, existing water quality must be defined. As explained earlier, DEM evaluates existing water quality by determining the pollutant levels which would result under the design conditions appropriate for the particular criteria (i.e., background water quality, when available and/or appropriate, non-point source inputs; and existing RIPDES permit limitations or recent historical discharge data, whichever is higher). In general, available data would be used to make this determination.

Use the above-mentioned criteria, the present instream water quality C_p is defined as:

$$C_p = \frac{(DF - 1) \cdot C_B + (1 \cdot C_d)}{DF}$$

where: C_b = background concentration[1]
C_d = discharge data[2]
DF = dilution factor

In this permit, all monthly average limitations are either the same as or more stringent than the limits in the 2012 permit. Therefore, the limits contained in this permit are consistent with the Department's anti-degradation policy.

[1] Data collected at a location that is unimpacted by significant point source discharges.
[2] Discharge data refers to the maximum of the permit limit or the historic discharge level. The historic discharge level is determined by calculating the upper 95th confidence interval for the monthly average reported data for the past five (5) years. For specific cases, changes in treatment efficiency or pretreatment limitations may support the use of ans alternative period of time.s

The remaining general and specific conditions of the permit are based on the RIPDES regulations as well as 40 CFR Parts 122 through 125 and consist primarily of management requirements common to all permits.

V.e **Comment Period, Hearing Requests, and Procedures for Final Decisions**

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the Rhode Island Department of Environmental Management, Office of Water Resources, 235 Promenade Street, Providence, Rhode Island, 02908-5767. In accordance with Chapter 46-17.4 of Rhode Island General Laws, a public hearing will be held prior to the close of the public comment period. In reaching a final decision on the draft permit the Director will respond to all significant comments and make these responses available to the public at DEM's Providence office.

Following the close of the comment period, and after a public hearing, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments, provided oral testimony, or requested notice. Within thirty (30) days following the notice of the final permit decision any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of 250-RICR-150-10-1.50 of the Regulations for the Rhode Island Pollutant Discharge Elimination System.

VI.e **DEM Contact**

Additional information concerning the permit may be obtained between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding holidays from:

Travis Babikoff, Environmental Engineer I
Department of Environmental Management/ Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908
Telephone: (401) 222-4700, ext: 7274
Email: travis.babikoff@dem.ri.gov

12/12/19
Date

Joseph B. Haberek, P.E.
Environmental Engineer IV
RIPDES Program
Office of Water Resources
Department of Environmental Management

ATTACHMENT A

DESCRIPTION OF DISCHARGE: Secondary treated domestic and industrial wastewater.
DISCHARGE: 001A - Secondary Treatment Discharge

AVERAGE EFFLUENT CHARACTERISTICS AT POINT OF DISCHARGE:

PARAMETER	AVERAGE[1]	MAXIMUM[2]
FLOW	0.862 MGD	1.07 MGD
BOD_5	2.97 mg/L	5.75 mg/L
BOD_5 load	21.31 lb/day	51.41 lb/day
BOD_5 % removal	98.74 %	
TSS	3.60 mg/L	6.312 mg/L
TSS load	25.9 lb/day	56.22 lb/day
TSS % removal	98.79%	
pH	6.14 S.U.(Minimum)	6.94 S.U.(Maximum)
Settleable Solids	0.01 mL/L	0.01 mL/L
Chlorine Residual	10.00 µg/L	10.03 µg/L
Nitrogen, Nitrate	4.61 mg/L	5.96 mg/L
Nitrogen, Nitrite	0.254 mg/L	0.379 mg/L
Nitrogen, Total	11.57 mg/L	13.7 mg/L
Nitrogen, Total Kjeldhal	6.69 mg/L	8.83 mg/L
Ammonia (June-Oct)	1.596 mg/L	2.40 mg/L
Ammonia (Nov-May)	7.1 mg/L	9.53 mg/L
Phosphorus	0.413 mg/L	0.601 mg/L
Cadmium	0.06 µg/L	0.06 µg/L
Copper	7.9 µg/L	10.53 µg/L
Cyanide	0.4 µg/L	7.6 µg/L
Lead	0.17 µg/L	0.22 µg/L
Zinc	39.42 µg/L	39.42 µg/L

[1]Data represents the mean of the monthly average data from October 2013 to September 2018.
[2]Data represents the mean of the daily maximum data from October 2013 to September 2018.e

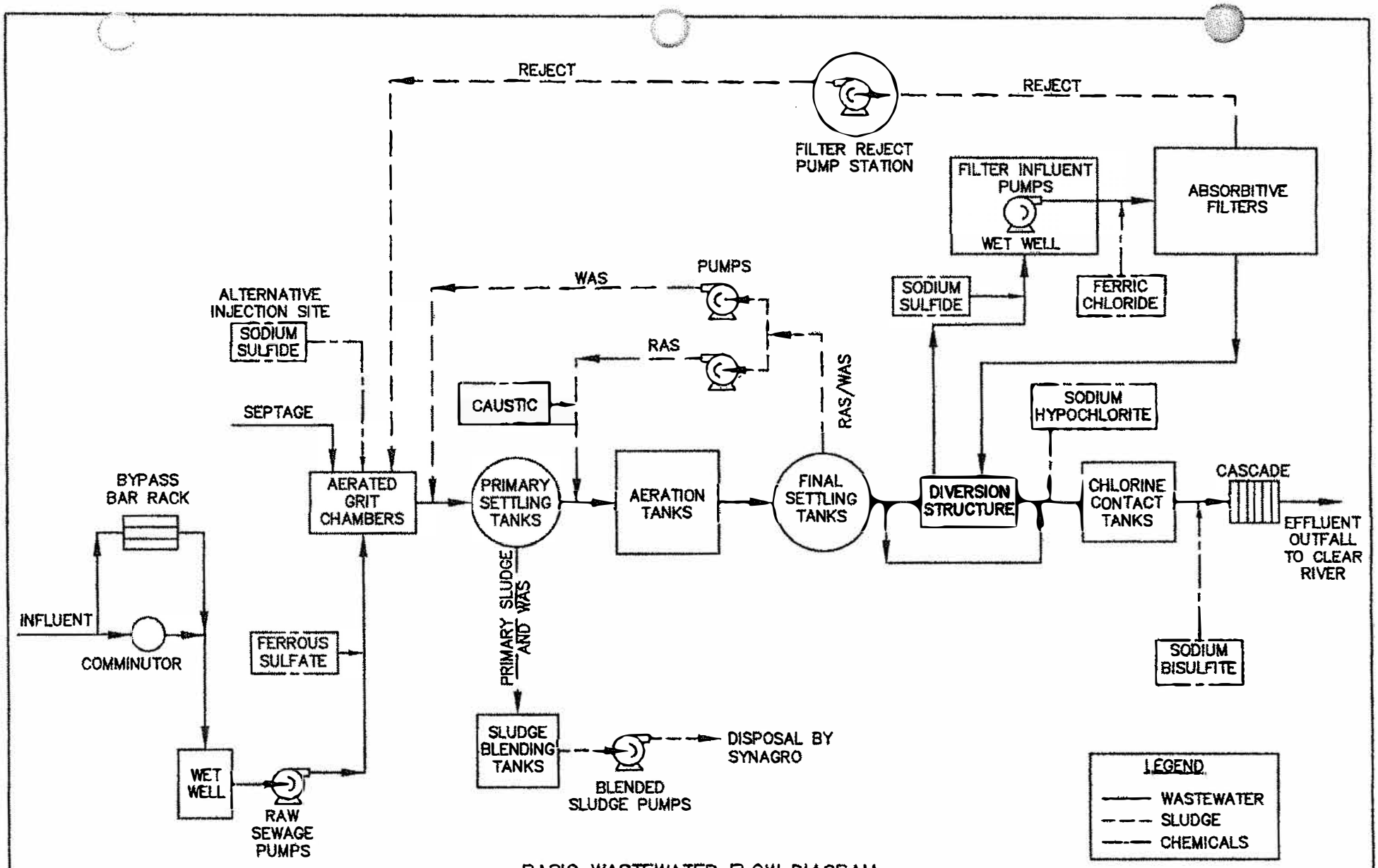
Whole Effluent Toxicity Testing Results (percent effluent)

Species: Ceriodaphnia Dubia

Monitoring Quarter	LC50 Result	C-NOEC Result
4th Quarter 2013	>100%e	100%
1st Quarter 2014 e	>100%e	100%
2nd Quarter 2014	>100%e	100%
3rd Quarter 2014e	>100%e	100%

4th Quarter 2014	>100%	100%
1st Quarter 2015	>100%	50%
2nd Quarter 2015	>100%	100%
3rd Quarter 2015	>100%	100%
4th Quarter 2015	>100%	100%
1st Quarter 2016	>100%	100%
2nd Quarter 2016	>100%	100%
3rd Quarter 2016	>100%	100%
4th Quarter 2016	>100%	100%
1st Quarter 2017	>100%	100%
2nd Quarter 2017	>100%	100%
3rd Quarter 2017	>100%	100%
4th Quarter 2017	=100%	100%
1st Quarter 2018	>100%	50%
2nd Quarter 2018	>100%	100%
3rd Quarter 2018	>100%	100%

ATTACHMENT B
Burrillville WWTF Treatment Process Schematic



BASIC WASTEWATER FLOW DIAGRAM

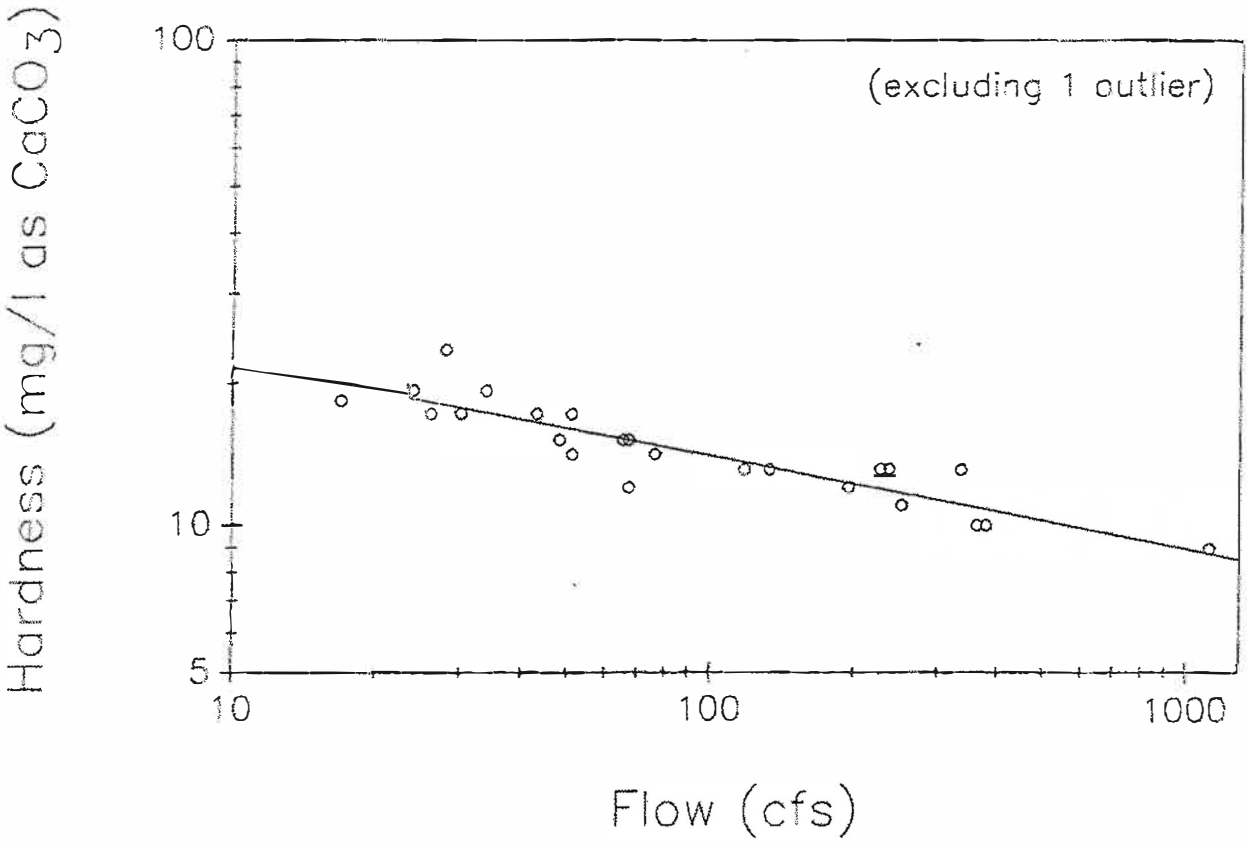
JAMES J. GEREMIA & ASSOCIATES, INC.
CONSULTING ENVIRONMENTAL ENGINEERS & SCIENTISTS
272 W. Exchange Street Suite 201 Providence,RI 02903-1025
Phone: 401-454-7000 Fax: 401-454-7415

BURRILLVILLE SEWER COMMISSION
WASTEWATER TREATMENT FACILITY

FIG 1-1

ATTACHMENT C
Flow vs. Hardness Data

BRANCH RIVER AT FORESTDALE
Flow vs. Hardness



ATTACHMENT D
Summary of Applicable Water Quality Based Limits

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY SPECIFIC DATA INPUT SHEET

NOTE: LIMITS BASED ON RI WATER QUALITY CRITERIA DATED JULY 2006

FACILITY NAME: **Burrillville WWTF 2019 Permit**

RIPDES PERMIT #: **RI0100455**

	DISSOLVED BACKGROUND DATA (ug/L)	ACUTE METAL TRANSLATOR	CHRONIC METAL TRANSLATOR
ALUMINUM	NA	NA	NA
ARSENIC	NA	1	1
CADMIUM	NA	0.995791077	0.960791077
CHROMIUM III	NA	0.316	0.86
CHROMIUM VI	NA	0.982	0.962
COPPER	NA	0.96	0.96
LEAD	NA	0.97137459	0.97137459
MERCURY	NA	0.85	0.85
NICKEL	NA	0.998	0.997
SELENIUM	NA	NA	NA
SILVER	NA	0.85	NA
ZINC	NA	0.978	0.986
AMMONIA (as N)	NA		

USE NA WHEN NO DATA IS AVAILABLE

NOTE 1: METAL TRANSLATORS FROM RI WATER QUALITY REGS.

pH =	**6.9** S.U.
HARDNESS =	**29.0** (mg/L as CaCO3)

FLOW DATA	
DESIGN FLOW =	**1.500** MGD
=	2.321 CFS
7Q10 FLOW =	**2.400** CFS
7Q10 (JUNE-OCT) =	**2.400** CFS
7Q10 (NOV-MAY) =	**5.350** CFS
30Q5 FLOW =	**0.000** CFS
HARMONIC FLOW =	**31.150** CFS

DILUTION FACTORS	
ACUTE =	**2.034**
CHRONIC =	**2.034**
(MAY-OCT) =	**2.034**
(NOV-APR) =	**3.305**
30Q5 FLOW =	**1.000**
HARMONIC FLOW =	**14.421**

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS
FACILITY NAME: _____ RIPDES PERMIT #: RI0100455

Month	Upper 90th% pH	Upper 90th% Temp (°C)	Acute Criteria* mg/L as N	Chronic Criteria* mg/L as N
May	6.8	16.7	42	5.72
Jun	6.8	22	42	3.89
Jul	6.9	25.3	39.1	3.12
Aug	6.9	24.8	39.1	3.12
Sep	7.3	20.6	26.2	3.57
Oct	7	13.8	36.1	6.11
Nov	6.7	8.9	44.6	9.2
Dec	6.9	3.9	39.1	9.93
Jan	6.9	1.8	39.1	9.93
Feb	6.9	2.5	39.1	9.93
Mar	6.6	5.0	46.8	10.7
Apr	6.7	11.9	44.6	7.58

**NOTE: Criteria from The Rhode Island Water Quality Regulations 250-RICR-150-05-1.26*

*apH and Temperature data points calculated based on Upper 90th percentilea of historical WQ data collected at the USGS Forestdale Station on the Branch Rivera USGS Station # 01111500 through the most recent reviewed and accepted data (2016-2017)a

*aThe receiving water body is a warm water body, therefore it is assumeda that salmonids are absent, and those acute criterion for Total Ammonia Nitrogen are useda

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF 2019 Permit RIPDES PERMIT #: RI0100455

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE6 (ug/L)6	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)6	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS							
TOXIC METALS AND CYANIDE							
ANTIMONY	7440360		450	732.252672	10	640	16.2722816
ARSENIC (limits are total recoverable)	7440382	NA	340	553.2575744	150	1.4	16.15142502
ASBESTOS	1332214			No Criteria			No Criteria
BERYLLIUM	7440417		7.5	12.2042112	0.17		0.276628787
CADMIUM (limits are total recoverable)	7440439	NA	0.60349057	0.986167553	0.103916372		0.175996272
CHROMIUM III (limits are total recoverable)	16065831	NA	206.72764856	1064.534972	26.89101982		50.88119151
CHROMIUM VI (limits are total recoverable)	18540299	NA	16	26.51288244	11		18.606559
COPPER (limits are total recoverable)	7440508	NA	4.1864123946	7.096091808	3.109718763		5.271064522
CYANIDE	57125		22	35.79901952	5.2	140	8.461586432
LEAD (limits are total recoverable)	7439921	NA	16.40398813	27.4796476	0.639239867		1.070842416
MERCURY (limits are total recoverable)	7439976	NA	1.4	2.680140499	0.77	0.15	0.141176471
NICKEL (limits are total recoverable)	7440020	NA	164.30595516	267.8990751	18.24931898	4600	29.78516123
SELENIUM (limits are total recoverable)	7782492	NA	20	32.5445632	5	4200	8.1361408
SILVER (limits are total recoverable)	7440224	NA	0.4103396286	0.7855484676	NA		No Criteria
THALLIUM	7440280		46	74.85249536	1	0.47	0.376
ZINC (limits are total recoverable)	7440666	NA	41.05300956	68.30533049	41.3888215	26000	68.30533049
VOLATILE ORGANIC COMPOUNDS							
ACROLEIN	107028		2.9	4.718961664	0.06	290	0.09763369
ACRYLONITRILE	107131		378	615.0922445	8.4	2.5	13.66871654
BENZENE	71432		265	431.2154624	5.9	510	9.600646144
BROMOFORM	75252		1465	2383.889254	33	1400	53.69852928
CARBON TETRACHLORIDE	56235		1365	2221.166438	30	16	48.8168448
CHLOROBENZENE	108907		795	1293.646387	18	1600	29.29010688
CHLORODIBROMOMETHANE	124481			No Criteria		130	1499.775181
CHLOROFORM	67663		1445	2351.344691	32	4700	52.07130112
DICHLOROBROMOMETHANE	75274			No Criteria		170	1961.244467
1,2DICHLOROETHANE	107062		5900	9600.646144	131	370	213.166889
1,1DICHLOROETHYLENE	75354		580	943.79233286	13	7100	21.15396608
1,2DICHLOROPROPANE	78875		2625	4271.473926	58	150	94.37923328
1,3DICHLOROPROPYLENE	542756			No Criteria		21	16.8
ETHYLBENZENE	100414		1600	2603.565056	36	2100	58.58021376
BROMOMETHANE (methyl bromide)	74839			No Criteria		1500	1200
CHLOROMETHANE (methyl chloride)	74873			No Criteria			No Criteria
METHYLENE CHLORIDE	75092		9650	15702.75174	214	5900	348.2268262
1,1,2,2TETRACHLOROETHANE	79345		466	758.2883226	10	40	16.2722816
TETRACHLOROETHYLENE	127184		240	390.5347584	5.3	33	8.624309248
TOLUENE	108883		635	1033.289882	14	15000	22.781194246
1,2TRANSDICHLOROETHYLENE	156605			No Criteria		10000	80006
1,1,1TRICHLOROETHANE	71556			No Criteria			No Criteria

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF 2019 Permit RIPDES PERMIT #: RI0100455

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L0	DAILY MAX LIMIT (ug/L0	FRESHWATER CRITERIA CHRONIC (ug/L0	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L0	MONTHLY AVE LIMIT (ug/L0
1,1,2TRICHLOROETHANE	79005		9000	1464.505344	200	160	32.5445632
TRICHLOROETHYLENE	79016		19500	3173.094912	430	300	69.97081088
VINYL CHLORIDE	75014			No Criteria		2.4	27.68815718
ACID ORGANIC COMPOUNDS							
2CHLOROPHENOL	95578		129	209.9124326	2.9	150	4.718961664
2,4DICHLOROPHENOL	120832		101	164.3500442	2.2	290	3.579901952
2,4DIMETHYLPHENOL	105679		106	172.486185	2.4	850	3.905347584
4,6DINITRO2METHYL PHENOL	534521			No Criteria		280	224
2,4DINITROPHENOL	51285		31	50.44407296	0.69	5300	1.12278743
4NITROPHENOL	88755			No Criteria			No Criteria
PENTACHLOROPHENOL	87865		0.053513518	0.087078704	0.04105589	30	0.0668073
PHENOL	108952		251	408.4342682	5.6	1700000	9.112477696
2,4,6TRICHLOROPHENOL	88062		16	26.03565056	0.36	24	0.585802138
BASE NEUTRAL COMPUNDS							
ACENAPHTHENE	83329		85	138.3143936	1.9	990	3.091733504
ANTHRACENE	120127			No Criteria		40000	32000
BENZIDINE	92875			No Criteria		0.002	0.023073464
POLYCYCLIC AROMATIC HYDROCARBONS				No Criteria		0.18	2.076611789
BIS(2CHLOROETHYL)ETHER	111444			No Criteria		5.3	61.14468045
BIS(2CHLOROISOPROPYL)ETHER	108601			No Criteria		65000	52000
BIS(2ETHYLHEXYL)PHTHALATE	117817		555	903.1116288	12	22	19.52673792
BUTYL BENZYL PHTHALATE	85687		85	138.3143936	1.9	1900	3.091733504
2CHLORONAPHTHALENE	91587			No Criteria		1600	1280
1,2DICHLOROBENZENE	95501		79	128.5510246	1.8	1300	2.929010688
1,3DICHLOROBENZENE	541731		390	634.6189824	8.7	960	14.15688499
1,4DICHLOROBENZENE	106467		56	91.12477696	1.2	190	1.952673792
3,3DICHLOROBENZIDENE	91941			No Criteria		0.28	3.230285005
DIETHYL PHTHALATE	84662		2605	4238.929357	58	44000	94.37923328
DIMETHYL PHTHALATE	131113		1650	2684.926464	37	1100000	60.20744192
DI-n-BUTYL PHTHALATE	84742			No Criteria		4500	3600
2,4DINITROTOLUENE	121142		1550	2522.203648	34	34	55.32575744
1,2DIPHENYLHYDRAZINE	122667		14	22.78119424	0.31	2	0.50444073
FLUORANTHENE	206440		199	323.81840380	4.4	140	7.159803904
FLUORENE	86737			No Criteria		5300	4240
HEXACHLOROBENZENE	118741			No Criteria		0.0029	0.033456523
HEXACHLOROBUTADIENE	87683			No Criteria		180	2076.611789
HEXACHLOROCYCLOPENTADIENE	77474		0.35	0.569529856	0.008	1100	0.013017825
HEXACHLOROETHANE	67721		49	79.734179840	1.1	33	1.7899509760
ISOPHORONE	78591		5850	9519.2847360	130	9600	211.53966080
NAPHTHALENE	91203		115	187.13123840	2.6		4.230793216
NITROBENZENE	98953		1350	2196.7580160	30	690	48.8168448

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF 2019 Permit RIPDES PERMIT #: RI0100455

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
N-NITROSODIMETHYLAMINE	62759			No Criteria		30	346.1019648
N-NITROSODI-N-PROPYLAMINE	621647			No Criteria		5.1	58.83733402
N-NITROSODIPHENYLAMINE	86306		293	476.7778509	6.5	60	10.57698304
PYRENE	129000			No Criteria		4000	3200
1,2,4trichlorobenzene	120821		75	122.042112	1.7	70	2.766287872
PESTICIDES/PCBs							
ALDRIN	309002		3	4.88168448		0.0005	0.005768366
Alpha BHC	319846			No Criteria		0.049	0.565299876
Beta BHC	319857			No Criteria		0.17	1.961244467
Gamma BHC (Lindane)	58899		0.95	1.545866752		1.8	20.766117898
CHLORDANE	57749		2.4	3.905347584	0.0043	0.0081	0.006997081
4,4DDT	50293		1.1	1.7899509768	0.001	0.0022	0.0016272288
4,4DDE	72559			No Criteria		0.0022	0.0253808118
4,4DDD	72548			No Criteria		0.0031	0.035763878
DIELDRIN	60571		0.24	0.390534758	0.056	0.00054	0.0062298358
ENDOSULFAN (alpha)	959988		0.22	0.357990195	0.056	89	0.0911247778
ENDOSULFAN (beta)	33213659		0.22	0.357990195	0.056	89	0.0911247778
ENDOSULFAN (sulfate)	1031078			No Criteria		89	71.2
ENDRIN	72208		0.086	0.139941622	0.036	0.06	0.048
ENDRIN ALDEHYDE	7421934			No Criteria		0.3	0.24
HEPTACHLOR	76448		0.52	0.846158643	0.0038	0.00079	0.006183467
HEPTACHLOR EPOXIDE	1024573		0.52	0.846158643	0.0038	0.00039	0.004499326
POLYCHLORINATED BIPHENYLS	1336363			No Criteria	0.014	0.00064	0.007383509
2,3,7,8TCDD (Dioxin)	1746016			No Criteria		0.000000051	5.88373E-07
TOXAPHENE	8001352		0.73	1.187876557	0.0002	0.0028	0.000325446
TRIBUTYLTIN			0.46	0.7485249548	0.072		0.117160428
NON PRIORITY POLLUTANTS							
OTHER SUBSTANCES							
ALUMINUM (limits are total recoverable)	7429905	NA	750	1220.42112	87		141.5688499
AMMONIA as N(winter/summer)	7664417		39.1 | 26.2	1E+05 | 42633	7.58 | 3.12		20042 | 5077
4BROMOPHENYL-PHENYL ETHER			18	29.29010688	0.4		0.650891264
CHLORIDE	16887006		860000	1399416.218	230000		374262.4768
CHLORINE	7782505		19	38.6466688	11		22.3743872
4CHLORO2METHYLPHENOL			15	24.4084224	0.32		0.520713011
1CHLORONAPHTHALENE			80	130.1782528	1.8		2.929010688
4CHLOROPHENOL	106489		192	312.4278067	4.3		6.997081088
2,4DICHLORO6METHYLPHENOL			22	35.79901952	0.48		0.781069517
1,1DICHLOROPROPANE			1150	1871.312384	26		42.30793216
1,3DICHLOROPROPANE	142289		303	493.0501325	6.7		10.90242867
2,3DINITROTOLUENE			17	27.66287872	0.37		0.602074419
2,4DINITRO6METHYL PHENOL			12	19.52673792	0.26		0.423079322

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF 2019 Permit RIPDES PERMIT #: RI0100455

NOTE: METALS CRITERIA ARE EXPRESSED AS DISSOLVED, METALS LIMITS ARE EXPRESSED AS TOTAL

CHEMICAL NAME	CAS #	BACKGROUND CONCENTRATION (ug/L)	FRESHWATER CRITERIA ACUTE (ug/L)	DAILY MAX LIMIT (ug/L)	FRESHWATER CRITERIA CHRONIC (ug/L)	HUMAN HEALTH NON-CLASS A CRITERIA (ug/L)	MONTHLY AVE LIMIT (ug/L)
IRON	7439896			No Criteria	1000		1627.22816
pentachlorobenzene	608935		13	21.15396608A	0.28		0.455623885
PENTACHLOROETHANE			362	589.0565939A	8		13.01782528
1,2,3,5tetrachlorobenzene			321	522.3402394A	7.1		11.55331994
1,1,1,2TETRACHLOROETHANE	630206		980	1594.683597A	22		35.79901952
2,3,4,6TETRACHLOROPHENOL	58902		7	11.39059712A	0.16		0.260356506
2,3,5,6TETRACHLOROPHENOL			8.5	13.83143936A	0.19		0.30917335
2,4,5TRICHLOROPHENOL	95954		23	37.42624768A	0.51		0.829886362
2,4,6TRINITROPHENOL	88062		4235	6891.311258A	94		152.959447
XYLENE	1330207		133	216.4213453A	3		4.88168448

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF RIPDES PERMIT #: RI0100455

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
PRIORITY POLLUTANTS			
TOXIC METALS AND CYANIDE			
ANTIMONY	7440360	732.25	16.27
ARSENIC, TOTAL	7440382	553.26	16.15
ASBESTOS	1332214	No Criteria	0.00000
BERYLLIUM	7440417	12.20	0.28
CADMIUM, TOTAL	7440439	0.99	0.17600
CHROMIUM III, TOTAL	16065831	1064.53	50.88
CHROMIUM VI, TOTAL	18540299	26.51	18.61
COPPER, TOTAL	7440508	7.10	5.27
CYANIDE	57125	35.80	8.46
LEAD, TOTAL	7439921	27.48	1.07
MERCURY, TOTAL	7439976	2.68	0.14
NICKEL, TOTAL	7440020	267.90	29.79
SELENIUM, TOTAL	7782492	32.54	8.14
SILVER, TOTAL	7440224	0.79	0.79
THALLIUM	7440280	74.85	0.38
ZINC, TOTAL	7440666	68.31	68.31
VOLATILE ORGANIC COMPOUNDS			
ACROLEIN	107028	4.72	0.09763
ACRYLONITRILE	107131	615.09	13.67
BENZENE	71432	431.22	9.60
BROMOFORM	75252	2383.89	53.70
CARBON TETRACHLORIDE	56235	2221.17	48.82
CHLOROBENZENE	108907	1293.65	29.29
CHLORODIBROMOMETHANE	124481	No Criteria	1499.78
CHLOROFORM	67663	2351.34	52.07
DICHLOROBROMOMETHANE	75274	No Criteria	1961.24
1,2DICHLOROETHANE	107062	9600.65	213.17
1,1DICHLOROETHYLENE	75354	943.79	21.15
1,2DICHLOROPROPANE	78875	4271.47	94.38
1,3DICHLOROPROPYLENE	542756	No Criteria	16.80
ETHYLBENZENE	100414	2603.57	58.58
BROMOMETHANE (methyl bromide)	74839	No Criteria	1200.00
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00000
METHYLENE CHLORIDE	75092	15702.75	348.23
1,1,2,2TETRACHLOROETHANE	79345	758.29	16.27
FLUORENE	86737	No Criteria	4240.00
HEXACHLOROBENZENE	118741	No Criteria	0.03346
HEXACHLOROBUTADIENE	87683	No Criteria	2076.610
HEXACHLOROCYCLOPENTADIENE	77474	0.57	0.01302
HEXACHLOROETHANE	67721	79.73	1.79

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
TETRACHLOROETHYLENE	127184	390.53	8.62
TOLUENE	108883	1033.29	22.78
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	8000.00
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00000
1,1,2TRICHLOROETHANE	79005	1464.51	32.54
TRICHLOROETHYLENE	79016	3173.09	69.97
VINYL CHLORIDE	75014	No Criteria	27.69
ACID ORGANIC COMPOUNDS			
2CHLOROPHENOL	95578	209.91	4.72
2,4DICHLOROPHENOL	120832	164.35	3.58
2,4DIMETHYLPHENOL	105679	172.49	3.91
4,6DINITRO2METHYL PHENOL	534521	No Criteria	224.00
2,4DINITROPHENOL	51285	50.44	1.12
4NITROPHENOL	88755	No Criteria	0.00000
PENTACHLOROPHENOL	87865	0.09	0.06681
PHENOL	108952	408.43	9.11
2,4,6TRICHLOROPHENOL	88062	26.04	0.59
BASE NEUTRAL COMPUNDS			
ACENAPHTHENE	83329	138.31	3.09
ANTHRACENE	120127	No Criteria	32000.00
BENZIDINE	92875	No Criteria	0.02307
PAHs		No Criteria	2.08
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	61.14
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	52000.00
BIS(2ETHYLHEXYL)PHTHALATE	117817	903.11	19.53
BUTYLBENZYLPHTHALATE	85687	138.31	3.09
2CHLORONAPHTHALENE	91587	No Criteria	1280.00
1,2DICHLOROBENZENE	95501	128.55	2.93
1,3DICHLOROBENZENE	541731	634.62	14.16
1,4DICHLOROBENZENE	106467	91.12	1.95
3,3DICHLOROBENZIDENE	91941	No Criteria	3.23
DIETHYL PHTHALATE	84662	4238.93	94.38
DIMETHYL PHTHALATE	131113	2684.93	60.21
DI-n-BUTYL PHTHALATE	84742	No Criteria	3600.00
2,4DINITROTOLUENE	121142	2522.20	55.33
1,2DIPHENYLHYDRAZINE	122667	22.78	0.50
FLUORANTHENE	206440	323.82	7.16
NON PRIORITY POLLUTANTS			
OTHER SUBSTANCES			
ALUMINUM, TOTAL	7429905	1220.420	141.57
AMMONIA (as N), WINTER (NOV-AP	7664417	103381.55	20041.74
AMMONIA (as N), SUMMER (MAY-O	7664417	42633.38	5076.95

CALCULATION OF WATER QUALITY BASED NON-CLASS AA FRESHWATER DISCHARGE LIMITS

FACILITY NAME: Burrillville WWTF RIPDES PERMIT #: RI0100455

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
ISOPHORONE	78591	9519.28	211.54
NAPHTHALENE	91203	187.13	4.23
NITROBENZENE	98953	2196.76	48.82
N-NITROSODIMETHYLAMINEN	62759	No Criteria	346.10
N-NITROSODI-N-PROPYLAMINEN	621647	No Criteria	58.84
N-NITROSODIPHENYLAMINEN	86306	476.78	10.58
PYRENEN	129000	No Criteria	3200.00
1,2,4trichlorobenzene	120821	122.04	2.77
PESTICIDES/PCBs			
ALDRIN	309002	4.88	0.00577
Alpha BHC	319846	No Criteria	0.57
Beta BHC	319857	No Criteria	1.96
Gamma BHC (Lindane)	58899	1.55	1.55
CHLORDANE	57749	3.91	0.00700
4,4DDT	50293	1.79	0.00163
4,4DDE	72559	No Criteria	0.02538
4,4DDD	72548	No Criteria	0.03576
DIELDRIN	60571	0.39	0.00623
ENDOSULFAN (alpha)	959988	0.36	0.09112
ENDOSULFAN (beta)	33213659	0.36	0.09112
ENDOSULFAN (sulfate)	1031078	No Criteria	71.20
ENDRIN	72208	0.14	0.05
ENDRIN ALDEHYDE	7421934	No Criteria	0.24
HEPTACHLOR	76448	0.85	0.01
HEPTACHLOR EPOXIDE	1024573	0.85	0.00
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.01
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00
TOXAPHENE	8001352	1.19	0.00
TRIBUTYLTIN		0.75	0.12

CHEMICAL NAME	CAS#	DAILY MAX LIMIT (ug/L)	MONTHLY AVE LIMIT (ug/L)
4BROMOPHENYLPHENYL ETHER		29.29	0.65
CHLORIDE	16887006	1399416.22	374262.48
CHLORINE	7782505	38.65	22.37
4CHLORO2METHYLPHENOL		24.41	0.52
1CHLORONAPHTHALENE		130.18	2.93
4CHLOROPHENOL	106489	312.43	7.00
2,4DICHLORO6METHYLPHENOL		35.80	0.78
1,1DICHLOROPROPANE		1871.31	42.31
1,3DICHLOROPROPANE	142289	493.05	10.90
2,3DINITROTOLUENE		27.66	0.60
2,4DINITRO6METHYL PHENOL		19.53	0.42
IRON	7439896	No Criteria	1627.23
pentachlorobenzene	608935	21.15	0.46
PENTACHLOROETHANE		589.06	13.02
1,2,3,5tetrachlorobenzene		522.34	11.55
1,1,1,2TETRACHLOROETHANE	630206	1594.68	35.80
2,3,4,6TETRACHLOROPHENOL	58902	11.39	0.26
2,3,5,6TETRACHLOROPHENOL		13.83	0.31
2,4,5TRICHLOROPHENOL	95954	37.43	0.83
2,4,6TRINITROPHENOL	88062	6891.31	152.96
XYLENE	1330207	216.42	4.88

ATTACHMENT E
Comparison of Allowable Limits with Discharge Monitoring Report Data, Permit Application Data, and Annual Priority Pollutant Scan Data

Facility Name: ***Burrillville WWTF***

RIPDES Permit #: ***RI0100455***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Priority Pollutant Scan Data (ug/l) 2013-2018		Permit Application Data (ug/L) 12/8/2016		Ave. DMR Data Effluent (ug/L) 10/13-9/18		Potential WQ Based Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
CONVENTIONALS													
TOXIC METALS AND CYANIDE													
ANTIMONY	7440360	732.25	16.27	---	<3	<3	<5	<5	---	---	732.25	16.27	No
ARSENIC, TOTAL	7440382	553.26	16.15	---	<2	<2	<4	<4	---	---	553.26	16.15	No
ASBESTOS	1332214	No Criteria	0.00000	---	---	---	---	---	---	---	No Criteria	0.00000	---
BERYLLIUM	7440417	12.20	0.28	---	<1	<1	<1	<1	---	---	12.20	0.28	No
CADMIUM, TOTAL	7440439	0.99	0.17600	---	<0.1	<0.1	<0.1	<0.1	0.06	0.06	0.99	0.18	No
CHROMIUM III, TOTAL	16065831	1064.53	50.88	---	<1	<1	<1	<1	---	---	1064.53	50.88	No
CHROMIUM VI, TOTAL	18540299	26.51	18.61	---	<1	<1	<1	<1	---	---	26.51	18.61	No
COPPER, TOTAL	7440508	7.10	5.27	---	18	13	23	8.7	23.6	7.9	7.10	5.27	Yes
CYANIDE	57125	35.80	8.46	---	<10	<10	<10	<10	8	8.5	35.80	8.46	No
LEAD, TOTAL	7439921	27.48	1.07	---	2	0.67	<2	<1	2	0.17	27.48	1.07	Yes
MERCURY, TOTAL	7439976	2.68	0.14	---	<0.2	<0.2	<0.2	<0.2	---	---	2.68	0.14	No
NICKEL, TOTAL	7440020	267.90	29.79	---	4	2.67	4	2.8	14	4.16	267.90	29.79	No
SELENIUM, TOTAL	7782492	32.54	8.14	---	<5	<5	<10	<10	---	---	32.54	8.14	No
SILVER, TOTAL	7440224	0.79	0.79	---	<0.1	<0.1	<0.2	<0.2	---	---	0.79	0.79	No
THALLIUM	7440280	74.85	0.38	---	<1	<1	<2	<2	---	---	74.85	0.38	No
ZINC, TOTAL	7440666	68.31	68.31	---	46	42.67	51	34.5	75	39.4	68.31	68.31	Yes
VOLATILE ORGANIC COMPOUNDS													
ACROLEIN	107028	4.72	0.09763	---	---	---	<10	<10	---	---	4.72	0.098	No
ACRYLONITRILE	107131	615.09	13.67	---	---	---	<5	<5	---	---	615.09	13.67	No
BENZENE	71432	431.22	9.60	---	---	---	<0.25	<0.25	---	---	431.22	9.60	No
BROMOFORM	75252	2383.89	53.70	---	---	---	<0.25	<0.25	---	---	2383.89	53.70	No
CARBON TETRACHLORIDE	56235	2221.17	48.82	---	---	---	<0.25	<0.25	---	---	2221.17	48.82	No
CHLOROBENZENE	108907	1293.65	29.29	---	---	---	<0.25	<0.25	---	---	1293.65	29.29	No
CHLORODIBROMOMETHANE	124481	No Criteria	1499.78	---	---	---	<0.25	<0.25	---	---	No Criteria	1499.78	No
CHLOROFORM	67663	2351.34	52.07	---	1.7	1.83	4.8	3.45	---	---	2351.34	52.07	No
DICHLOROBROMOMETHANE	75274	No Criteria	1961.24	---	0.34	0.32	<0.25	<0.25	---	---	No Criteria	1961.24	No
1,2DICHLOROETHANE	107062	9600.65	213.17	---	---	---	<0.25	<0.25	---	---	9600.65	213.17	No
1,1DICHLOROETHYLENE	75354	943.79	21.15	---	---	---	<0.25	<0.25	---	---	943.79	21.15	No
1,2DICHLOROPROPANE	78875	4271.47	94.38	---	---	---	<0.25	<0.25	---	---	4271.47	94.38	No
1,3DICHLOROPROPYLENE	542756	No Criteria	16.80	---	---	---	<0.25	<0.25	---	---	No Criteria	16.80	No
ETHYLBENZENE	100414	2603.57	58.58	---	---	---	<0.25	<0.25	---	---	2603.57	58.58	No
BROMOMETHANE (methyl bromide)	74839	No Criteria	1200.00	---	---	---	<0.25	<0.25	---	---	No Criteria	1200.00	No
CHLOROMETHANE (methyl chloride)	74873	No Criteria	0.00000	---	---	---	<0.25	<0.25	---	---	No Criteria	0.00000	No
METHYLENE CHLORIDE	75092	15702.75	348.23	---	---	---	<0.25	<0.25	---	---	15702.75	348.23	No
1,1,2,2TETRACHLOROETHANE	79345	758.29	16.27	---	---	---	<0.25	<0.25	---	---	758.29	16.27	No
FLUORENE	86737	No Criteria	4240.00	---	---	---	<5	<5	---	---	No Criteria	4240.00	No
HEXACHLOROBENZENE	118741	No Criteria	0.03346	---	---	---	<5	<5	---	---	No Criteria	0.033	No
HEXACHLOROBUTADIENE	87683	No Criteria	2076.61	---	---	---	<5	<5	---	---	No Criteria	2076.61	No
HEXACHLOROCYCLOPENTADIENE	77474	0.57	0.01302	---	---	---	<5	<5	---	---	0.57	0.013	No
HEXACHLOROETHANE	67721	79.73	1.79	---	---	---	<5	<5	---	---	79.73	1.79	No
ISOPHORONE	78591	9519.28	211.54	---	---	---	<5	<5	---	---	9519.28	211.54	No
NAPHTHALENE	91203	187.13	4.23	---	---	---	<5	<5	---	---	187.13	4.23	No
NITROBENZENE	98953	2196.76	48.82	---	---	---	<5	<5	---	---	2196.76	48.82	No
N-NITROSODIMETHYLAMINE	62759	No Criteria	346.10	---	---	---	<5	<5	---	---	No Criteria	346.10	No
N-NITROSODI-N-PROPYLAMINE	621647	No Criteria	58.84	---	---	---	<5	<5	---	---	No Criteria	58.84	No
N-NITROSODIPHENYLAMINE	86306	476.78	10.58	---	---	---	<5	<5	---	---	476.78	10.58	No
PYRENE	129000	No Criteria	3200.00	---	---	---	<5	<5	---	---	No Criteria	3200.00	No
1,2,4trichlorobenzene	120821	122.04	2.77	---	---	---	<5	<5	---	---	122.04	2.77	No
PESTICIDES/PCBs													
ALDRIN	309002	4.88	0.00577	---	---	---	---	---	---	---	4.88	0.0058	---
Alpha BHC	319846	No Criteria	0.57	---	---	---	---	---	---	---	No Criteria	0.57	---
Beta BHC	319857	No Criteria	1.96	---	---	---	---	---	---	---	No Criteria	1.96	---
Gamma BHC (Lindane)	58899	1.55	1.55	---	---	---	---	---	---	---	1.55	1.55	---
CHLORDANE	57749	3.91	0.00700	---	---	---	---	---	---	---	3.91	0.00700	---
4,4DDT	50293	1.79	0.00163	---	---	---	---	---	---	---	1.79	0.0016	---
4,4DDE	72559	No Criteria	0.02538	---	---	---	---	---	---	---	No Criteria	0.025	---
4,4DDD	72548	No Criteria	0.03576	---	---	---	---	---	---	---	No Criteria	0.036	---
DIELDRIN	60571	0.39	0.00623	---	---	---	---	---	---	---	0.39	0.0062	---
ENDOSULFAN (alpha)	959988	0.36	0.09112	---	---	---	---	---	---	---	0.36	0.091	---
ENDOSULFAN (beta)	33213659	0.36	0.09112	---	---	---	---	---	---	---	0.36	0.091	---
ENDOSULFAN (sulfate)	1031078	No Criteria	71.20	---	---	---	---	---	---	---	No Criteria	71.20	---

Facility Name: ***Burrillville WWTF***

RIPDES Permit #: ***RI0100455***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Priority Pollutant Scan Data (ug/l) 2013-2018		Permit Application Data (ug/L) 12/8/2016		Ave. DMR Data Effluent (ug/L) 10/13-9/18		Potential WQ Based Permit Limits (ug/L)		Reasonable Potential
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	(Yes/No)
ENDRIN	72208	0.14	0.05	---	---	---	---	---	---	---	0.14	0.05	No
ENDRIN ALDEHYDE	7421934	No Criteria	0.24	---	---	---	---	---	---	---	No Criteria	0.24	---
HEPTACHLOR	76448	0.85	0.01	---	---	---	---	---	---	---	0.85	0.01	No
HEPTACHLOR EPOXIDE	1024573	0.85	0.00	---	---	---	---	---	---	---	0.85	0.0045	---
POLYCHLORINATED BIPHENYLS3	1336363	No Criteria	0.01	---	---	---	---	---	---	---	No Criteria	0.01	---
2,3,7,8TCDD (Dioxin)	1746016	No Criteria	0.00	---	---	---	---	---	---	---	No Criteria	0.0000008	---
TOXAPHENE	8001352	1.19	0.00	---	---	---	---	---	---	---	1.19	0.00033	---
TRIBUTYLTIN		0.75	0.12	---	---	---	---	---	---	---	0.75	0.12	---
TETRACHLOROETHYLENE	127184	380.53	8.62	---	---	---	<0.25	<0.25	---	---	380.53	8.62	No
TOLUENE	108883	1033.29	22.78	---	---	---	<0.25	<0.25	---	---	1033.29	22.78	No
1,2TRANSDICHLOROETHYLENE	156605	No Criteria	8000.00	---	---	---	<0.25	<0.25	---	---	No Criteria	8000	No
1,1,1TRICHLOROETHANE	71556	No Criteria	0.00	---	---	---	<0.25	<0.25	---	---	No Criteria	0.00000000	No
1,1,2TRICHLOROETHANE	79005	1464.51	32.54	---	---	---	<0.25	<0.25	---	---	1464.51	32.54	No
TRICHLOROETHYLENE	79016	3173.09	69.97	---	---	---	<0.25	<0.25	---	---	3173.09	69.97	No
VINYL CHLORIDE	75014	No Criteria	27.69	---	---	---	<0.25	<0.25	---	---	No Criteria	27.69	No
ACID ORGANIC COMPOUNDS													
2CHLOROPHENOL	95578	209.91	4.72	---	---	---	<5	<5	---	---	209.91	4.72	No
2,4DICHLOROPHENOL	120832	164.35	3.58	---	---	---	<5	<5	---	---	164.35	3.53	No
2,4DIMETHYLPHENOL	105679	172.49	3.91	---	---	---	<5	<5	---	---	172.49	3.91	No
4,6DINITRO2METHYL PHENOL	534521	No Criteria	224.00	---	---	---	---	---	---	---	No Criteria	224	---
2,4DINITROPHENOL	51285	50.44	1.12	---	---	---	<5	<5	---	---	50.44	1.12	No
4NITROPHENOL	88755	No Criteria	0.00	---	---	---	<5	<5	---	---	No Criteria	0.00000000	No
PENTACHLOROPHENOL	87865	0.09	0.07	---	---	---	<5	<5	---	---	0.09	0.07	No
PHENOL	108952	408.43	9.11	---	---	---	<5	<5	---	---	408.43	9.11	No
2,4,6TRICHLOROPHENOL	88062	26.04	0.59	---	---	---	<5	<5	---	---	26.04	0.59	No
BASE NEUTRAL COMPOUNDS													
ACENAPHTHENE	83329	138.31	3.09	---	---	---	<5	<5	---	---	138.31	3.09	No
ANTHRACENE	120127	No Criteria	32000.00	---	---	---	<5	<5	---	---	No Criteria	32000	No
BENZIDINE	92875	No Criteria	0.02	---	---	---	<5	<5	---	---	No Criteria	0.02	No
PAHs		No Criteria	2.08	---	---	---	---	---	---	---	No Criteria	2.08	---
BIS(2CHLOROETHYL)ETHER	111444	No Criteria	61.14	---	---	---	<5	<5	---	---	No Criteria	61.14	No
BIS(2CHLOROISOPROPYL)ETHER	108601	No Criteria	52000.00	---	---	---	<5	<5	---	---	No Criteria	52000	No
BIS(2ETHYLHEXYL)PHTHALATE	117817	903.11	19.53	---	---	---	<5	<5	---	---	903.11	19.53	No
BUTYL BENZYL PHTHALATE	85687	138.31	3.09	---	---	---	<5	<5	---	---	138.31	3.09	No
2CHLORONAPHTHALENE	91587	No Criteria	1280.00	---	---	---	<5	<5	---	---	No Criteria	1280	No
1,2DICHLOROBENZENE	95501	128.55	2.93	---	---	---	<5	<5	---	---	128.55	2.93	No
1,3DICHLOROBENZENE	541731	634.62	14.16	---	---	---	<5	<5	---	---	634.62	14.16	No
1,4DICHLOROBENZENE	106467	91.12	1.95	---	---	---	<5	<5	---	---	91.12	1.95	No
3,3DICHLOROBENZIDENE	91941	No Criteria	3.23	---	---	---	<20	<20	---	---	No Criteria	3.23	No
DIETHYL PHTHALATE	84662	4238.93	94.38	---	---	---	<5	<5	---	---	4238.93	94.38	No
DIMETHYL PHTHALATE	131113	2684.93	60.21	---	---	---	<5	<5	---	---	2684.93	60.21	No
DI-n-BUTYL PHTHALATE	84742	No Criteria	3600.00	---	---	---	<5	<5	---	---	No Criteria	3600	No
2,4DINITROTOLUENE	121142	2522.20	55.33	---	---	---	<5	<5	---	---	2522.20	55.33	No
1,2DIPHENYLHYDRAZINE	122667	22.78	0.50	---	---	---	<5	<5	---	---	22.78	0.50	No
FLUORANTHENE	206440	323.82	7.16	---	---	---	<5	<5	---	---	323.82	7.16	No
NON PRIORITY POLLUTANTS:													
OTHER SUBSTANCES													
ALUMINUM, TOTAL	7429905	1220.42	141.57	---	---	---	---	---	149	38.2	1220.42	141.57	No
AMMONIA (as N), WINTER (NOV-APR)	7664417	103381.55	20041.74	---	---	---	13200	1600	22600	4848	103381.55	20041.74	Yes
AMMONIA (as N), SUMMER (MAY-OCT)	7664417	42633.38	5076.95	---	---	---	22800	3710	22800	4848	42633.38	5076.95	Yes
4BROMOPHENYL PHENYL ETHER		29.29	0.65	---	---	---	<10.0	<10.0	---	---	29.29	0.65	No
CHLORIDE	16887006	1399416.22	374262.48	---	---	---	---	---	---	---	1399416	374262	---
CHLORINE	7782505	38.65	22.37	---	---	---	10	10	10	10	38.65	22.37	Yes
4CHLORO2METHYLPHENOL		24.41	0.52	---	---	---	---	---	---	---	24.41	0.52	---
1CHLORONAPHTHALENE		130.18	2.93	---	---	---	---	---	---	---	130.18	2.93	---
4CHLOROPHENOL	106489	312.43	7.00	---	---	---	---	---	---	---	312.43	7.00	---
2,4DICHLORO6METHYLPHENOL		35.80	0.78	---	---	---	---	---	---	---	35.80	0.78	---
1,1DICHLOROPROPANE		1871.31	42.31	---	---	---	---	---	---	---	1871.31	42.31	---
1,3DICHLOROPROPANE	142289	493.05	10.90	---	---	---	---	---	---	---	493.05	10.90	---
2,3DINITROTOLUENE		27.66	0.60	---	---	---	---	---	---	---	27.66	0.60	---
2,4DINITRO6METHYL PHENOL		19.53	0.42	---	---	---	---	---	---	---	19.530	0.42	---
IRON	7439896	No Criteria	1627.23	---	---	---	---	---	---	---	No Criteria	1627.23	---
pentachlorobenzene	608935	21.15	0.46	---	---	---	---	---	---	---	21.15	0.46	---

Facility Name: ***Burrillville WWTF***

RIPDES Permit #: ***RI0100455***

Outfall #: ***001A***

NOTE: METALS LIMITS ARE TOTAL METALS

Parameter	CAS #	Concentration Limits (ug/L) Based on WQ Criteria		Antideg. Limits (ug/L)	Priority Pollutant Scan Data (ug/l) 2013-2018		Permit Application Data (ug/L) 12/8/2016		Ave. DMR Data Effluent (ug/L) 10/13-9/18		Potential WQ Based Permit Limits (ug/L)		Reasonable Potential (Yes/No)
		Daily Max	Monthly Ave	Monthly Ave	Max	Ave	Max	Ave	Daily Max	Monthly Ave	Daily Max	Monthly Ave	
PENTACHLOROETHANE		589.06	13.02	---	---	---	---	---	---	---	589.06	13.02	---
1,2,3,5tetrachlorobenzene		522.34	11.55	---	---	---	---	---	---	---	522.34	11.55	---
1,1,1,2TETRACHLOROETHANE	630208	1594.68	35.80	---	---	---	---	---	---	---	1594.68	35.80	---
2,3,4,6TETRACHLOROPHENOL	58902	11.39	0.26	---	---	---	---	---	---	---	11.39	0.26	---
2,3,5,6TETRACHLOROPHENOL		13.83	0.31	---	---	---	---	---	---	---	13.83	0.31	---
2,4,5TRICHLOROPHENOL	95954	37.43	0.83	---	---	---	---	---	---	---	37.43	0.83	---
2,4,6TRINITROPHENOL	88062	6891.31	152.96	---	---	---	---	---	---	---	6891.31	152.96	---
XYLENE	1330207	216.42	4.85	---	---	---	---	---	---	---	216.42	4.85	---
NON WQ BASED PARAMETERS													
BOD5	---	No Criteria	No Criteria	---	---	---	18000	3690	12600	2975	---	---	---
TSS	---	No Criteria	No Criteria	---	---	---	16000	4670	13200	3803	---	---	---
pH (min, max)	---	No Criteria	No Criteria	---	---	---	6.02	7.36	5.4	7.36	---	---	---
Flow (mgd)	---	No Criteria	No Criteria	---	---	---	2.26	0.82	2.2	0.86	---	---	---
Fecal Coliform (MPN/100ml)	---	No Criteria	No Criteria	---	---	---	78	5.1	15	3	---	---	---
TKN	---	No Criteria	No Criteria	---	---	---	24400	5790	24400	6700	---	---	---
Nitrate + Nitrite	---	No Criteria	No Criteria	---	---	---	14100	4990	---	---	---	---	---
Nitrogen, Nitrate		No Criteria	No Criteria	---	---	---	---	---	14080	4810	---	---	---
Nitrogen, Nitrite		No Criteria	No Criteria	---	---	---	---	---	1370	254	---	---	---
Nitrogen, Total		No Criteria	No Criteria	---	---	---	---	---	30400	11568	---	---	---
Phosphorus	---	No Criteria	No Criteria	---	---	---	1400	540	1800	413	---	---	---
Hardness (as CaCO3)	---	No Criteria	No Criteria	---	---	---	53.8	43.4	---	---	---	---	---
Chloroethane	---	No Criteria	No Criteria	---	---	---	<0.25	<0.25	---	---	---	---	---
2-Chloro-ethylvinyl ether	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
1,1-Dichloroethane	---	No Criteria	No Criteria	---	---	---	<0.25	<0.25	---	---	---	---	---
p-chloro-m-cresol	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
4,6-Dinitro-o-cresol	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
2-Nitrophenol	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Acenaphthylene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Benzo(a)anthracene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Benzo(a)pyrene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
3,4 Benzo-Fluoranthene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Benzo(ghi)Perylene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Benzo(k)Fluoranthene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Bis (2-Chloroethoxy) Methane	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
4-Chlorophenyl Phenyl Ether	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Chrysene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Di-n-Octyl Phthalate	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Dibenzo(a,h)anthracene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
2,6-Dinitrotoluene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Indeno(1,2,3-cd) pyrene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---
Phenanthrene	---	No Criteria	No Criteria	---	---	---	<5	<5	---	---	---	---	---

ATTACHMENT F

WET Limit Calculations

Reasonable potential for WET limits has been previously established for Burrillville's WWTF. To calculate WET limits, the following steps are taken:

1.a The in-stream waste concentration (IWC) is calculated.a

$$IWC = \frac{Facility\ Flow\ (cfs)}{Critical\ Flow\ 7Q10\ (cfs) + Facility\ Flow\ (cfs)} \cdot 100\%$$

$$IWC = \frac{2.321\ cfs}{2.4\ cfs + 2.321\ cfs} \cdot 100\%a$$

$$\boldsymbol{IWC = 49\%}$$

2.a The Acute Wasteload Allocation (WLA_a) is calculated.a

$$WLA_a = \frac{(Facility\ Flow + Critical\ Flow) \cdot Acute\ Criteria - Critical\ Flow \cdot Background\ Acute\ Toxicity}{Facility\ Flow}$$

$$WLA_a = \frac{(2.321\ cfs + 2.4\ cfs) \cdot 0.3\ TU_a - 2.4\ cfs \cdot 0\ TU_a}{2.321\ cfs}$$

The acute criteria is defined as 0.3 Toxicity Units Acute (TU_a) (See EPA's *Technical Support Document (TSD) For Water Quality-based Toxics Control*, March 1991). A PDF of this document can be found at the following web address: https://www3.epa.gov/npdes/pubs/owm0264.pdf. The background acute toxicity for this facility is assumed to be 0 TU_a.

$$\boldsymbol{WLA_a = 0.610\ TU_a}$$

3.a The Chronic Wasteload Allocation (WLA_c) is calculated.a

$$WLA_c = \frac{(Facility\ Flow + Critical\ Flow) \cdot Chronic\ Criteria - Critical\ Flow \cdot Background\ Chronic\ Toxicity}{Facility\ Flow}$$

$$WLA_c = \frac{(2.321\ cfs + 2.4\ cfs) \cdot 1.0\ TU_c - 2.4\ cfs \cdot 0\ TU_c}{2.321\ cfs}$$

The chronic criteria is defined as 1.0 Toxicity Units Chronic (TU_c) (See EPA's TSD). The background chronic toxicity for this facility is assumed to be 0 TU_c.

$$\boldsymbol{WLA_c = 2.034\ TU_c}$$

4.a The acute and chronic wasteload allocations are compared by multiplying the WLA_a by the Acute toa Chronic Ratio (ACR) multiplier.a

$$WLA_{a,c} = WLA_a \cdot ACR$$

The ACR is assumed to be 10 (See EPA's TSD).

$$WLA_{a,c} = 0.610\ TU_a \cdot 10$$

$$\boldsymbol{WLA_{a,c} = 6.10\ TU_{a,c}}$$

5.a The Acute Long-Term Average ($LTA_{a,c}$) is calculated using the acute-to-chronic WLA.a

$$LTA_{a,c} = WLA_{a,c} \cdot WLA_{a,c}\ Multiplier$$

The $WLA_{a,c}$ multiplier is found in Table 5-1, Acute, from the TSD, using the 99th percentile and a Coefficient of Variation (CV) calculated based on the facility's reported WET data from December 2013 to September 2018. Calculating a CV requires at least 10 samples, which Burrillville WWTF

has. The CV is calculated as the standard deviation divided by the mean. Using the data from December 2013 to September 2018, the CV for WET data reported by Burrillville's WWTF is 0.27. The data used to calculate the mean and standard deviation is provided in the table below.

Ceriodaphnia dubia

CHRONIC - Method 1002.0		
Date	NOEC	TUc*
12/31/2013	100	1
3/31/2014	100	1
6/30/2014	100	1
9/30/2014	100	1
12/31/2014	100	1
3/31/2015	50	2
6/30/2015	100	1
9/30/2015	100	1
12/31/2015	100	1
3/31/2016	100	1
6/30/2016	100	1
9/30/2016	100	1
12/31/2016	100	1
3/31/2017	100	1
6/30/2017	100	1
9/30/2017	100	1
12/31/2017	100	1
3/31/2018	50	2
6/30/2018	100	1
9/30/2018	100	1
		Average TUc= 1.1
		Standard Deviation = 0.3
		Coeffiecient of Variation = 0.3/1.1 = 0.27

The $WLA_{a,c}$ multiplier (found in Table 5-1 from the TSD using the 99th percentile) and the calculated CV of 0.27 is interpolated in the table and found to be 0.562. The Acute Long-Term Average is then calculated:

$$LTA_{a,c} = 6.10\, TU_{a,c} \cdot 0.562$$

$$\boldsymbol{LTA_{a,c} = 3.428\ TU_{a,c}}$$

6.e The Chronic Long-Term Average (LTA_c) is calculated using the chronic WLA.e

$$LTA_c = WLA_c \cdot WLA_c\ Multiplier$$

The WLA_c multiplier is found in Table 5-1, Chronic, from the TSD, using the 99th percentile and the same CV as calculated in Step 5. Interpolating from the table, the chronic WLA Multiplier is found to be 0.740.

$$LTA_c = 2.034\, TU_c \cdot 0.740$$

$$\boldsymbol{LTA_c = 1.505\, TU_c}$$

7.e The limiting LTA is used to calculate a Maximum Daily Limit (MDL), which is the LC_{50}.e

$$MDL = Limiting\ LTA \cdot LTA\ Multiplier\ for\ MDL$$

Comparing the $LTA_{a,c}$ from Step 5 to the LTA_c from Step 6, it can be seen that then LTA_c is the smaller value, and thus the more limiting LTA. The LTA multiplier for MDLs is found in Table 5-2 of the TSD, for the 99th percentile and with the CV calculated in Step 5. Interpolating from the table, the LTA multiplier for MDL is found to be 1.795. The MDL is then calculated:

$$MDL = 1.505\ TU_c \cdot 1.795$$

$$MDL = 2.702\ TU_c$$

The MDL represents the value used for an acute limit, so to convert from TU_c to TU_a the MDL value calculated above is divided by the ACR, which is 10.

$$MDL = \frac{2.702\ TU_c}{10}$$

$$MDL = 0.270\ TU_a$$

The LC_{50} limit is presented as a percent of effluent, and this is calculated by dividing one (1) by the TU_a.

$$LC_{50} = \frac{1}{0.270\ TU_a} \cdot 100\%$$

$$LC_{50} = 370\%$$

LC_{50} is defined as the concentration of wastewater that causes mortality to 50% of the test organisms. Since the concentration of wastewater in testing cannot be greater than 100%, the LC_{50} limit is then set to greater than or equal to 100%.

$$\boldsymbol{LC_{50} \geq 100\%}$$

8.a The limiting LTA is used to calculate an Average Monthly Limit (AML), which is the C-NOEC.a

$$AML = Limiting\ LTA \cdot LTA\ Multiplier\ for\ AML$$

Comparing the $LTA_{a,c}$ from Step 5 to the LTA_c from Step 6, it can be seen that then LTA_c is the smaller value, and thus the more limiting LTA. The LTA multiplier for AMLs is found in Table 5-2 of the TSD, for the 95th percentile, n=4 (for quarterly sampling) and with the CV calculated in Step 5. Interpolating from this table, the LTA Multiplier for AML is found to be 1.233. The AML is then calculated:

$$AML = 1.505\ TU_c \cdot 1.233$$

$$AML = 1.856\ TU_c$$

The AML represents the value used for a chronic limit. Since the units are already in chronic units, the C-NOEC can be calculated by dividing one (1) by the TU_c. The value is rounded to the nearest 5%.a

$$C - NOEC = \frac{1}{1.856\ TU_c} \cdot 100\%$$

$$\boldsymbol{C - NOEC = 55\%a}$$

C-NOEC is defined as the highest concentration of toxicant or effluent at which no adverse effects area observed. When chronic WET testing is performed, the limit calculated in Step 8 must be included ina the dilution series, as described in Part I.B.6 of the permit.a

ATTACHMENT G

Phosphorous Limit Calculations

Attachment G
Burrillville WWTF Phosphorus Analysis

Determine if the Upper Slatersville Reservoir is a "Lake, Pond, Kettlehole, or Reservoir"
(i.e., Retention Time at 7Q10 is 14 Days or Greater)

Surface Area of Reservoir:	138 acres	=	6011280 ft^2	*(from DEM Fisheries Investigations Handbook)*
Average Depth of Reservoir:	7.5 ft			*(from DEM Fisheries Investigations Handbook)*
Retention Time at 7Q10:	73.51 days			*(calculated)*

Retention time is greater than 14 days, therefore, it is a "reservoir".

Data From USGS Station at Forestdale
(downstream of Slatersville Reservoirs and Forestdale Pond)

Drainage Area:	91.2 mi^2	*(from RIPDES 2018 7Q10 Statistics Table)*
7Q10 @ Station:	10.7 cfs	*(from RIPDES 2018 7Q10 Statistics Table)*

WWTF Data

Average WWTF Flow:	0.86 MGD	=	1.3244 cfs	*(from Attachment A of 2019 RIPDES Permit)*
Design WWTF Flow:	1.5 MGD	=	2.31 cfs	*(from RIPDES Permit)*
Drainage Area @ WWTF:	46.9 mi^2			*(from 2012 Permit Development Document)*
7Q10 @ WWTF:	2.4 cfs			*(calculated)*

Flow into Slatersville Reservoirs

% of Drainage Area Between USGS station and WWTF:	50	*(estimated based on river mile)*
Drainage Area @ Reservoir:	69.05 mi^2	*(calculated)*
7Q10 @ Reservoir:	7.0985 cfs	*(calculated)*

TP Limit for WWTF to Protect Reservoir Influent Criteria

TP Criteria @ Reservoir Influent:	25 ug/l	=	0.025 mg/l	*(from RI Water Quality Regs)*
Background TP Concentration:	0.04 ug/l	=	0.00004 mg/l	*(assumed)*
% Allocation of Criteria:	90 %			*(RIPDES Policy w/ Background Data)*
Effluent Dillution Factor @ Reservoir Influent:	4.073			*(calculated)*
Limit to Protect Reservoir:	91.519 ug/l	=	0.09152 mg/l	*(calculated)*
Resulting Instream Concentration End of Pipe:	44.905 ug/l	=	0.04491 mg/l	*(calculated)*

PART II
TABLE OF CONTENTS

GENERAL REQUIREMENTS

DEFINITIONS

GENERAL REQUIREMENTS

(a)o Duty to Complyo

The permittee must comply with all conditions of this permit. Any permit noncomplianceo constitutes a violation of Chapter 46-12 of the Rhode Island General Laws and the Clean Watero Act (CWA) and is grounds for enforcement action; for permit termination, revocation ando reissuance, or modification; or for denial of a permit renewal application.o

(1)o The permittee shall comply with effluent standards or prohibitions established undero Section 307(a) of the CWA for toxic pollutants within the time provided in the regulationso that establish these standards or prohibitions, even if the permit has not yet been modifiedo to incorporate the requirement.o

(2)o The CWA provides that any person who violates a permit condition implementingo Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA is subject to a civil penalty noto to exceed $10,000 per day of such violation. Any person who willfully or negligentlyo violates permit conditions implementing Sections 301, 302, 306, 307 or 308 of the Act iso subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or byo imprisonment of not more than 1 year, or both.o

(3)o Chapter 46-12 of the Rhode Island General Laws provides that any person who violates ao permit condition is subject to a civil penalty of not more than $5,000 per day of sucho violation. Any person who willfully or negligently violates a permit condition is subjecto to a criminal penalty of not more than $10,000 per day of such violation ando imprisonment for not more than 30 days, or both. Any person who knowingly makes anyo false statement in connection with the permit is subject to a criminal penalty of not moreo than $5,000 for each instance of violation or by imprisonment for not more than 30 days,o or both.o

(b)o Duty to Reapplyo

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

(c)o Need to Halt or Reduce Not a Defenseo

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

(d)o Duty to Mitigateo

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation ofo this permit which has a reasonable likelihood of adversely affecting human health or theo environment.

(e)o Proper Operation and Maintenanceo

The permittee shall at all times properly operate and maintain all facilities and systems ofo treatment and control (and related appurtenances) which are installed or used by the permittee too achieve compliance with the conditions of this permit. Proper operation and maintenance alsoo includes adequate laboratory controls and appropriate quality assurance procedures, and, whereo applicable, compliance with DEM "Rules and Regulations Pertaining to the Operation ando Maintenance of Wastewater Treatment Facilities" and "Rules and Regulations Pertaining to theo Disposal and Utilization of Wastewater Treatment Facility Sludge." This provision requires theo operation of back-up or auxiliary facilities or similar systems only when the operation iso necessary to achieve compliance with the conditions of the permit.o

(f)o Permit Actionso

This permit may be modified, revoked and reissued, or terminated for cause, including but noto limited to: (1) Violation of any terms or conditions of this permit; (2) Obtaining this permit byo misrepresentation or failure to disclose all relevant facts; or (3) A change in any conditions thato requires either a temporary or permanent reduction or elimination of the authorized discharge.o The filing of a request by the permittee for a permit modification, revocation and reissuance, oro termination or a notification of planned changes or anticipated noncompliance, does not stay anyo permit condition.o

(g)o Property Rightso

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

(h)o Duty to Provide Informationo

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

(i)o Inspection and Entryo

The permittee shall allow the Director, or an authorized representative, upon the presentation ofo credentials and other documents as may be required by law, to:o

(1)o Enter upon the permittee's premises where a regulated facility or activity is located oro conducted, or where records must be kept under the conditions of this permit;o

(2)o Have access to and copy, at reasonable times any records that must be kept under theo conditions of this permit;o

(3)o Inspect at reasonable times any facilities, equipment (including monitoring and controlo equipment), practices or operations regulated or required under this permit; ando

(4)e Sample or monitor any substances or parameters at any location, at reasonable times, fore the purposes of assuring permit compliance or as otherwise authorized by the CWA ore Rhode Island law.e

(j) Monitoring and Records

(1)e Samples and measurements taken for the purpose of monitoring shall be representative ofe the volume and nature of the discharge over the sampling and reporting period.e

(2)e The permittee shall retain records of all monitoring information, including all calibratione and maintenance records and all original strip chart recordings from continuouse monitoring instrumentation, copies of all reports required by this permit, and records ofe all data used to complete the application for this permit, for a period of at least 5 yearse from the date of the sample, measurement, report or application. This period may bee extended by request of the Director at any time.e

(3)e Records of monitoring information shall include:e

(i)e The date, exact place, and time of sampling or measurements;e

(ii)e The individual(s) who performed the sampling or measurements;e

(iii)e The date(s) analyses were performed;e

(iv)e The individual(s) who performed the analyses;e

(v)e The analytical techniques or methods used; ande

(vi)e The results of such analyses.e

(4)e Monitoring must be conducted according to test procedures approved under 40 CFR Parte 136 and applicable Rhode Island regulations, unless other test procedures have beene specified in this permit.e

(5)e The CWA provides that any person who falsifies, tampers with, or knowingly renderse inaccurate, any monitoring device or method required to be maintained under this permite shall upon conviction, be punished by a fine of not more than $10,000 per violation or by imprisonment for not more than 6 months per violation or by both. Chapter 46-12 of thee Rhode Island General Laws also provides that such acts are subject to a fine of not moree than $5,000 per violation, or by imprisonment for not more than 30 days per violation, ore by both.e

(6)e Monitoring results must be reported on a Discharge Monitoring Report (DMR).e

(7)e If the permittee monitors any pollutant more frequently than required by the permit, usinge test procedures approved under 40 CFR Part 136, applicable State regulations, or ase specified in the permit, the results of this monitoring shall be included in the calculatione and reporting of the data submitted in the DMR.e

(k)n Signatory Requirementn

All applications, reports, or information submitted to the Director shall be signed and certified inn accordance with 250-RICR-150-10-1.12 of the Rhode Island Pollutant Discharge Eliminationn System (RIPDES) Regulations. Rhode Island General Laws, Chapter 46-12 provides that anyn person who knowingly makes any false statement, representation, or certification in any recordn or other document submitted or required to be maintained under this permit, includingn monitoring reports or reports of compliance or noncompliance shall, upon conviction, ben punished by a fine of not more than $5,000 per violation, or by imprisonment for not more thann 30 days per violation, or by both.n

(l)n Reporting Requirementsn

(1)n Planned changes. The permittee shall give notice to the Director as soon as possible ofn any planned physical alterations or additions to the permitted facility.n

(2)n Anticipated noncompliance. The permittee shall give advance notice to the Director ofn any planned changes in the permitted facility or activity which may result inn noncompliance with the permit requirements.n

(3)n Transfers. This permit is not transferable to any person except after written notice to then Director. The Director may require modification or revocation and reissuance of then permit to change the name of the permittee and incorporate such other requirements asn may be necessary under State and Federal law.n

(4)n Monitoring reports. Monitoring results shall be reported at the intervals specifiedn elsewhere in this permit.n

(5)n Twenty-four hour reporting. The permittee shall immediately report any noncompliancen which may endanger health or the environment by calling DEM at (401) 222-4700 orn (401)n222-3070 at night.n

A written submission shall also be provided within five (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.

The following information must be reported immediately:

(i)n Any unanticipated bypass which causes a violation of any effluent limitation in then permit; or

(ii)n Any upset which causes a violation of any effluent limitation in the permit; orn

(iii)n Any violation of a maximum daily discharge limitation for any of the pollutantsn specifically listed by the Director in the permit.n

The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(6)a Other noncompliance. The permittee shall report all instances of noncompliance nota reported under paragraphs (1), (2), and (5), of this section, at the time monitoring reportsa are submitted. The reports shall contain the information required in paragraph (l)(5) ofa the section.a

(7)a Other information. Where the permittee becomes aware that it failed to submit anya relevant facts in a permit application, or submitted incorrect information in a permita application or in any report to the Director, they shall promptly submit such facts ora information.a

(m)a Bypassa

"Bypass" means the intentional diversion of waste streams from any portion of a treatmenta facility.a

(1)a Bypass not exceeding limitations. The permittee may allow any bypass to occur whicha does not cause effluent limitations to be exceeded, but only if it also is for essentiala maintenance to assure efficient operation. These bypasses are not subject to thea provisions of paragraphs (2) and (3) of this section.a

(2)a Notice.a

(i)a Anticipated bypass. If the permittee knows in advance of the need for a bypass, ita shall submit prior notice, if possible at least ten (10) days before the date of thea bypass.a

(ii)a Unanticipated bypass. The permittee shall submit notice of an unanticipateda bypass as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations.a

(3)a Prohibition of bypass.a

(i)a Bypass is prohibited, and the Director may take enforcement action against aa permittee for bypass, unless:a

(A)a Bypass was unavoidable to prevent loss of life, personal injury, or severea property damage, where "severe property damage" means substantiala physical damage to property, damage to the treatment facilities which causesa them to become inoperable, or substantial and permanent loss of naturala resources which can reasonably be expected to occur in the absence of aa bypass. Severe property damage does not mean economic loss caused bya delays in production;a

(B)a There were no feasible alternatives to the bypass, such as the use of auxiliarya treatment facilities, retention of untreated wastes, or maintenance duringa normal periods of equipment downtime. This condition is not satisfied ifa adequate backup equipment should have been installed in the exercise ofa reasonable engineering judgment to prevent a bypass which occurred duringa normal periods of equipment downtime or preventive maintenance; anda

(C)a The permittee submitted notices as required under paragraph (2) of thisa section.

(ii)a The Director may approve an anticipated bypass, after considering its adversea effects, if the Director determines that it will meet the three conditions listed abovea in paragraph (3)(i) of this section.a

(n)a Upseta

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

(1)a Effect of an upset. An upset constitutes an affirmative defense to an action brought fora noncompliance with such technology-based permit effluent limitations if the requirementsa of paragraph (2) of this section are met. No determination made during administrativea review of claims that noncompliance was caused by upset, and before an action fora noncompliance, is final administrative action subject to judicial review.a

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

(a)a An upset occurred and that the permittee can identify the cause(s) of the upset;a

(b)a The permitted facility was at the time being properly operated;a

(c)a The permittee submitted notice of the upset as required in 250-RICR-150-10-1.14(R) of the RIPDES Regulations; anda

(d)a The permittee complied with any remedial measures required under 250-RICR-150-10-1.14(E) of the RIPDES Regulations.a

(3)a Burden of proof. In any enforcement proceeding the permittee seeking to establish thea occurrence of an upset has the burden of proof.a

(o)a Change in Dischargea

All discharges authorized herein shall be consistent with the terms and conditions of this permit.a Discharges which cause a violation of water quality standards are prohibited. The discharge ofa any pollutant identified in this permit more frequently than or at a level in excess of thata authorized shall constitute a violation of the permit. Any anticipated facility expansions,a production increases, or process modifications which will result in new, different or increaseda discharges of pollutants must be reported by submission of a new NPDES application at leasta 180 days prior to commencement of such discharges, or if such changes will not violate thea effluent limitations specified in this permit, by notice, in writing, to the Director of sucha changes. Following such notice, the permit may be modified to specify and limit any pollutantsa not previously limited.a

Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(p)e Removed Substancese

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or controle of wastewaters shall be disposed of in a manner consistent with applicable Federal and Statee laws and regulations including, but not limited to the CWA and the Federal Resourcee Conservation and Recovery Act, 42 U.S.C. §§6901 et seq., Rhode Island General Laws,e Chapters 46-12, 23-19.1 and regulations promulgated thereunder.e

(q)e Power Failurese

In order to maintain compliance with the effluent limitation and prohibitions of this permit, thee permittee shall either:e

> In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or if such alternative power source is not in existence, and no date for its implementation appears in Part I,

> Halt reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(r)e Availability of Reportse

Except for data determined to be confidential under paragraph (w) below, all reports prepared ine accordance with the terms of this permit shall be available for public inspection at the DEM, 291e Promenade Street, Providence, Rhode Island. As required by the CWA, effluent data shall note be considered confidential. Knowingly making any false statement on any such report maye result in the imposition of criminal penalties as provided for in Section 309 of the CWA ande under Section 46-12-14 of the Rhode Island General Laws.e

(s) State Lawse

Nothing in this permit shall be construed to preclude the institution of any legal action or relievee the permittee from any responsibilities, liabilities, or penalties established pursuant to anye applicable State law.e

(t)e Other Lawse

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

(u)o Severabilityo

The provisions of this permit are severable, and if any provision of this permit, or the applicationo of any provision of this permit to any circumstance, is held invalid, the application of sucho provision to other circumstances, and the remainder of this permit, shall not be affected thereby.o

(v)o Reopener Clauseo

The Director reserves the right to make appropriate revisions to this permit in order too incorporate any appropriate effluent limitations, schedules of compliance, or other provisionso which may be authorized under the CWA or State law. In accordance with 250-RICR-150-10-1.16 and 250-RICR-150-10-1.24 of the RIPDES Regulations, if any effluent standard oro prohibition, or water quality standard is promulgated under the CWA or under State law whicho is more stringent than any limitation on the pollutant in the permit, or controls a pollutant noto limited in the permit, then the Director may promptly reopen the permit and modify or revokeo and reissue the permit to conform to the applicable standard.o

(w)o Confidentiality of Informationo

(1)o Any information submitted to DEM pursuant to these regulations may be claimed aso confidential by the submitter. Any such claim must be asserted at the time of submissiono in the manner prescribed on the application form or instructions or, in the case of othero submissions, by stamping the words "confidential business information" on each pageo containing such information. If no claim is made at the time of submission, DEM mayo make the information available to the pubic without further notice.o

(2)o Claims of confidentiality for the following information will be denied:o

(i)o The name and address of any permit applicant or permittee;o

(ii)o Permit applications, permits and any attachments thereto; ando

(iii)o NPDES effluent data.o

(x)o Best Management Practiceso

The permittee shall adopt Best Management Practices (BMP) to control or abate the discharge ofo toxic pollutants and hazardous substances associated with or ancillary to the industrialo manufacturing or treatment process and the Director may request the submission of a BMP plano where the Director determines that a permittee's practices may contribute significant amounts ofo such pollutants to waters of the State.o

(y)o Right of Appealo

Within thirty (30) days of receipt of notice of a final permit decision, the permittee or anyo interested person may submit a request to the Director for an adjudicatory hearing to reconsidero or contest that decision. The request for a hearing must conform to the requirements of 250-RICR-150-10-1.50 of the RIPDES Regulations.o

DEFINITIONS

1.o For purposes of this permit, those definitions contained in the RIPDES Regulations and theo Rhode Island Pretreatment Regulations shall apply.o

2.o The following abbreviations, when used, are defined below.o

cu. M/day or M^3/day	cubic meters per day
mg/l	milligrams per liter
ug/l	micrograms per liter
lbs/day	pounds per day
kg/day	kilograms per day
Temp. °C	temperature in degrees Centigrade
Temp. °F	temperature in degrees Fahrenheit
Turb.	turbidity measured by the Nephelometric Method (NTU)
TNFRor TSS	total nonfilterable residue or total suspended solids
DO	dissolved oxygen
BOD	five-day biochemical oxygen demand unless otherwise specified
TKN	total Kjeldahl nitrogen as nitrogen
Total N	total nitrogen
NH_3-N	ammonia nitrogen as nitrogen
Total P	total phosphorus
COD	chemical oxygen demand
TOC	total organic carbon
Surfactant	surface-active agent
pH	a measure of the hydrogen ion concentration
PCB	polychlorinated biphenyl
CFS	cubic feet per second
MGD	million gallons per day
Oil & Grease	Freon extractable material
Total Coliform	total coliform bacteria
Fecal Coliform	total fecal coliform bacteria
ml/l	milliliter(s) per liter
NO_3-N	nitrate nitrogen as nitrogen
NO_2-N	nitrite nitrogen as nitrogen
NO_3-NO_2	combined nitrate and nitrite nitrogen as nitrogen
Cl_2	total residual chlorine