STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

August 29, 2022

Honorable A. Keith McDonald, Mayor
e-copy: kmcdonald@cityofbartlett.org
City of Bartlett
6400 Stage Road, Bartlett, TN 38134

Subject: **NPDES Permit No. TN0066800**
City of Bartlett
Bartlett, Shelby County, Tennessee

Dear Mayor McDonald:

In accordance with the provisions of the Tennessee Water Quality Control Act, Tennessee Code Annotated (T.C.A.), Sections 69-3-101 through 69-3-120, the Division of Water Resources hereby issues the enclosed NPDES Permit. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application.

Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment.

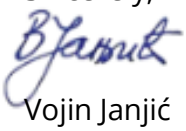
Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice

of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

TDEC has activated a new email address to accept appeals electronically. If you wish to file an appeal, you may do so by emailing the appeal and any attachments to TDEC.Appeals@tn.gov. If you file an appeal electronically, you do not have to send a paper copy. If you have questions about your electronic filing, you can call (615) 532-0131. Electronic filing is encouraged, but not required.

If you have questions, please contact the Memphis Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Ms. Ariel Wessel-Fuss at (615) 532-0642 or by E-mail at *Ariel.Wessel-Fuss@tn.gov*.

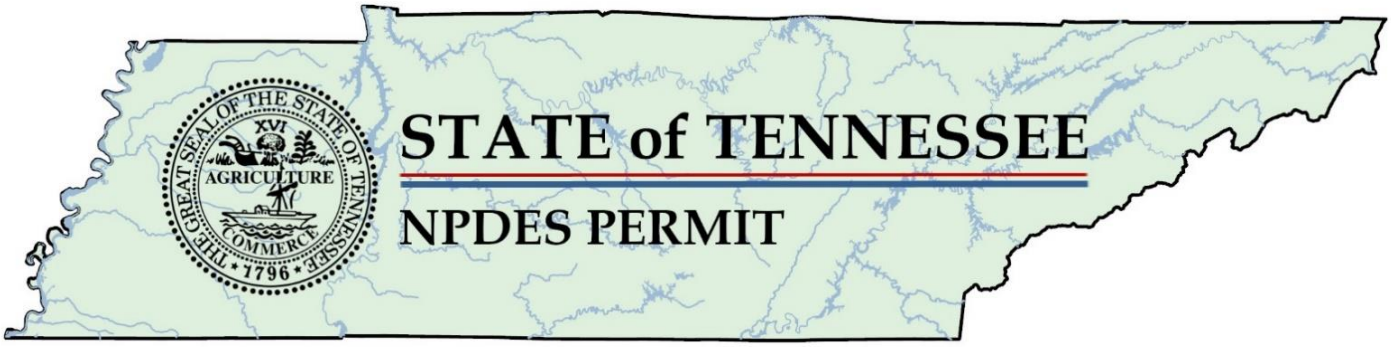
Sincerely,



Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Permit File & Memphis Environmental Field Office
Mr. Larry A. Gamblin, Wastewater Treatment Plant Operator, City of Bartlett, lgamblin@cityofbartlett.org
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. W. Rick McClanahan, Director of Utilities and Engineering, City of Bartlett, rmcclanahan@cityofbartlett.org
Mr. Scott Morgan, P.E., Senior Administrator Environmental Engineering, City of Memphis, Division of Public Works, scott.morgan@memphistn.gov



Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES) Permit Number TN0066800

Issued by

Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**City of Bartlett** **Bartlett STP No. 1**
is authorized to:	treated municipal wastewater from Outfall 001
from a facility located at:	5258 Shelter Run Lane, Bartlett, Shelby County, Tennessee
to receiving waters named:	Loosahatchie River at mile 18.4

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

This permit shall become effective on:	**October 1, 2022**
This permit shall expire on:	**September 30, 2027**
Issuance date:	**September 1, 2022**

for Jennifer Dodd
Director

Table of Contents

PART 1

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

1.1.1. Numeric Limitations

City of Bartlett is authorized to discharge treated municipal wastewater from Outfall 001 to Loosahatchie River at mile 18.4 from a treatment facility with a design capacity of 2.2 MGD. Discharge from Outfall 001 shall be limited and monitored by the permittee as specified below:

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: All Year							
Code	**Parameter**	**Qualifier**	**Value**	**Unit**	**Sample Type**	**Monitoring Frequency**	**Statistical Base**
00300	Oxygen, dissolved (DO)	>=	3.0	mg/L	Grab	Five Per Week	Instantaneous Minimum
00400	pH	>=	6.0	SU	Grab	Five Per Week	Minimum
00400	pH	<=	9.0	SU	Grab	Five Per Week	Maximum
00530	Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Three Per Week	Monthly Average
00530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Three Per Week	Weekly Average
00530	Total Suspended Solids (TSS)	<=	45	mg/L	Composite	Three Per Week	Daily Maximum
00530	Total Suspended Solids (TSS)	<=	550	lb/d	Composite	Three Per Week	Monthly Average
00530	Total Suspended Solids (TSS)	<=	734	lb/d	Composite	Three Per Week	Weekly Average
00545	Settleable Solids	<=	1.0	mL/L	Grab	Three Per Week	Daily Maximum
00600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Monthly	Monthly Average
00600	Nitrogen, total (as N)	Report	-	lb/d	Composite	Monthly	Monthly Average
00600	Nitrogen, total (as N)*	<=	57,727	lb/yr	Calculated	Monthly	Rolling Average
00610	Nitrogen, Ammonia total (as N)	<=	5	mg/L	Composite	Three Per Week	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	10	mg/L	Composite	Three Per Week	Weekly Average
00610	Nitrogen, Ammonia total (as N)	<=	10	mg/L	Composite	Three Per Week	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	92	lb/d	Composite	Three Per Week	Monthly Average

00610	Nitrogen, Ammonia total (as N)	<=	183	lb/d	Composite	Three Per Week	Weekly Average
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Monthly Average
00665	Phosphorus, total (as P)	Report	-	lb/d	Composite	Monthly	Monthly Average
00665	Phosphorus, total (as P)	<=	23725	lb/yr	Calculated	Monthly	Rolling Average
50050	Flow	Report	-	MGD	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	MGD	Continuous	Daily	Monthly Average
51040	E. coli	<=	941	#/100mL	Grab	Three Per Week	Daily Maximum
51040	E. coli	<=	126	#/100mL	Grab	Three Per Week	Monthly Geometric Mean
80082	CBOD, 5-day, 20 C	<=	20	mg/L	Composite	Three Per Week	Monthly Average
80082	CBOD, 5-day, 20 C	<=	25	mg/L	Composite	Three Per Week	Weekly Average
80082	CBOD, 5-day, 20 C	<=	30	mg/L	Composite	Three Per Week	Daily Maximum
80082	CBOD, 5-day, 20 C	<=	367	lb/d	Composite	Three Per Week	Monthly Average
80082	CBOD, 5-day, 20 C	<=	459	lb/d	Composite	Three Per Week	Weekly Average
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>	4.6	%	Composite	Annual	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales promelas	>	4.6	%	Composite	Annual	Minimum

Description: External Outfall, Number: 001, Monitoring: Percent Removal, Season: All Year

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
80358	CBOD, 5-day, 20 C, % removal	>=	40	%	Calculated	Three Per Week	Daily Minimum
80358	CBOD, 5-day, 20 C, % removal	>=	85	%	Calculated	Three Per Week	Monthly Average Minimum
81011	TSS, % removal	>=	40	%	Calculated	Three Per Week	Daily Minimum
81011	TSS, % removal	>=	85	%	Calculated	Three Per Week	Monthly Average Minimum

Description: Influent Structure, Number: INF1, Monitoring: Raw Sewage Influent, Season: All Year							
Code	**Parameter**	**Qualifier**	**Value**	**Unit**	**Sample Type**	**Monitoring Frequency**	**Statistical Base**
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Three Per Week	Daily Maximum
00530	Total Suspended Solids (TSS)	Report	-	mg/L	Composite	Three Per Week	Monthly Average
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Three Per Week	Daily Maximum
80082	CBOD, 5-day, 20 C	Report	-	mg/L	Composite	Three Per Week	Monthly Average

General MyTDEC Forms Report Requirements*	
Bypass of Treatment Facility	See Section 1.3.5.1. and 2.3.5.
Anticipated Bypass of Treatment Facility	See Section 1.3.5.1. and 2.3.5.
Five-day Follow-up Noncompliance Report	See Sections 1.3.5.1. and 2.3.1.a.
Scheduled Reporting	See Section 2.3.1.b.

* Each event shall be reported via MyTDEC Forms.

Notes:

The permittee shall achieve 85 % removal of $CBOD_5$ and TSS on a monthly average basis. The permittee shall report all instances of releases, overflows and/or bypasses. See **Part 2.3.2(a)** for the definition of overflow and **Part 1.3.5** for reporting requirements.

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

Unless elsewhere specified, summer months are May through October; winter months are November through April.

See **Part 1.2.3** for test procedures.

See **Part 3.4** for biomonitoring test and reporting requirements.

See below for percent removal calculations.

The permittee may collect more samples than specified as the monitoring frequency in the permit. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an *E. coli* group concentration of less than 1 per 100 mL shall be considered as having a concentration of 1 per 100 mL. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount.

Total residual chlorine (TRC) monitoring shall be applicable when chlorine, bromine, or any other oxidants are added. The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR § 136 as amended, so long as the requirements of Tennessee Rule 0400-

40-03-.05(8) are met. The method detection limit (MDL) should be determined in accordance with 40 CFR § 136 as amended, Appendix B. The MDL for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.
Monitoring and reporting requirements for both total nitrogen (TN) and total phosphorus (TP) begin the effective date of the permit.

Each daily load is calculated by multiplying the day's sample concentration (mg/L) by the effluent flow rate (MGD) for the day the sample was collected and the conversion factor 8.34 lbs/gal.

$$Load = \begin{pmatrix} Effluent \\ Concentration \end{pmatrix} * \begin{pmatrix} Effluent\ flow\ for\ the\ day\ the \\ day\ the\ sample\ was\ collected \end{pmatrix} * (8.34)$$

The average pound per day is the mathematical average where the sum of all the calculated loads during the current month and previous 11 months is divided by the number of calculated loads.

$$Average\ Pounds\ per\ Day = \left(\frac{Sum\ of\ All\ Loads\ in\ \frac{lbs}{day}\ During\ the\ Current\ Month\ and\ the\ Previous\ 11\ Months}{Total\ Number\ of\ Loads\ Calculated\ During\ the\ Current\ Month\ and\ Previous\ 11\ Months} \right)$$

The annual rolling load (lb/year) for the current month is calculated and reported monthly using the data from the current month and previous 11 months. Each annual rolling load is calculated by multiplying the average of all sample loads for the current month and the previous 11 months by 365 days.

$$Annual\ Rolling\ Load = \left(\frac{Sum\ of\ All\ Loads\ in\ \frac{lbs}{day}\ During\ the\ Current\ Month\ and\ Previous\ 11\ Months}{Total\ Number\ of\ Loads\ Calculated\ During\ the\ Current\ Month\ and\ Previous\ 11\ Months} \right) * (365)$$

* For Total Nitrogen, the annual rolling load cannot be calculated or reported until the permittee has collected 12 months of data, therefore the annual rolling load limit is not effective until the 13th month following the permit effective date. The permittee should report "NODI = 9" for "monitoring not required" for the annual rolling load in NetDMR until that time.

1.1.2. Collection System Requirements

City of Bartlett is authorized to operate a sewage collection system. Operation and discharges from the collection system shall be limited and monitored by the permittee as specified below:

Code	Monitoring	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
51925	Dry Weather	SSO, Dry Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total
51926	Wet Weather	SSO, Wet Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total

Report via NetDMR. See sections **1.3.1.** and **1.3.5.2.**

Collection System MyTDEC Forms Report Requirements*	
Sanitary Sewer Overflow (SSO, Dry Weather)	See Section 1.3.5.1.
Sanitary Sewer Overflow (SSO, Wet Weather)	See Section 1.3.5.1.
Release (Dry Weather)	See Section 1.3.5.1.
Release (Wet Weather)	See Section 1.3.5.1.
Five-day Follow-up Noncompliance Report	See Sections 1.3.5.1. and 2.3.1.

* Each event shall be reported via MyTDEC Forms.

1.1.3. Narrative Conditions

Schedule (Due) Date	Schedule Event Description	Comments
29-JAN-23	Industrial User Survey	The permittee shall submit the results of an Industrial Waste Survey (IWS) to the Division of Water Resources, Pretreatment Section within 120 days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date. If an IWS has been submitted within the past 3 years, the permittee shall notify the Division of the date when the IWS was previously submitted to the Division. The IWS shall be submitted to the following email address: DWRWater.Compliance@tn.gov.

The authorized discharge shall not:

- Result in distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as may be detrimental to fish and aquatic life.
- Result in total suspended solids, turbidity, or color in such amounts or character that will result in any objectionable appearance to the receiving water, considering the nature and location of the water.
- Contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner that prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, Tennessee Code Annotated (Tenn. Code Ann.) §68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, Tenn. Code Ann. §68-46-101 et. seq.

1.2. MONITORING PROCEDURES

1.2.1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge and shall be taken after treatment and prior to mixing with uncontaminated stormwater runoff or the receiving stream. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed and calibrated by a qualified source at least once every 12 months[1], and maintained to ensure that the accuracy of the measurements is consistent with accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

Composite samples must be proportioned by flow at the time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6°C during the compositing period, or as otherwise specified in 40 CFR §136 or in the method.

Samples and measurements taken in compliance with the monitoring requirements specified above shall be representative of the volume and nature of the monitored discharge, and shall be taken at the following location(s):

Influent samples must be collected prior to mixing with any other wastewater being returned to the head of the plant, such as sludge return. Those systems with more than one influent line must collect samples from each and proportion the results by the flow from each line.

Effluent samples must be representative of the wastewater being discharged and collected prior to mixing with any other discharge or the receiving stream.

[1] The Division expects for permittees to meet EPA's guidance on proper operation and maintenance of flow measurement devices, as stated in the NPDES Compliance Inspection Manual.

This can be a different point for different parameters but must be after all treatment for that parameter or all expected changes. Specifically:

a) The chlorine residual must be measured after the chlorine contact chamber and any dechlorination. It may be to the advantage of the permittee to measure at the end of any long outfall lines.

b) Samples for *E. coli* can be collected at any point between completion of disinfection and the actual discharge.

c) The dissolved oxygen (DO) can drop in the outfall line; therefore, DO measurements are required at the discharge end of outfall lines greater than one mile long. Systems with outfall lines less than one mile may measure dissolved oxygen as the wastewater leaves the treatment facility. For systems with dechlorination, DO must be measured after this step and as close to the end of the outfall line as possible.

d) Total suspended solids (TSS) and settleable solids can be collected at any point after the final clarifier.

e) Biomonitoring tests (if required) shall be conducted on final effluent.

1.2.2. Sampling Frequency

The permittee should report “No Discharge” on Discharge Monitoring Reports (DMRs) only if a permitted outfall does not discharge at any time during the monitoring period. If the outfall discharges effluent at any time during the monitoring period, the permittee must provide at least one sampling result from the effluent of that outfall.

If the required monitoring frequency is once per month or 1/month, the monitoring period is one month. If the discharge occurs during only one day in that period, the permittee must sample on that day and report the results of analyses accordingly.

1.2.3. Test Procedures

a) Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b) Unless otherwise noted in the permit, all pollutant parameters shall be determined using sufficiently sensitive methods in Title 40 CFR § 136, as

amended, and promulgated pursuant to Section 304 (h) of the Act. The chosen methods must be sufficiently sensitive as required in state rule 0400-40-03-.05(8).

c) If the minimum level of quantification (ML) for all methods available in accordance with 40 CFR § 136 are above the stated permit limit or applicable water quality criteria for that parameter, then the method with the lowest ML shall be used.

d) Where the analytical results are below the method detection limit (MDL), the permittee shall report the actual laboratory MDL and ML values. See **Section 1.3.6.** for instructions regarding reporting less than detection.

e) When there is no analytical method that has been approved under 40 CFR §136 or required under 40 CFR chapter I, subchapter N or O, and a specific method is not otherwise required by the Director, the permittee may use any suitable method but shall provide a description of the method. When selecting a suitable method, factors such as a method's precision, accuracy, or resolution must be considered when assessing the performance of the method.

1.2.4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

i. The date, exact place, and time of sampling or measurements;
ii. The individual(s) who performed the sampling or measurements;
iii. The date analyses were performed;
iv. The individual(s) who performed the analyses;
v. The laboratory where the analyses were performed;
vi. The analytical techniques or methods used; and
vii. The results of such analyses.

1.2.5. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

1.3. REPORTING

1.3.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly on Discharge Monitoring Reports (DMRs) using EPA's NetDMR website. The first DMR is due on the 15th of the month following permit effectiveness. Subsequent DMRs shall be submitted through NetDMR no later than 15 days after the completion of the reporting period. In compliance with the Federal NPDES Electronic Reporting Rule, DMRs may not be submitted via email under any circumstances.

Discharge Monitoring Reports and any other information or report must be signed and certified by a responsible corporate officer as defined in Tennessee Rules, Chapter 0400-40-05-.07(2)(i), a general partner or proprietor, a principal municipal executive officer or ranking elected official, or his or her duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

In the event that electronic reporting is unavailable, the permittee shall comply with reporting conditions provided in **Section 1.7**.

1.3.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR § 136, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or other reporting form specified by the Commissioner. Such increased frequency shall also be indicated.

1.3.3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in § 69-3-115 of the Tennessee Water Quality Control Act.

1.3.4. Monthly Report of Operation

Monthly Operational Reports (MORs) shall be submitted by the 15th day of the month following data collection. Reports shall be submitted by one of the following methods, presented below in order of preference:

1) Using MyTDEC Forms, if available.

2) Submitting both a signed and certified copy in pdf format, uploaded as an attachment to NetDMR, *and* a copy of the native format spreadsheet file emailed to DWRWW.Report@tn.gov and TDEC.Memphis.EFO@tn.gov.
3) Submitting signed and certified forms to the EFO at the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Memphis Environmental Field Office
8383 Wolf Lake Drive
Bartlett, Tennessee 38133

1.3.5. Overflow, Release, and Bypass Reporting

1.3.5.1. Event Report Requirements

For the purpose of this section, "events" are known as instances of sanitary sewer overflows, releases, upsets, and bypasses. These events shall be reported through MyTDEC Forms according to the following conditions:

a) Events that are not a threat to human health and the environment shall be reported using MyTDEC Forms no later than 15 days following the completion of the DMR reporting period.

b) Events that could cause a threat to human health or the environment, as defined in **Section 2.3.1.a**., shall be reported using MyTDEC Forms no later than 5 days after becoming aware of the non-compliance.

In both cases, the event report must contain the following:

i. Start date;
ii. Estimated duration in hours;
iii. Estimated volume in gallons;
iv. Type of event;
v. Type of structure (e.g., manhole);
vi. Types of human health and environmental impacts;
vii. Location (i.e., latitude and longitude);
viii. The name of receiving water (if applicable);
ix. Description of the cause;
x. The steps being taken to correct, reduce, eliminate, and prevent recurrence of the noncompliance; and
xi. The next downstream pump/lift station using the permittee's naming conventions.

In the event that MyTDEC Forms is not functioning, the permittee shall comply with reporting conditions provided in **Section 1.7**.

1.3.5.2. DMR Report Requirements

On the DMR, the permittee must separately report:

i. The total number of sanitary sewer overflows for the reporting month; and
ii. The total number of dry-weather sanitary sewer overflows for the reporting month.

On the DMR, sanitary sewer overflows are coded "SSO, Dry Weather" and "SSO, Wet Weather". Each discrete location of a sanitary sewer overflow shall be reported as a separate value.

1.3.6. Reporting Less Than Detection; Reporting Significant Figures

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the minimum level (ML) of 40 CFR § 136 approved analytical methods, compliance will be demonstrated when a non-detect result is obtained using the most sensitive method available. The results of non-detect analyses, in this case, shall be reported as Below Detection Limit (BDL) or "NODI = B" in NetDMR. Reporting examples are provided below.

Reporting Example 1: If the permit limit is 0.02 mg/L with a method detection limit (MDL) of 0.05 mg/L and no detection is shown, the permittee must report "BDL" or "NODI = B" on DMRs in NetDMR. Whenever "BDL" or "NODI = B" is reported, the actual MDL must be reported in the DMR comments or in an attachment submitted in NetDMR.

Reporting Example 2: If the permit limit is 0.02 mg/L with an MDL of 0.05 mg/L and detection is shown, the actual detected value must be reported.

Reporting Example 3: If the permit limit is 0.02 mg/L with an MDL of 0.01 mg/L and no detection is shown, the permittee must report less than MDL (<0.01 mg/L in this case).

For purposes of calculating averages, zero may be assigned for values less than the MDL, the numeric value of the MDL may be assigned for values between the MDL and the ML. If the average value is less than the MDL, the permittee must report "less than {numeric value of the MDL}" and if the average value is less than the ML, the permittee must report "less than {numeric value of the ML}." If a value is equal to or greater than the ML, the permittee must report and use the actual

value. The resulting average value must be compared to the compliance level, the ML, in assessing compliance.

Reported results are to correspond to the number of significant figures (decimal places) set forth in the permit conditions. The permittee shall round values, if allowed by the method of sample analysis, using a uniform rounding convention adopted by the permittee.

1.3.7. Outlier Data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.

Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, 'h' and 'k' statistics). Furthermore, outliers should be verified, corrected, or removed based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), can it be removed from the data set and not reported on DMRs. Otherwise, all results (including monitoring of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. The permittee should use the "comment" section in NetDMR to explain any potential outliers or dubious results.

1.4. COMPLIANCE WITH SECTION 208

The limits and conditions in this permit shall require compliance with an area-wide waste treatment plan (208 Water Quality Management Plan) where such approved plan is applicable.

1.5. REOPENER CLAUSE

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under

Sections 301(b)(2)(C) and (D), 307(a)(2), and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation, or sludge disposal requirement so issued or approved:

a) Contains different conditions or is otherwise more stringent than any condition in the permit; or

b) Controls any pollutant or disposal method not addressed in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

1.6. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit, except for conditions under compliance schedules. See **Section 1.1.** for numeric and narrative requirements.

1.7. ELECTRONIC REPORTING

This permit requires the submission of forms developed by the Director in order for a person to comply with certain requirements, including, but not limited to, making reports, submitting monitoring results, and applying for permits. The Director may make these forms available electronically and, if submitted electronically, then that electronic submission shall comply with the requirements of Chapter 0400-01-40. Electronic submission is required when available unless waived by the Commissioner in accordance with 40 C.F.R. § 127.15.

In the event of large-scale emergencies and/or prolonged electronic reporting system outages, an episodic electronic reporting waiver may be granted by the Commissioner in accordance with 40 CFR § 127.15. A request for a deadline extension or episodic electronic reporting waiver should be submitted to DWRWater.Compliance@tn.gov, in compliance with the Federal NPDES Electronic Reporting Rule.

If an episodic electronic reporting waiver is granted, reports with wet-ink original signatures shall be mailed to the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT UNIT
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

For purposes of determining compliance with this permit, data provided to the Division electronically is legally equivalent to data submitted on signed and certified forms. A copy must be retained for the permittee's files.

PART 2

2. GENERAL PERMIT REQUIREMENTS

2.1. GENERAL PROVISIONS

2.1.1. Duty to Comply

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

2.1.2. Duty to Reapply

The permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Division Director no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

2.1.3. Proper Operation and Maintenance

a) The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances, including but not limited to collection and conveyance systems) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Low pressure pumps, low pressure tanks, septic tank effluent pumps (STEP), STEP tanks, and septic tank effluent gravity tanks are integral to the treatment and conveyance of sewage in a low-pressure system design, and shall be owned or under control of the municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

b) Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT, or other technology based effluent limitations such as those established in Tennessee Rule 0400-40-05-.09.

2.1.4. Duty to Provide Information

The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

2.1.5. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials, to:

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

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

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

d) Sample or monitor at reasonable times for the purposes of assuring permit compliance or as otherwise authorized by the Director.

2.1.6. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the Division's offices or via the Department's dataviewer webpage. As required by the Federal Act, effluent data shall not be considered confidential.

2.1.7. Treatment Facility Failure (Industrial Sources)

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

2.1.8. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to

private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

2.1.9. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

2.1.10. Other Information

If the permittee becomes aware of failure to submit any relevant facts in a permit application, or of submission of incorrect information in a permit application or in any report to the Director, then the permittee shall promptly submit such facts or information.

2.2. CHANGES AFFECTING THE PERMIT

2.2.1. Planned Changes

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

a) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as defined in Rule 0400-40-05-.02;

b) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit nor to notification requirements under 40 CFR § 122.42(a)(1); or

c) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices.

2.2.2. Permit Modification, Revocation, or Termination

a) This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR § 122.62 and § 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended. Causes for such permit action include but are not limited to the following:

    i. Violation of any terms or conditions of the permit;

ii. Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts; and

iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

b) The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

c) If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit for the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d) The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

2.2.3. Change of Ownership

Except as provided in Tennessee Rule Chapter 0400-40-05-.06(5)(a) or (b), this permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect permit limits and conditions contained in the permit) by the permittee if:

a) The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c) The permittee shall provide the following information to the Director in the permittee's formal notice of intent to transfer ownership:

i. The permit number of the subject permit;
ii. The effective date of the proposed transfer;
iii. The name, address, and contact information of the transferor;
iv. The name, address, and contact information of the transferee;
v. The names of the responsible parties for both the transferor and transferee;
vi. A statement that the transferee assumes responsibility for the subject permit;
vii. A statement that the transferor relinquishes responsibility for the subject permit;
viii. The signatures of the responsible parties for both the transferor and transferee pursuant to the signatory requirements of subparagraph (i) of Rule 0400-40-05-.07(2); and
ix. A statement regarding any proposed modifications to the facility, its operations, or any other changes, which might affect the permit, limits and conditions contained in the permit.

2.2.4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice, the original address of the permittee will be assumed to be correct.

2.3. NONCOMPLIANCE

2.3.1. Reporting of Noncompliance

a) 24-hour Reporting:

In the case of any noncompliance, or any release (whether or not caused by improper operation and maintenance), which could cause a threat to human health or the environment, the permittee shall:

i. Report the noncompliance or release to the Commissioner within 24 hours from the time the permittee becomes aware of the circumstances. Such noncompliance or release includes, but is not limited to, any unanticipated bypass exceeding any effluent limitation, any upset exceeding any effluent limitation, and violations of any maximum daily effluent limitation identified in the permit as requiring 24-hour reporting. (The EFO should be contacted for names and phone numbers of the environmental response team.)

ii. Submit a written report within five days of the time the permittee becomes aware of the noncompliance. The permittee shall provide the following information:

1. A description of and the cause of the noncompliance or release;

2. The period of noncompliance or release, including start and end dates and times i.e. duration or, if not corrected, the anticipated time the noncompliance or release is expected to continue;

3. The steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance or release; and

4. For POTWs or domestic wastewater treatment plants, reporting any dry weather overflow, wet weather overflow, dry weather release, wet weather release, combined sewer overflow, or bypass, this written report must also include the following:

I. Type of event;
II. Type of sewer overflow, release, or bypass structure (e.g., manhole, combined sewer overflow outfall);
III. Estimated volume (gallons);
IV. Types of human health and environmental impacts;
V. Location (latitude and longitude);
VI. Estimated duration (hours);
VII. The next downstream pump station (for overflows and releases only); and
VIII. The name of receiving water (if applicable).

iii. Industrial dischargers that do not treat domestic waste shall comply with subpart a) ii. 4. of this subparagraph with respect to bypasses only.

iv. For overflows, releases, bypasses, upsets and washouts, the report required by a) ii. Shall be submitted electronically via MyTDEC Forms.

b) Other Noncompliance.

i. All permittees shall report each instance of noncompliance or any release (whether or not caused by improper operation and maintenance), not reported under sub-part a) at the time of submitting the next routine monitoring report, including all information required by sub-parts a) ii. 1-3.

ii. In addition to the information required by part i of this sub-part, POTWs and domestic wastewater treatment plants shall submit a written report containing the information required by sub-part a) i. 4. If these events are caused by an extreme weather event, the Commissioner may provide a written waiver of some or all of these reporting requirements.

iii. In addition to the information required by sub-part i, industrial dischargers shall submit a written report of bypasses containing the information required by sub-part a) i. 4. This part does not relieve industrial dischargers from any applicable reporting requirements of 40 C.F.R. Part 117 (2021) and 40 C.F.R. Part 302 (2021).

2.3.2. Overflows and Releases

a) For publicly owned treatment works (POTW) or domestic wastewater treatment plants, sanitary sewer overflows, including dry-weather overflows and wet weather overflows, are prohibited.

b) Releases caused by improper operation and maintenance, which is to be determined by the Commissioner based on the totality of the circumstances, are prohibited.

c) The permittee shall operate the collection, transmission, and treatment system so as to avoid sanitary sewer overflows and releases due to improper operation or maintenance. A “release” may be due to improper operation or maintenance of the collection system or may be due to other cause(s).

d) The permittee shall take all reasonable steps to minimize any adverse impact associated with overflows and releases.

e) No new or additional flows shall be added upstream of any point in the collection, transmission, or treatment system that experiences greater than 5 sanitary sewer overflows and/or releases per year[2] or would otherwise overload any portion of the system. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after:

1) An authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report

[2] This includes dry weather overflows, wet weather overflows, dry weather releases and wet weather releases.

and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem;

2) The correction work is underway; and
3) The cumulative, peak-design flows potentially added from new connections and line extensions upstream of any chronic overflow or release point are less than or proportional to the amount of inflow and infiltration removal documented upstream from that point.

The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to the permittee's DMR and uploaded to NetDMR. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

f) In the event that chronic sanitary sewer overflows or releases have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium of the actions identified in this paragraph, the permittee may request a meeting with Division EFO staff to petition for a waiver based on mitigating evidence.

g) For industrial dischargers, the discharge of pollutants from any location other than a permitted outfall is prohibited.

2.3.3. Upset

a) An upset shall constitute an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;
ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;
iii. The permittee submitted information required under "Reporting of Noncompliance" within 24 hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and
iv. The permittee complied with any remedial measures required under "Adverse Impact".

b) In any enforcement proceeding, the permittee seeking to establish the affirmative defense of an upset has the burden of proof.

2.3.4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.3.5. Bypass

a) Bypasses (see subpart 4.1) are prohibited unless all the following conditions are met:

   i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;
   ii. There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
      a. For anticipated bypass, the permittee submits prior notice, if possible at least ten days before the date of the bypass, or
      b. For unanticipated bypass, the permittee submits notice of an unanticipated bypass within 24 hours from the time that the permittee becomes aware of the bypass.

b) Bypasses that do not cause effluent limitations to be exceeded may be allowed only if the bypass is necessary for essential maintenance to assure efficient operation. The permittee must sample and report the discharge during each bypass to demonstrate that the bypass does not cause effluent limitations to be exceeded.

2.3.6. Washout

a) For domestic wastewater plants only, a "*washout*" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decreases due

to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to inflow and infiltration.

b) A washout is prohibited. If a washout occurs the permittee must report the incident to the Division in the appropriate EFO within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on that month's DMR. Each day of a washout is a separate violation.

2.4. LIABILITIES

2.4.1. Civil and Criminal Liability

Except as provided in permit conditions for "*Bypass*" (**Section 2.3.5**), "*Overflows and Releases*" (**Section 2.3.2**), and "*Upset*" (**Section 2.3.3**), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including, but not limited to, fish kills and losses of aquatic life and/or wildlife as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2.4.2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or the Federal Water Pollution Control Act, as amended.

PART 3

3. PERMIT SPECIFIC REQUIREMENTS

3.1. CERTIFIED OPERATOR

The waste treatment facilities shall be operated under the supervision of a certified wastewater treatment operator, and the collection system shall be operated under the supervision of a certified collection system operator in accordance with the Water Environmental Health Act of 1984.

3.2. POTW PRETREATMENT PROGRAM GENERAL PROVISIONS

As an update of information previously submitted to the Division, the permittee will undertake the following activity:

a) The permittee shall submit the results of an Industrial Waste Survey (IWS) in accordance with Rule 0400-40-14-.08-(6)(b)1, including any industrial users (IU) covered under Section 301(i)(2) of the Act. As much information as possible must be obtained relative to the character and volume of pollutants contributed to the POTW by the IUs. This information will be submitted to the Division of Water Resources, Pretreatment Section within one hundred twenty (120) days of the effective date of this permit, unless such a survey has been submitted within 3 years of the effective date. Development of a pretreatment program may be required after completion of the industrial user review. All requirements and conditions of the pretreatment program are enforceable through the NPDES permit.

b) The permittee shall enforce Rule 0400-40-14-.05, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in Rule 0400-40-14-.03. These general prohibitions and the specific prohibitions in this section apply to all non-domestic sources introducing pollutants into the POTW whether the source is subject to other National Pretreatment Standards or any state or local pretreatment requirements.

Specific prohibitions: Under no circumstances shall the permittee allow introduction of the following wastes into the POTW:

i. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint

of less than 140°F or 60°C using the test methods specified in 40 CFR § 261.21

ii. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0 unless the system is specifically designed to accommodate such discharges;

iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;

iv. Any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW;

v. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Division, upon request of the POTW, approves alternate temperature limits;

vi. Any priority pollutant in amounts that will contaminate the treatment works sludge;

vii. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

viii. Pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems; or

ix. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

c) The permittee shall notify the Division of any of the following changes in user discharge to the system no later than 30 days prior to change of discharge:

i. New introductions into such works of pollutants from any source which would be a new source as defined in Section 306 of the Act if such source were discharging pollutants;

ii. New introductions of pollutants into such works from a source which would be subject to Section 301 of the "Federal Water Quality Act as Amended" if it were discharging such pollutants; or

iii. A substantial change in volume or character of pollutants being introduced into such works by a source already discharging pollutants into such works at the time this permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the POTW, and on any anticipated impact on the effluent discharged from such works. If this discharge necessitates a revision of the current NPDES permit or pass-through

guidelines, discharge by this source is prohibited until the Tennessee Division of Water Resources gives final authorization.

3.3. BIOSOLIDS MANAGEMENT PRACTICES

All sludge and/or biosolids use or disposal must comply with 40 CFR § 503 *et seq*. Biosolids shall be sampled and analyzed at a frequency dependent on the amount used annually.

Any facility that land applies non-exceptional quality biosolids must obtain an appropriate permit from the Division in accordance with Chapter 0400-40-15.

a) Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.

b) Notice of change in sludge disposal practice: The permittee shall give prior notice to the Director of any change planned in the permittee's sludge disposal practice.

The current method of sludge disposal is to a municipal solid waste landfill (or co-composting facility). This method of disposal is controlled by the rules of the Tennessee Division of Solid Waste Management (DSWM) and Federal Regulations at 40 CFR § 258. If the permittee anticipates changing its disposal practices to either land application or surface disposal, the Division of Water Resources shall be notified prior to the change. A copy of any results of pollutant analyses required by the Tennessee Division of Solid Waste Management (DSWM) and/or 40 CFR § 258 shall be submitted to the Division of Water Resources.

3.4. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on samples of final effluent from Outfall 001.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction in survival, reproduction and growth (IC_{25}) of the test organisms. The IC_{25} shall be determined based on a 25% reduction as compared to the controls, and as derived from linear interpolation. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Tests shall be conducted and results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
4 X PL	**2 X PL**	**Permit Limit (PL)**	**0.50 X PL**	**0.25 X PL**	**Control**
% effluent					
18.4	**9.2**	**4.6**	**2.3**	**1.15**	**0**

The dilution/control water used will be moderately hard water as described in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms*, EPA-821-R-02-013 (or the most current edition). A chronic standard reference toxicant quality assurance test shall be conducted with each species used in the toxicity tests and the results submitted with the discharge monitoring report. Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC_{25} is less than or equal to the permit limit indicated for each outfall in the above table(s).

All tests will be conducted using a minimum of three 24-hour, flow-proportionate composite samples of final effluent (*e.g.*, collected on days 1, 3, and 5). If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within two (2) weeks. Furthermore, if the results do not meet the acceptability criteria in the above-referenced *Short-term Methods* document, or if the required concentration-

response review fails to yield a valid relationship per guidance contained in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing*, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted yearly (1/yr) for Outfall 001 and begin no later than 90 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation.

In the event of 2 consecutive test failures or 3 test failures within a 12-month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the Division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three months. Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary, to conduct further analyses. The final determination of any extension period will be made at the discretion of the Division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of*

Effluents and Receiving Water to Freshwater Organisms, EPA-821-R-02-013, or the most current edition. Results of tests, reference toxicant information, copies of raw data sheets, statistical analysis, and chemical analyses shall be compiled in a report also written in accordance with the *Short-term Methods* document above.

A copy of the biomonitoring report (including any follow-up reports) shall be submitted to the Division as an attachment to the monthly DMR in NetDMR.

3.5. PLACEMENT OF SIGNS

Within 60 days of the effective date of this permit, the permittee shall place and maintain a sign at each outfall and any overflow/release point in the collection system or the nearest publicly accessible location. For the purposes of this requirement, any point that has had a total of 5 or more overflows plus releases in the previous 12 months must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The *minimum* sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following are given as examples of the minimal amount of information that must be included on the signs:

NPDES Permitted Municipal/Sanitary Outfall:

TREATED MUNICIPAL/SANITARY WASTEWATER
City of Bartlett
Bartlett STP No. 1
(901) 385-6400
NPDES Permit NO. TN0066800
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis

Unpermitted release/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
City of Bartlett
Bartlett STP No. 1
(901) 385-6400
NPDES Permit No. TN0066800
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis

The permittee may request the removal of signs for unpermitted release/overflows points only. This request should be sent to Division EFO staff detailing the work that has been completed to rectify the cause(s) contributing to overflows and releases at that location. In no case will approval to remove the signs be granted if either an overflow or release has occurred at that location in the previous 12 months.

PART 4

4. DEFINITIONS AND ACRONYMS

All terminology not specifically defined herein shall be defined in accordance with the Water Quality Control Act of 1977, T.C.A. Title 69, Chapter 3, Part 1 and Tennessee Rule 0400-40-05. The following terms have the meanings given below unless otherwise specified.

4.1. DEFINITIONS

For the purposes of this permit, ***annually*** is defined as a monitoring frequency of once every 12 months beginning with the effective date of this permit, so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

Biosolids are treated sewage sludge that have contaminant concentrations less than or equal to the contaminant concentrations listed in Table 1 of subparagraph (3)(b) of Rule 0400-40-15-.02, meet any one of the ten vector attraction reduction options listed in part (4)(b)1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 of Rule 0400-40-15-.04, and meet either one of the six pathogen reduction alternatives for Class A listed in part (3)(a)3, 4, 5, 6, 7, or 8, or one of the three pathogen reduction alternatives for Class B listed in part (3)(b)2, 3, or 4 of Rule 0400- 40-15-.04.

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

A ***calendar day*** means the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

Combined sewer overflow or "CSO" means a discharge from a combined sewer system (CSS) at a point prior to the publicly owned treatment works (POTW) treatment plant headworks.

Combined sewer system or "CSS" means a wastewater collection system owned by a State or municipality which was originally designed to convey sanitary wastewaters (domestic, commercial, and industrial wastewaters) and stormwater through a single-pipe system into a publicly owned treatment works (POTW) treatment plant headworks.

A ***composite sample*** means a combination of not less than eight influent or effluent portions (aliquots), collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case less than eight hours. A sufficient volume of sample to perform all required analyses plus any additional amount for quality control must be obtained. For automatic samplers that use a peristaltic pump, a minimum 100 ml aliquot must be obtained.

The ***daily maximum amount*** means the total amount of any pollutant in the discharge by weight during any calendar day.

The ***daily maximum concentration*** is a limitation on the average concentration in units of mass per volume (*e.g.* milligrams per liter) of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily maximum concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily maximum concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

Degradation means the alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

De Minimis is degradation of a small magnitude, as provided in this paragraph:

(a) Discharges and withdrawals:
   1. Subject to the limitation in part 3 of this subparagraph, a single discharge other than those from new domestic wastewater sources will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.
   2. Subject to the limitation in part 3 of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.
   3. If more than one activity described in part 1 or 2 of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

(b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and

cumulatively, are offset by impact minimization and/or in-system mitigation, provided however, in Outstanding National Resource Waters (ONRWs) the mitigation must occur within the ONRW.

Discharge or ***discharge of a pollutant*** refers to the addition of pollutants to waters from a source.

A ***dry weather overflow*** means a sanitary sewer overflow that is not directly related to a rainfall event.

An ***ecoregion*** is a relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

The ***geometric mean*** of any set of values means the n^{th} root of the product of the individual values where n is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero shall be considered to be one.

A ***grab sample*** means a single sample collected at a particular time.

IC_{25} means the inhibition concentration in which at least a 25% reduction in reproduction and/or growth in test organisms occurs.

Industrial discharger means those industries identified in the standard industrial classification manual, Bureau of the Budget, 1987, as amended and supplemented, under the category "Division D - Manufacturing" and such other classes of significant waste producers as the Board or Commissioner deems appropriate.

Industrial wastes means any liquid, solid, or gaseous substance, or combination thereof, or form of energy including heat, resulting from any process of industry, manufacture, trade, or business or from the development of any natural resource.

The ***instantaneous maximum concentration*** means the concentration, in units of mass per volume, of any pollutant parameter in a grab sample taken at any point in time.

The ***instantaneous minimum concentration*** means the minimum concentration, in units of mass per volume, of a pollutant parameter in a grab sample taken at any point in time.

LC_{50} means the concentration that causes at least 50% lethality of the test organisms.

Major facility means a municipal or domestic wastewater treatment plant with a design capacity of one million gallons per day or greater; or any other facility or activity classified as such by the Commissioner.

Minor facility means any facility that is not a major facility.

The ***monthly average amount*** means the arithmetic mean of all the measured daily discharges by weight during the calendar month when the measurements were made.

The ***monthly average concentration***, means the arithmetic mean of all samples collected in a one calendar-month period, expressed in units of mass per volume of any pollutant other than bacteria.

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

New or increased discharge is a new discharge of pollutants to waters of the state or an increase in the authorized loading of a pollutant above either (1) numeric effluent limitations established in a National Pollutant Discharge Elimination System permit for that discharge, or (2) if no such limitations exist, the actual discharges of that pollutant.

New source means any building, structure, facility, area, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced after the publication of state or federal regulations prescribing a standard of performance.

Nitrate (as N) means nitrate reported as nitrogen.

A ***one-week period*** (or ***calendar-week***) means the period from Sunday through Saturday. For weekly average reporting purposes, a calendar week that contains a change of month shall be considered part of the latter month.

Owner or ***operator*** means any person who owns, leases, operates, controls, or supervises a source.

Person means an individual, association, partnership, corporation, municipality, state or federal agency, or an agent or employee thereof.

Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant means sewage, industrial wastes, or other wastes.

Pollution means such alteration of the physical, chemical, biological, bacteriological, or radiological properties of the waters of this state including, but not limited to, changes in temperature, taste, color, turbidity, or odor of the waters that will:

(a) Result or will likely result in harm, potential harm, or detriment to the public health, safety, or welfare;

(b) Result or will likely result in harm, potential harm, or detriment to the health of animals, birds, fish, or aquatic life;

(c) Render or will likely render the waters substantially less useful for domestic, municipal, industrial, agricultural, recreational, or other reasonable uses; or

(d) Leave or likely leave the waters in such condition as to violate any standards of water quality established by the Board.

Quarter means any one of the following three-month periods: January 1 through March 31, April 1 through June 30, July 1 through September 30, and/or October 1 through December 31.

Rainfall event means any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of

rainfall occurring within 10 hours of each other will be considered a single rainfall event.

Rationale or ***fact sheet*** means a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

A ***reference site*** means the least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

A ***reference condition*** is a parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

Release means the flow of sewage from any portion of the collection or transmission system owned or operated by a publicly owned treatment works (POTW) or a domestic wastewater treatment plant, other than through permitted outfalls, that does not reach waters. In addition, a "release" includes a backup into a building or private property that is caused by blockages, flow conditions, or other malfunctions originating in the collection or transmission system owned or operated by the permittee. A "release" does not include:

(a) Backups into a building or private property caused by blockages or other malfunctions originating in a private lateral;

(b) Events caused by vandalism;

(c) Events caused by lightning strike;

(d) Events caused by damage due to third parties working on other utilities in the right of way, e.g., cross bore from telecommunications line; or

(e) Events that are directly incidental to planned, preventative, or predictive maintenance provided the site is under the direct control of a certified operator or contractor, public access is restricted, and the site is disinfected.

Sanitary sewer overflow or ***SSO*** means an unpermitted discharge of wastewater from the collection, transmission, or treatment system other than through the permitted outfall.

Schedule of compliance means a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, condition of a permit, other limitation, prohibition, standard, or regulation. This term includes, but is not limited to, schedules authorized by national effluent limitations guidelines or by Tennessee's water quality standards.

The term ***semi-annually,*** for the purposes of this permit, means the same as once every 6 months. Measurements of the limited effluent parameters may be made any time during a 6 month period beginning from the effective date of this permit, so long as the second set of measurements for a given 12 month period are made approximately 6 months subsequent to that time, if feasible.

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

Sewage means water-carried waste or discharges from human beings or animals, from residences, public or private buildings, or industrial establishments, or boats, together with such other wastes and ground, surface, storm, or other water as may be present

Sewerage system means the conduits, sewers, and all devices and appurtenances by means of which sewage and other waste is collected, pumped, treated, or disposed.

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

Source means any activity, operation, construction, building, structure, facility, or installation from which there is or may be the discharge of pollutants.

Standard of performance means a standard for the control of the discharge of pollutants that reflects the greatest degree of effluent reduction that the

Commissioner determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.

Stream means a surface water that is not a wet weather conveyance.

Subecoregion is a smaller, more homogenous area that has been delineated within an ecoregion.

Total dissolved solids or ***TDS*** means nonfilterable residue.

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

The term ***washout*** is applicable to domestic wastewater activated sludge plants and means a loss of mixed liquor suspended solids (MLSS) of 30.00% or more from the aeration basin(s).

Waters means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof, except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

Watercourse means a man-made or natural hydrologic feature with a defined linear channel that discretely conveys flowing water, as opposed to sheet-flow.

Weekly average amount means the arithmetic mean of all the measured daily discharges by weight during the calendar week when the measurements were made.

Weekly average concentration means the arithmetic mean of all the concentrations expressed in units of mass per volume of any pollutant measured in a calendar week.

Wet weather conveyance means, notwithstanding any other law or rule to the contrary, man-made or natural watercourses, including natural watercourses that have been modified by channelization:

(a) That flow only in direct response to precipitation runoff in their immediate locality;

(b) Whose channels are at all times above the groundwater table;

(c) That are not suitable for drinking water supplies; and

(d) In which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

Wet weather overflow means a sanitary sewer overflow that is directly related to a specific rainfall event.

Wet weather release means a release that is directly related to a specific rainfall event.

4.2. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval
30Q5 – 30-day minimum, 5-year recurrence interval
7Q10 – 7-day minimum, 10-year recurrence interval
BAT – best available technology economically achievable
BCT – best conventional pollutant control technology
BDL – below detection limit
BOD_5 – five-day biochemical oxygen demand
BPT – best practicable control technology currently available
$CBOD_5$ – five-day carbonaceous biochemical oxygen demand
CEI – compliance evaluation inspection
CFR – code of federal regulations
CFS – cubic feet per second
CFU – colony forming units
CIU – categorical industrial user
CSO – combined sewer overflow
DMR – discharge monitoring report
D.O. – dissolved oxygen

E. coli – *Escherichia coli*
EPA – Environmental Protection Agency
EFO – environmental field office
GPM – gallons per minute
IC_{25} – inhibition concentration causing 25% reduction in survival, reproduction, and growth of the test organisms
IU – industrial user
IWS – industrial waste survey
LB (lb) – pound
LC_{50} – acute test causing 50% lethality
MDL – method detection limit
MGD – million gallons per day
mg/L – milligrams per liter
ML – minimum level of quantification
mL – milliliter
MLSS – mixed liquor suspended solids
MOR – monthly operating report
NODI – no discharge code in NetDMR
NPDES – national pollutant discharge elimination system
PL – permit limit
POTW – publicly owned treatment works
SAR – semi-annual report [pretreatment program]
SIU – significant industrial user
SSO – sanitary sewer overflow
STP – sewage treatment plant
TBEL – technology-based effluent limit
TCA – Tennessee code annotated
TDEC – Tennessee Department of Environment and Conservation
TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation
TMDL – total maximum daily load
TRC – total residual chlorine
TSS – total suspended solids
WQBEL – water quality-based effluent limit

4.3. RESOURCES, HYPERLINKS, AND WEB PAGES

Clean Water Act NPDES Electronic Reporting (eReporting) Information
https://www.epa.gov/compliance/npdes-ereporting

Electronic Code of Federal Regulations (eCFR), Title 40 (40 CFR § 1 through § 1099)
https://www.ecfr.gov/cgi-bin/text-idx?SID=75202eb5d09974cab585afeea981220b&mc=true&tpl=/ecfrbrowse/Title40/40chaptI.tpl

Electronic Reporting (NetDMR) Waiver Request
https://www.tn.gov/content/dam/tn/environment/water/documents/wr_ereporting_waiver.pdf

Low Flow Statistics Tools: A How-To Handbook for NPDES Permit Writers (EPA)
https://www.epa.gov/sites/production/files/2018-11/documents/low_flow_stats_tools_handbook.pdf

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (EPA)
https://www.epa.gov/sites/production/files/2015-08/documents/acute-freshwater-and-marine-wet-manual_2002.pdf

NetDMR Login
https://cdxnodengn.epa.gov/net-netdmr/

NetDMR, MyTDEC Forms, & Electronic Reporting Information
https://www.tn.gov/environment/program-areas/wr-water-resources/netdmr-and-electronic-reporting.html

NPDES Compliance Inspection Manual (EPA)
https://www.epa.gov/sites/production/files/2017-01/documents/npdesinspect.pdf

NPDES Electronic Reporting Rule
https://www.federalregister.gov/documents/2015/10/22/2015-24954/national-pollutant-discharge-elimination-system-npdes-electronic-reporting-rule

Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys (QSSOP)
https://www.tn.gov/content/dam/tn/environment/water/documents/DWR-PAS-P-01-Quality_System_SOP_for_Macroinvertebrate_Stream_Surveys-081117.pdf

Rules of the TN Department of Environment and Conservation, Chapter 0400-40
https://publications.tnsosfiles.com/rules/0400/0400-40/0400-40.htm

Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA)
https://www.epa.gov/sites/production/files/2015-08/documents/short-term-chronic-freshwater-wet-manual_2002.pdf

TDEC Water Quality Rules, Reports, and Publications
https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html

Technical Support Document for Water Quality-based Toxics Control (EPA)
https://www3.epa.gov/npdes/pubs/owm0264.pdf

Tennessee Nutrient Reduction Framework
https://www.tn.gov/content/dam/tn/environment/water/tmdl-program/wr-ws_tennessee-draft-nutrient-reduction-framework_030315.pdf

Tennessee Plant Optimization Program (TNPOP)
https://www.tn.gov/environment/program-areas/wr-water-resources/tn-plant-optimization-programs/tnpop.html

Tennessee Water Resources Data and Map Viewers
https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-data-map-viewers.html

USGS StreamStats
https://www.usgs.gov/mission-areas/water-resources/science/streamstats-streamflow-statistics-and-spatial-analysis-tools?qt-science_center_objects=0#qt-science_center_objects

USGS SWToolbox
https://www.usgs.gov/software/swtoolbox-software-information

ADDENDUM TO RATIONALE

August 26, 2022
Ariel Wessel-Fuss

The City of Bartlett provided comments on the draft permit during the public notice period. These comments centered around nutrients.

Item 1
In section 6.6 of the Rational Total Nitrogen and Total Phosphorus the following issues need to be addressed.
Since the local agency has not had the opportunity to review the findings of the SPARROW model, the City is requesting the following information from the TDEC and any future actions concerning nutrient effluent limits alluded to in the rational be deferred until the information is provided to the City and TDEC accurately shows statistical validity and reliability of the model results and the appropriateness of the limits shown to this watershed.

Item 1 Response
The SPARROW models and SPARROW Mappers are tools developed by the United States Geological Survey (USGS). The models are used to estimate long-term average values of water characteristic while the mappers allow for the visualization of data. These tools do not generate nor validate nutrient limits.
Please see the USGS websites for more information on the SPARROW tools
https://www.usgs.gov/mission-areas/water-resources/science/sparrow-modeling-estimating-nutrient-sediment-and-dissolved

https://sparrow.wim.usgs.gov/sparrow-tennessee/

Item 1a
Please provide the City with a copy of the output of the SPARROW model for the Loosahatchie showing the levels of P and N for the river at specific locations along the river between the mouth at the Mississippi and upstream to at least Arlington. This will allow the City to see the output being used to potentially set the required limits outlined in Table 7A.

Item 1a Response
The SPARROW Model generates data on a HUC 10 watershed basis. As mentioned previously the SPARROW Model does not generate limits. The data is publicly available on the USGS Website

https://sparrow.wim.usgs.gov/sparrow-tennessee/

Item 1b

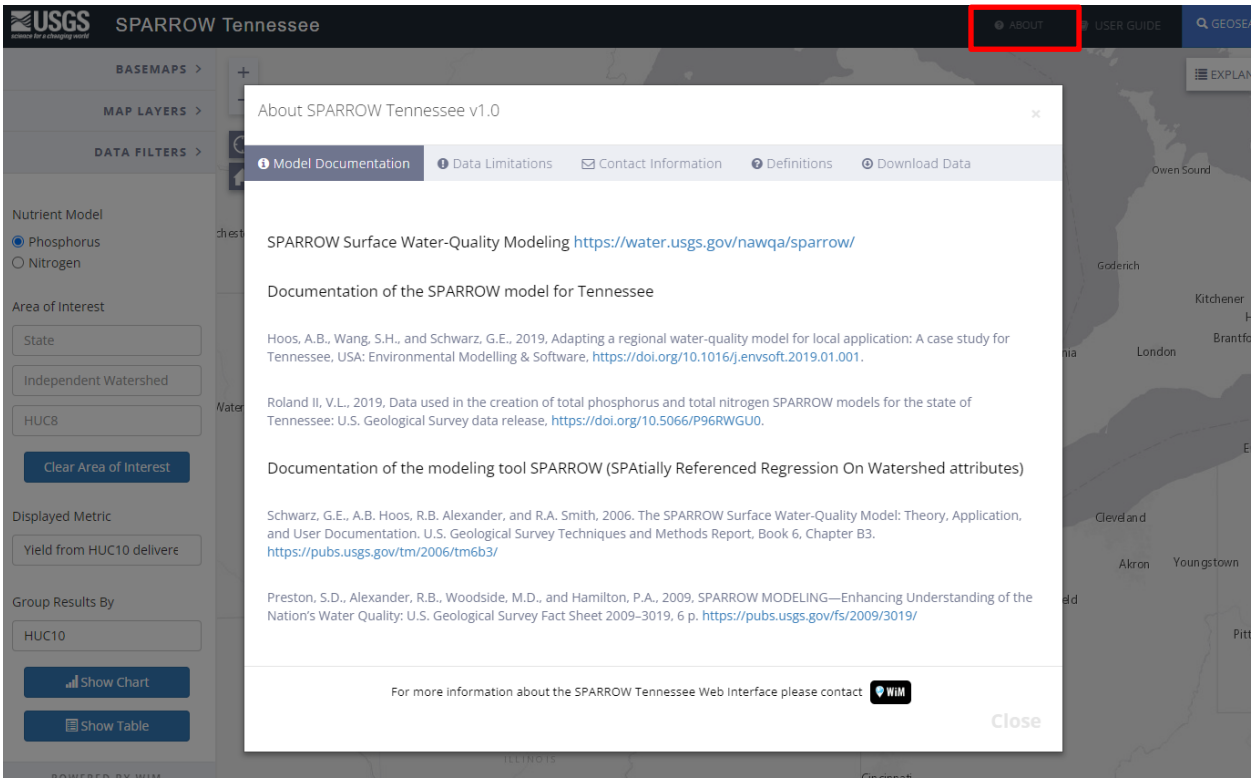
Please provide a copy of the most recent sampling done that are being used to correlate the P and N numbers produced by the model.

Item 1c

Please provide a table or other means showing the correlation of the samples taken calibrated to the SPARROW model outcomes from the mouth of the Loosahatchie in the Mississippi to Arlington. This comparison should show that there is a good correlation between the model of the Loosahatchie and the samples taken on the Loosahatchie.

Item 1c & 1b Response

The SPARROW MODEL and associated data is managed by the USGS.
From the SPARROW Tennessee Mapper https://sparrow.wim.usgs.gov/sparrow-tennessee/
Click on the About link in the upper right hand corner to bring up data, contact information and links to documentation related to the model. Please note that Anne Hoos is listed as the first contact. She has recently retired and Victor Roland will be the best person to contact for additional information.



Item 1 d

The Sparrow was developed in the North East United States where large percentages of wastewater plant flows make up the 7Q10 flows for those rivers. That is the reason they classify wastewater plants as a Medium or High impact to the watershed. Our plant currently

makes up about 2 % of the flow in a 7Q10 event which is not a normal low water event and certainly should not be considered a medium contributor to either Nitrogen or Phosphorus. We agree with the permit that it should remain a Low Impact contributor at this time; however we take issue with the fact that just because the model defines waste water treatment plants as medium contributors in the model that all wastewater plants should be so classified especially since this plant is such a low contributor to the flow in the river. We can certainly argue that agriculture in this water shed will provide significantly more N and P and flow to the river than our plant does. We agree with TDEC that the levels should remain where they are now but to state that this plant is a medium impact at this time without providing data to the City to support such future requirements is premature. The City is very concerned that if this is left in the permit the back sliding provision will prevent any change in the future even when better data is provided. Once again this statement being placed in the rational is premature at this time and should be removed.

Without that data and a good correlation establishing that the model is reliable and valid for this watershed, the State should not be imposing or even hinting at imposing stricter limits on the City. The levels outlined in Table A7 as a future limit will result in substantial capital expenditures to meet these limits and to suggest those limits without shared data is not fair to the City. The City should be allowed to review the data and comment on any inconsistencies or inaccuracies being depended on by TDEC to establish limits now or in the future. The City is not asking that the rolling limits be changed for this permit for Phosphorus or Nitrogen. We are asking however; that in this rational section, and since the City has not been made privy to the data as completed for the Loosahatchie, that any mention of our facility being a potential Medium Impact facility be deleted. The City should remain as a Low Impact limit at current levels for this permit with no mention of a medium contributor.

Item 1d Response

The classification of Low, Medium or High as a result of the SPARROW Model evaluation should be understood as a tool for permitting decision making.

Wastewater plants have individual permit in order to be able to address specific site conditions. The Loosahatchie is assessed as unavailable conditions due to nutrients. Since a wastewater plant contributes nutrients to the receiving stream, nutrients must be limited in the permit.

Tennessee has a narrative water quality criteria for nutrients. The methodology for addressing nutrients is described in the 2015 Nutrient Reduction Framework (NRF). The classification of Low, Medium or High impact is based on criteria specific to Tennessee. This document describes an Enrichment Factor which encompasses the contribution load from Wastewater Plants, Agriculture as well as the contributions from Urban Areas. The

Enrichment Factor calculation for phosphorus also includes the contribution from mining activities. The classification of Low, Medium or High impact is based on criteria specific to Tennessee. The methodology for those classifications can be found the 2015 Nutrient Reduction Framework (NRF):

https://www.tn.gov/content/tn/environment/program-areas/wr-water-resources/nutrient-management-in-tennessee/background/tennessee-nutrient-reduction-framework0.html

Table A7 in the rationale is copied from the NRF. The output from the SPARROW Model combined with the NRF methodology places wastewater plants in a specific category. The medium category for both Total Nitrogen (TN) and Phosphorus (TP) generally results in a proposed limit of 8 mg/l for TN and 1 mg/l for TP. The permit writer then utilizes their best professional judgement based on this information along with site specific considerations to generate a limit. The permit writer did not change the classification of the facility to "low impact." As described in the rationale, the cap limit was generated based on participation in biological nutrient optimization. Furthermore, the utilization of a 7Q10 low flow value is established in the water quality criteria (Rule 0400-40-03) in Tennessee to evaluate the potential impacts to water quality for fish and aquatic life in free flowing streams . Human Health and organism criteria is evaluated using a 30Q5 low flow.

The Division included table A7 serves two purposes. First, even though the division implemented limits capping the amount of nutrients, the table is still a part of the determination. Second, the commentor is states "The levels outlined in Table A7 as a future limit will result in substantial capital expenditures to meet these limits." The Division realizes that capacity and growth planning requires evaluating conditions in both the short and long term. The City can now take this information into account. For example, the City may want to look into contracting a site specific stream model for the Loosahatchie, in years prior to initiating expansion plans for the STP.

Item 2a
The whole table 7A needs to be removed. The City is a low impact plant for nutrients and we understand that if we increase our flows beyond what we are permitted for we will need to expect limit changes in the planning limits issued for our plant; but that change in limits will be required then and should not be a part of this existing permit at least until data can be provided to the City answering the previous questions concerning model accuracy, validity and reliability.

Item 2a Response
As mentioned previous, the City is a medium impact plant according to the SPARROW Model. The limits imposed are a calculation of a cap on the loading based on pre-optimization data. The rationale does not create permit terms or conditions. Additionally, the SPARROW model does not generate permit limitations.

Item 2b
If the State chooses not to act on this disagreement then the statement made under Total Phosphorus and Nitrogen should certainly be modified to read "However, the permittee should be aware that modifications that increase the flow through the facility from the permitted limit such as an expansion will necessitate the implantation of stricter limits." The City does not want to be required to meet new limits if we chose to modify our plant for energy efficiency or to build a larger parking lot that has no bearing on the nutrients in the plant. The way it is written those type of modifications could be required to change limits and I don't think that is what TDEC is inferring.

Item 2b Response
The rationale does not create enforceable terms or conditions. The permit would have to be modified to accommodate any new or increased discharge or to implement new limits on that discharge. Changes to treatment processes or equipment may necessitate a permit modification as well. The requirement to implement new limits when a new or increased discharge occurs is rooted in Rule 0400-40-03-.08 - Antidegradation. If an upgrade or alteration to the facility does not trigger the antidegradation statement, then there would be no basis for implementing new nutrient limits through a permit modification. It is important to note that antidegradation is not the only reason new or revised limits would be implemented. New or revised stream assessments, Total Maximum Daily Loads, influent characterizes are some other reasons modify the permit. That modification process would include a public notice and comment period. This public notice/comment process allows for the permittee and the public to bring forth any issues regarding the proposed permit.

Closing
The City of Bartlett as a whole is satisfied with the limits provided for the next 4 years in the permit. We do feel that TDEC has not provided the City with data or documentation that adequately answers our questions about the limits TDEC is proposing to impose. Until this information is published for review and comments to the local agencies impacted, all potential comments and or proposed requirements associated with Nutrients should be suspended and removed until the next permit cycle or until a reopening is warranted as allowed in the permit. Bartlett and its' operators take great pride in protecting the waters of the state and especially the Loosahatchie from pollution but want to be sure that the limits we are being charge with maintaining have scientific, accurate and valid basis for implementation. Thank you for your consideration and we look forward to receiving the information requested in the previous items listed above as well as TDEC making the requested changes in the City's permit for this permit cycle.

Response
The Division appreciates all of the work the City of Bartlett and its staff do in order to protect water quality. The comments presented are well taken and illuminate a need for the Division

to improve communication with regulated entities on the Nutrient Reduction Framework. The Department has convened a Nutrient Reduction Taskforce which consists of stakeholders from multiple state and local agencies, academia, and others from the public and private sector. One of the goals of the Communication, Education and Outreach working group of this taskforce is to develop educational and engagement messaging for stakeholders. As such the Division representatives on the Nutrient Reduction Taskforce have informed the working group of the concerns presented here.

Collection System

The Division also received comments from the City of Memphis during the comment period. The portion of the City of Bartlett's collection system discharges to the City of Memphis for treatment. Memphis is currently operating under an EPA consent decree which requires an Inter-Jurisdictional Agreement Program (IJAP) to control discharges from satellite systems. The comments from Memphis center around collection system and overflow language. The City of Bartlett provided a response to the City of Memphis' comments. This letter indicated that the portion of the collection system discharging to the City of Memphis is not connected to the Bartlett STP 1 plant and thus is not covered under this permit. While this comment letter was received outside the comment period, the clarification is pertinent to the Division's response.

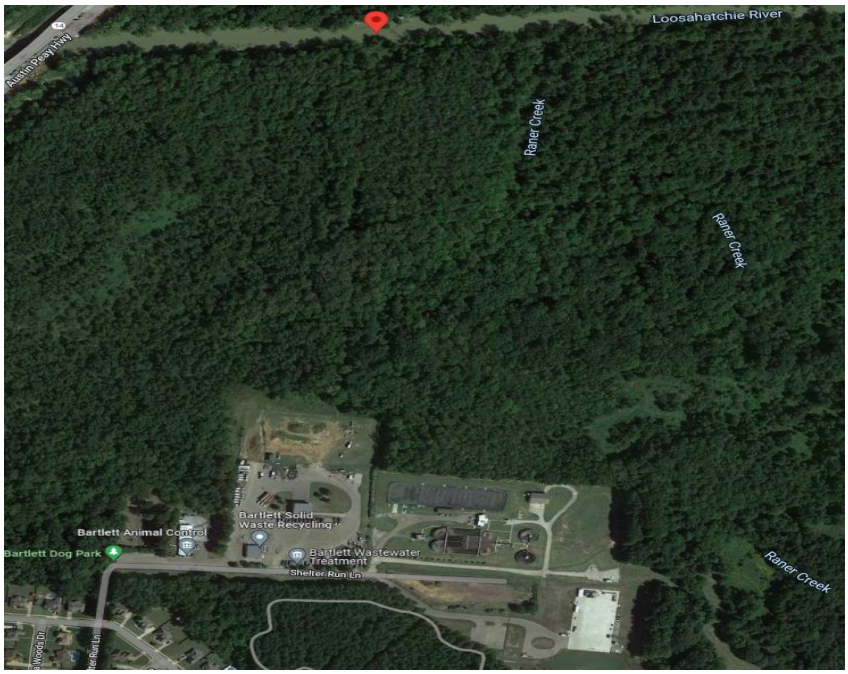
The City of Bartlett is correct. Permit TN0066800 does not cover the portion of the collection system discharging to the City of Memphis. Therefore, the comments provided by the City of Memphis are not relevant for this permit. When a municipality operates a collection system but discharges into the system of another municipality, the generating municipality is operating a satellite collection system. These satellite collection systems should be operated under a state operating permit (SOP).

RATIONALE

City of Bartlett
Bartlett STP No. 1
NPDES Permit No. TN0066800
Date: 7/7/2022
Permit Writer: Ariel Wessel-Fuss

1. FACILITY INFORMATION

Permittee Name:	**City of Bartlett**
Project Name:	**Bartlett STP No. 1**
Location:	5258 Shelter Run Lane, Bartlett, Shelby County, Tennessee
Contact:	Honorable A. McDonald - Mayor (901) 385-6400 kmcdonald@cityofbartlett.org
Design Flow Rate:	2.2 MGD
Percentage Industrial Flow:	0 %
Certified Operator Grades:	STP: III; CS: II; Date Rated: 04/01/1999
Treatment Description:	Extended aeration activated sludge plant with two oxidation ditches, two clarifiers and UV disinfection.



2. RECEIVING STREAM INFORMATION

Receiving Waterbody:	**Loosahatchie River at mile 18.4**
Watershed Group:	Loosahatchie
Hydrocode:	8010209
Low Flow:	7Q10 = 47.6 MGD (73.7CFS)
Low Flow Reference:	USGS Calculation (S. Williams - 10/31/17)

Stream Designated Uses:

Domestic Water Supply	*Industrial*	*Fish & Aquatic Life*	*Recreation*
		X	**X**
Livestock & Wildlife	*Irrigation*	*Navigation*	*Trout*
X	**X**		

The data for the gage nearest to the facility was inactivated in the late 1960's. In further researching the response to comments on the 2017 permit, we noted the next closest gage at Brunswick has been inactive since the middle of the 1970's. The division reached out to USGS at that time to better understand the impacts of the older data. As a result of that conversation the USGS agreed to recalculate the 7Q10 using the data from the gage data at Arlington which has data through 2015. The USGS provided the value of 73.7 cfs at Arlington. Since the drainage area for the Arlington gage location and the facility are very similar in size, there is no need to adjust the 7Q10 value for use at the facility discharge location. Appendix 5 shows the Streamstats output ran on 6/9/22. This result is the same as 2017, indicating that the USGS calculation from 2017 is still the best information available.

Although, the most accurate reflection of the low flow conditions would be up-to-date flow data from closer to the facility, utilizing the 73.7 cfs value is based on the best information available.

3. CURRENT PERMIT STATUS

Permit Type:	Municipal
Classification:	Major
Issuance Date:	16-Jan-18
Expiration Date:	30-Sep-22
Effective Date:	1-Feb-18

4. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

a) The units for *E. coli* have been standardized to number per 100 mL (#/100 mL). Previously, the Division used either MPN/100 mL or CFU/100 mL. The identification of one of these two units indirectly created a requirement for a specific type of testing methodology. By utilizing #/100 mL unit, permittees are provided the flexibility to select the 40 CFR § 136 method that is most suitable for their operations. The limit value (number) will remain the same as the limit units are functionally equivalent.

Language throughout the permit has been updated to reflect the eReporting phase 2 requirements in 40 CFR § 127. This includes (but is not limited to) detailing specific data elements that are required to be reported for overflows, releases and bypasses as well as pretreatment program information.

Total nitrogen effluent monitoring and limitations have been added to this permit (See **section 6.6.**).

b) Compliance Schedule Summary

Description of Report to be Submitted	Reference Section in Permit
Monthly Discharge Monitoring Reports	1.3.1.
Monthly Operational Reports	1.3.4.
Bypass and Overflow and Release Report	1.3.5.1.
Industrial Waste Survey Report within 120 days of the effective permit date*	3.2.
Biomonitoring Report beginning within 90 days of the effective permit date	3.4.

* The Narrative Condition in the permit will include a due date 120 days after the expected effective date of the final permit. If permit effectiveness is delayed, the date for this narrative condition will be adjusted accordingly.

c) For comparison, this rationale contains a table depicting the previous permit limits and effluent monitoring requirements in Appendix 1.

5. PREVIOUS PERMIT TERM REVIEW

A review of the permittee's Discharge Monitoring Reports (DMRs) from February 1, 2018 to June 9, 2022 revealed that the permittee reported violations of permit

limits for settleable solids, IC25, overflows, and *E. coli*. A summary of data reported on DMRs during the previous permit term is located in Appendix 2.

During the previous permit term, Division personnel from the Memphis Environmental Field Office performed a Compliance Evaluation Inspection (CEI) of the permittee's facility. The CEI was performed by Eddy Bouzeid on May 5, 2022, and the permittee was found to be generally in compliance with some specific issues. The inspection report described collection system issues, failure to submit the nutrient optimization report for 2021 and an IC25 failures.

6. PROPOSED EFFLUENT LIMITS AND RATIONALE

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	DAILY MINIMUM PERCENT REMOVAL	RATIONALE
CBOD5	20	367	25	459	30	40	D.O. protection, Refer to 6.1 below
NH3-N	5	92	10	183	10	-	D.O. protection, Refer to 6.4 below
Total Suspended Solids	30	550	40	734	45	40	T.C.A. 0400-40-05-.09
Dissolved Oxygen (mg/l)	3.0 (daily minimum) instantaneous	-	-	-	-	-	D.O. protection, Refer to 6.1 below
Total Nitrogen	Report	Report	-	-	57727 (lb/yr) (Rolling Average)	-	Refer to 6.6 below
Total Phosphorous	Report	Report	-	-	23725 (lb/yr) (Rolling Average)	Report	Refer to 6.6 below
E. coli (colonies/100ml)	126/100 ml	-	-	-	941/100 ml	-	T.C.A. 0400-40-03-.03, Refer to 6.7 below
Settleable Solids (ml/l)	-	-	-	-	1.0 (daily maximum)	-	T.C.A. 0400-40-05-.09
pH (standard units)	6.0-9.0	-	-	-	-	-	T.C.A. 0400-40-03-.03
Flow (MGD):							
Influent	Report	-	-	-	Report	-	Used to quantify pollutant load
Effluent	Report	-	-	-	Report	-	Used to quantify pollutant load
Whole Effluent Toxicity:							
IC_{25}	4.6 % per sample	–	—	—	—	—	Refer to 6.8 below
	Monthly Total		Refer to 7.2 below				
Dry Weather	Overflows	0	Refer to 7.2 below				
Wet Weather	Overflows	0	Refer to 7.2 below				

Note: Weekly limitations on BOD_5/$CBOD_5$ and TSS concentrations are given as required per 40 CFR 133.102(a)(2) or 133.102(a)(4)(2) & 133.102 (b)(2) respectively; daily BOD_5/$CBOD_5$ and TSS limitations are authorized by T.C.A. 0400-40-05-.09; monthly and weekly mass loads are limited per 40 CFR 122.45(f) and based on the design flow as per 40 CFR 122.45(b); monthly average percent removal rates for BOD_5/$CBOD_5$ and TSS are required per 40 CFR 133.102(a)(3) or 133.102(a)(4)(iii) and 133.102 (b)(3) respectively. A minimum 40% daily removal rate is required as equivalent to a daily mass load limitation.

6.1. CONVENTIONAL PARAMETERS

6.1.1. $CBOD_5$ and Dissolved Oxygen

Streeter-Phelps modeling in conjunction with an assimilative capacity study was performed at various conditions to determine allowable organic loadings. The monthly average limits for $CBOD_5$ (20 mg/l), NH_3-N (5 mg/l), and D.O. (3 mg/l) still apply and are considered sufficient to result in an instream dissolved oxygen concentration that remains above the required minimum of 5.0 mg/l. Modeling results are located in the permit file administrative record.

In addition to $CBOD_5$, NH_3-N undergoes biological oxidation in a receiving stream thereby utilizing in stream oxygen and potentially reducing oxygen levels below water quality standards. Ammonia as N is also a pollutant that exhibits toxicity to fish and other aquatic life. The two affects are analyzed separately and the division imposes the most stringent limit in the permit.

6.1.2. Total Suspended Solids (TSS)

Total Suspended Solids is a general indicator of the quality of a wastewater and will be limited in this permit. The technology-based TSS limit for conventional treatment plants is provided in Tennessee Rule 0400-40-05-.09(1)(a).

TSS - Conventional Secondary Treatment Plants			
Monthly Average	*Weekly Average*	*Daily Maximum*	*Monthly Average*
30 mg/L	40 mg/L	45 mg/L	85 % Removal

6.1.3. Percent Removal

The treatment facility is required to remove 85 % of the $CBOD_5$ and TSS that enter the facility on a monthly basis. This is part of the minimum requirement for all municipal treatment facilities contained in Code of Federal Regulations (CFR) 40 § 133.102. The reasons stated by the EPA for these requirements are to achieve these two basic objectives:

i. To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems; and
ii. To help prevent intentional dilution of the influent wastewater as a means of meeting permit limits.

The treatment facility is required to remove 40 % of the $CBOD_5$ and TSS that enter the facility on a daily basis. This percent removal will be calculated three times per week and recorded on the Monthly Operation Report. The number

of excursions (days when $CBOD_5$ and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report.

6.1.4. Settleable Solids

The settleable solids limit of 1.0 ml/L is a technology-based limit established in Rule 0400-40-05-.09.

6.2. FLOW

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in million gallons per day (MGD) and monitored at the time of sample collection.

6.3. PH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3) (b)], the pH for the protection of Fish and Aquatic Life shall not fluctuate more than 1.0 unit over a period of 24 hours and shall not be outside the following ranges: 6.0 – 9.0 standard units (SU) in wadeable streams and 6.5 – 9.0 SU in larger rivers, lakes, reservoirs, and wetlands. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0. The sample type will be grab.

6.4. AMMONIA (NH_3-N)

To assess ammonia toxicity impacts, the state utilizes Tennessee Rules, Chapter 0400-40-03-.03-3(3)(j), dated September 11, 2019, to derive allowable instream protection values protective of chronic and acute exposures to a continuous discharge. A mass balance equation with the treatment facility, stream flows, and these allowable values determines the monthly average and daily maximum permit limits.

The temperature used in calculations is determined based on measured ambient instream temperature or is estimated according to Tennessee's Three Grand Divisions as follows: East (winter 15°C, summer 25°C), Middle (winter 17°C, summer 27°C), and West (winter 20°C, summer 30°C). A pH value of 8 (instead of historically used 7.5) is used because ambient monitoring in West Tennessee showed that pH often exceeds 7.5 and is sometimes as high as 8, and because this assumption is more conservative.

Using temperature and pH values, the criterion continuous concentration (CCC) and criterion maximum concentration (CMC) values are calculated using the following equations:

$$CCC = 0.8876 * \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) * \left(2.126 * 10^{0.028*(20-MAX(T,7))}\right)$$

and

$$CMC = MIN\left\{\begin{array}{c}\left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}\right), \\ \left(0.7249 * \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) * \left(23.12 * 10^{0.036*(20-T)}\right)\right)\end{array}\right\}$$

The determined CCC and CMC values are then used in the mass balance equation as follows:

$$CCC = \frac{Q_S C_S + Q_{STP} C_{STP}}{Q_S + Q_{STP}} \quad \text{or} \quad C_{STP} = \frac{CCC(Q_S + Q_{STP}) - (Q_S C_S)}{Q_{STP}}$$

where:

CCC	=	Criteria continuous concentration (mg/L)
Q_S	=	7Q10 flow of receiving stream (MGD)
Q_{STP}	=	Design flow of STP (MGD)
C_S	=	Assumed/Measured instream NH_3 (mg/L)
C_{STP}	=	Allowable STP discharge of NH_3 (mg/L)

See below for calculations:

Ammonia as Nitrogen Calculations

CCC Calculation: Chronic Limits

	Winter		Summer
Temp (°C)=	20	Temp (°C)=	30
pH=	8	pH=	8
MAX Expression	20.0000	MAX Expression	30.0000
Winter CCC=	**0.78**	Summer CCC=	**0.41**

CCC - Continuous Chronic Criterion Allowable instream NH3 concentration [mg/l]

$$CCC = \frac{(\text{Critical Low Flow [MGD]} * \text{Background Ammonia [mg/L]}) + (\text{Design Flow [MGD]} * \textbf{Effluent Concentration [mg/L]})}{(\text{Critical Low Flow [MGD]} + \text{Design Flow [MGD]})}$$

where:		
	47.6	Critical Low Flow [MGD] (7Q10 value)
	0.1	Background Ammonia Concentration [mg/L] *
	2.2	WWTP Design Flow or long-term average flow [MGD]

Therefore, the Allowable **Effluent Concentrations** and corresponding **Amounts** in winter and summer are:

Winter		Summer	
15.43	Concentration [mg/L]	**7.068**	Concentration [mg/L]
283.0	Amount [lb/day]	**129.7**	Amount [lb/day]

* In the absence of measured data, an assumed background concentration of 0.1 mg/L is used based on an Agreed Wasteload Allocation Modeling Methodology between the EPA and State of TN

CMC Calculation: Acute Limits

	Winter		Summer
Temp (°C)=	20	Temp (°C)=	30
pH=	8	pH=	8
MAX Expression	20.0000	MAX Expression	30.0000
Winter CMC=	**3.90**	Summer CMC=	**1.70**

CMC - Continuous Maximum Criterion Allowable instream NH3 concentration [mg/l]

$$CMC = \frac{(\text{Critical Low Flow [MGD]} * \text{Background Ammonia [mg/L]}) + (\text{Design Flow [MGD]} * \textbf{Effluent Concentration [mg/L]})}{(\text{Critical Low Flow [MGD]} + \text{Design Flow [MGD]})}$$

where:		
	47.6	Critical Low Flow [MGD] (7Q10 value)
	0.1	Background Ammonia Concentration [mg/L]
	2.2	WWTP Design Flow or long-term average flow [MGD]

Therefore, the Allowable **Effluent Concentrations** and corresponding **Amounts** in winter and summer are:

Winter		Summer	
86.22	Concentration [mg/L]	**36.416**	Concentration [mg/L]
1581.9	Amount [lb/day]	**668.2**	Amount [lb/day]

* In the absence of measured data, an assumed background concentration of 0.1 mg/L is used based on an Agreed Wasteload Allocation Modeling Methodology between the EPA and State of TN

The calculated acute and chronic toxicity values above are compared to ammonia limits previously imposed to prevent ammonia toxicity or calculated to protect ambient dissolved oxygen levels. The permit imposes the most stringent values in the analysis. The analysis compares the calculated chronic ammonia value (CCC) with a monthly average limit previously imposed to protect dissolved oxygen or to prevent toxicity. The analysis compares the calculated acute ammonia value (CMC) with the previously imposed daily maximum value to protect dissolved oxygen or to prevent toxicity. Generally, water quality models have predicted the

monthly average ammonia limit to protect dissolved oxygen. The Division has historically developed a companion daily maximum value to protect dissolved oxygen by multiplying the monthly average limit by two. Empirical data supports the factor of two developed in consideration of the natural variation in biological pollutant removal and the design basis for treatment unit sizing.

		Winter Limits to protect F&AL		Summer Limits to protect F&AL		Current Winter Limits to protect D.O		Current Summer Limits to protect D.O	
Nitrogen, Ammonia total (as N)	Daily Maximum	86.22	mg/L	36.42	mg/L	10.00	mg/L	10.00	mg/L
Nitrogen, Ammonia total (as N)	Monthly Average	15.43	mg/L	7.07	mg/L	5.00	mg/L	5.00	mg/L
Nitrogen, Ammonia total (as N)	Weekly Average	23.14	mg/L	10.60	mg/L	10.00	mg/L	10.00	mg/L
Nitrogen, Ammonia total (as N)	Monthly Average	283.0	lb/d	129.7	lb/d	92.0	lb/d	92.00	lb/d
Nitrogen, Ammonia total (as N)	Weekly Average	424.56	lb/d	194.51	lb/d	183	lb/d	183.00	lb/d

The current limits will remain because the NH_3-N concentration limits calculated to protect dissolved oxygen are more restrictive than the toxicity limits calculated above.

6.5. CHLORINATION

A residual chlorine limit is not needed since the STP uses ultraviolet disinfection.

6.6. TOTAL NITROGEN AND TOTAL PHOSPHORUS

Nutrients are naturally occurring and essential components of healthy aquatic systems. Excessive amounts of nutrients, however, can impact water quality. The enrichment of a waterbody with nutrients, called eutrophication, can result in dense, rapidly multiplying growths, or blooms, of algal species and other nuisance aquatic plants. These have potential for negatively impacting the habitat for fish and aquatic life and degrading the water quality for drinking water supply and recreation uses. These impacts can present both locally from an individual activity and much further downstream from the cumulative impact of multiple activities. The Division has therefore developed and begun to implement a strategy to accomplish long-term nutrient reduction in Tennessee waters. The strategy, referred to as the Tennessee Nutrient Reduction Framework (NRF), contains proposed rationale and the methodology for implementing the strategy within a watershed area. Consequently, the Framework considers impacts from both point and non-point sources of nutrients and recommends possible reduction goals for both point and non-point sources. The NRF approach to nutrient reduction is intended to utilize an adaptive management approach in consideration of the facts presenting within a watershed and reevaluation of the effectiveness of progress being made. Regular reassessments of goals and action plans will be conducted by reviewing monitoring data, modeling results and other measures of success. As additional data becomes available (such as WWTP effluent characterization and instream water quality data), model results can be re-evaluated.

The receiving stream the Loosahatchie River (TN08010209002_2000) has been assessed as unavailable for its designated uses due to Nutrients. Previously, the division assessed a stream as unavailable for its designated uses due to Total Nitrogen (TN) and/or Total Phosphorus (TP). After reviewing the assessment process, the division has begun to use the term “nutrients” as the cause instead of specifying TN or TP. The biological systems of a stream will utilize all species of the nutrients. The primary driver of the nutrient impairment will often change as the biological processes continue in the stream. As such, identifying one specific nutrient driver (TN or TP) was not adequately convening the causes of the stream’s impairment. Therefore, the permit will implement limitations on both TN and TP in the proposed permit.

During a previous permit term, the permittee engaged a 3rd party contractor to optimize the existing treatment facility for biological nutrient removal. The initial results of the optimization process indicate that some level of biological treatment of phosphorus is achievable. However, the facility is showing inconsistent removal. Therefore, the permittee will continue the optimization effort outside the scope of the permit and will continue monitoring and reporting phosphorous and complying with annual rolling limit.

In the 2017 permit, total nitrogen monitoring was report only. Additionally, the division did consider whether a different phosphorus limit would appropriately represent the treatment level of the current facility. Utilizing monthly average MOR data, the 95th percentile was calculated using the EPA TSD manual method. The value calculated to be 33,247 lb/yr. The 2015 permit limit of 65 lb/day is equivalent to 23,725 lb/yr. However, the data indicates that during the optimization period, the effluent generally had higher and more frequent spikes of effluent phosphorus than prior to the optimization period. These variations are to be expected since the optimization process is unique to each facility and requires many process adjustments. The 2017 permit limit was issued with an annual rolling average of 23,725 lb/yr.

Since the 2017 permit, the SPARROW model has been completed for West Tennessee.

The SPARROW modeling has since been competed for West Tennessee. For total Nitrogen, the SPARROW model indicates that domestic wastewater facilities are a medium impact to the watershed. For total Phosphorus, the SPARROW model indicates that domestic wastewater facilities are a medium impact to the watershed.

Table A7 from the Nutrient Reduction Framework.

Required Effluent Limits			
	Low Impact	**Medium Impact**	**High Impact**
Total Nitrogen	Cap @ current level	8 mg/l	5 mg/l
Total Phosphorus	Cap @ current level	1 mg/l	0.3 mg/l

Table A7. Required Effluent Limits for Total Nitrogen and Total Phosphorus

Total Phosphorus

The Sparrow Model recommends decreasing the limits for TP. In this proposed permit, the reduced limit is not being imposed considering the successful implementation of biological nutrient removal for phosphorus. However, the permittee should be aware that modifications to the facility such as an expansion will necessitate the implementation of stricter limits. The calculation for the medium impact category is included for reference. As mentioned before, the Nutrient reduction Framework is expected to be an iterative process and it is

expected that as more data is available targeted reduction of nutrient limits may be necessary to meet the objectives of the Tennessee Water Quality Control Act.

MOR data	(Jan 2017 Missing)					
Phosphorus, total [as P]						
Monitoring Period	**MOR Value (mg/l)**	**Flow MGD**		**Monitoring Period**	**MOR Value (mg/l)**	**Flow MGD**
FEB' 12	3.09	0.99		JAN' 16	2.15	1.11
JUNE ' 12	3.20	0.97		FEB' 16	2.95	1.07
SEPT ' 12	2.76	1.02		MAR '16	4.45	1.27
OCT ' 12	3.30	0.95		APR' 16	3.1	1.07
NOV ' 12	3.27	0.91		MAY' 16	1.2	1.09
DEC ' 12	2.93	0.98		JUNE ' 16	5.65	1.045
JAN' 13	2.55	1.07		JUL ' 16	3	1.03
FEB' 13	3.17	1.04		AUG ' 16	3.4	0.93
MAR '13	3.56	0.96		SEPT ' 16	3.2	0.97
APR' 13	2.13	1.11		OCT ' 16	3.35	0.93
MAY' 13	3.03	1.16		NOV ' 16	3.25	0.95
JUNE ' 13	1.02	1		DEC ' 16	1.95	1.04
SEPT ' 13	3.00	1.01		FEB' 17	3.75	0.99
OCT ' 13	5.83	0.98		MAR '17	4.65	1.045
NOV ' 13	2.96	0.98		APR' 17	5.55	1.14
DEC ' 13	2.06	1.08		MAY' 17	4.7	1.08
JAN' 14	2.11	1.06		JUNE ' 17	3.75	1.053
FEB' 14	2.52	1.04		Total	57.00	57.00
MAR '14	1.10	1.09		Average	2.99	1.05
APR' 14	2.75	1.15		Std dev	1.20	0.07
MAY' 14	1.13	1.11				
JUNE ' 14	1.18	1.18		from pgs E-5 & E-6 in the TSD:		
JUL ' 14	4.95	1		xp = μ + zpσ		
AUG ' 14	1.49	1.02		where:		
SEPT ' 14	0.06	1.11		μ = mean of monthly averages		
OCT ' 14	3.18	1.05		σ = standard deviation of monthly averages		
NOV ' 14	4.12	1.09		zp = pth percentage point for std normal dist		
DEC ' 14	1.95	1.05				
JAN' 15	4.12	1.03		x95 = 95th %ile n-day monthly average limit		
FEB' 15	4.00	1.07		= μ + 1.645σ		
MAR '15	3.90	1.16		Note: zp = 1.645		
APR' 15	3.43	1.07				
MAY' 15	2.41	1.13		x95 (mg/L)=	5.0	
JUNE ' 15	2.40	1.08		x95 (lb/yr) (DF)=	33247	
JUL ' 15	4.2	1.13				
AUG ' 15	2.3	1.03		Current Limit (lb/day)=	65	
SEPT ' 15	1.5	0.97		Current Limit (lb/yr)=	23725	
OCT ' 15	3.4	0.94				
NOV ' 15	2.35	1.127		Medium Impact Category (mg/L)=	1.0	
DEC ' 15	1.85	1.18		x95 (lb/yr) (DF)=	6697	

Total Nitrogen

The Sparrow Model recommends establishing a limit based on 8 mg/l on Total Nitrogen. Considering the successful implementation of biological nutrient removal for nitrogen, an annual rolling average limit 57727 lb/yr is proposed. This limit is based on the TN MOR data during the same timeframe used to for TP (2012-2017). If a limit was calculated using current data, the permitee would be unduly "penalized" for engaging in nutrient optimization by generating a lower value. Utilizing this timeframe avoids this "penalty." However, the permittee should be aware that modifications to the facility such as an expansion will necessitate the implementation of stricter limits. The calculation for the medium impact category is included for reference. As mentioned before, the Nutrient reduction Framework is expected to be an iterative process and it is expected that as more data is available targeted reduction of nutrient limits may be necessary to meet the objectives of the Tennessee Water Quality Control Act.

MOR monthly Averages
Nitrogent Total

Monitoring Period	MOR Value (mg/l)	Flow MGD	MOR Value (lb/d)
FEB' 12	4.40	0.99	36.33
JUNE ' 12	4.50	0.97	36.40
SEPT ' 12	3.70	1.02	31.48
OCT ' 12	4.60	0.95	36.45
NOV ' 12	9.70	0.91	73.62
DEC ' 12	1.60	0.98	13.08
JAN' 13	2.80	1.07	24.99
FEB' 13	4.40	1.04	38.16
MAR '13	7.90	0.96	63.25
APR' 13	2.70	1.11	24.99
MAY' 13	3.40	1.16	32.89
JUNE ' 13	3.00	1	25.02
SEPT ' 13	43.00	1.01	362.21
OCT ' 13	3.20	0.98	26.15
NOV ' 13	1.70	0.98	13.89
DEC ' 13	1.40	1.08	12.61
JAN' 14	6.3	1.06	55.69
FEB' 14	5.8	1.04	50.31
MAR '14	5.7	1.09	51.82
APR' 14	2.4	1.15	23.02
MAY' 14	4.2	1.11	38.88
JUNE ' 14	2.7	1.18	26.57
JUL ' 14	4.4	1	36.70
AUG ' 14	5.40	1.02	45.94
SEPT ' 14	9.00	1.11	83.32
OCT ' 14	13.30	1.05	116.47
NOV ' 14	6.80	1.09	61.82
DEC ' 14	5.10	1.05	44.66
JAN' 15	14.50	1.03	124.56
MAR '15	9.00	1.16	87.07
JUNE ' 15	2.10	1.08	18.92

Monitoring Period	MOR Value (mg/l)	Flow MGD	MOR Value (lb/d)
SEPT ' 15	0.50	0.97	4.04
NOV ' 15	2.90	1.127	27.26
DEC ' 15	4.10	1.18	40.35
FEB' 16	6.22	1.25	64.84
AUG ' 16	20.9	1.15	200.45
NOV ' 16	1.4	1	11.68
MAR '17	7	1.045	61.01
JUNE ' 17	13.8	1.053	121.19
SEPT ' 16	3.5	0.97	28.31
DEC ' 16	5.6	1.04	48.57
Total	41.00	41.00	41.00
Average	6.45	1.05	56.71
Std dev	7.14	0.08	61.67

from pgs E-5 & E-6 in the TSD:
xp = μ + zpσ
where:
μ = mean of monthly averages
σ = standard deviation of monthly averages
zp = pth percentage point for std normal dist

x95 = 95th %ile n-day monthly average limit
= μ + 1.645σ
Note: zp = 1.645

x95 (lb/day)=	158.16
x95 (lb/yr)=	57727.03
Medium Impact Category (mg/L)=	8.0
x95 (lb/yr) (DF)=	53576

Based on the DMR data since 2017, the average TN value reported is 50.33 lb/d which would be 18370 lb/yr. If the permittee discharged at the maximum value reported on DMRs (160 lb/d) every day for a year, the limit of 57727 lb/yr would be violated. However, it is unlikely that situation would ever occur. Therefore, the permittee is not expected to have difficulty meeting this new limit.

6.7. *E. COLI*

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. *E. coli* is used as an indicator organism as a measure of the bacteriological health of a receiving stream and the effectiveness of disinfection. Both the geometric mean and daily maximum are limited for *E. coli* in accordance with Rule 0400-40-03-.03. The *E. coli* daily maximum limit of 487 colony forming units per 100 mL applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colony forming units per 100 mL applies to all other recreational waters. The units for *E. coli* have been standardized to #/100 mL, which is functionally equivalent to colony forming units.

6.8. BIOMONITORING

The Division evaluates all dischargers for reasonable potential to exceed the narrative water quality criterion "no toxics in toxic amounts". The Division has determined that for municipal facilities with stream dilutions of less than 500 to 1, any of the following conditions may demonstrate reasonable potential to exceed this criterion:

i. Toxicity is suspected or demonstrated;
ii. A pretreatment program is required; or
iii. The design capacity of the facility is greater than 1.0 MGD.

Because the design capacity of the facility exceeds 1.0 MGD, the facility is considered to have the reasonable potential to violate the narrative water quality criterion, "no toxics in toxic amounts". Even though the facility may not operate at or above 1.0 MGD initially, this discharge permit authorizes discharge up to 2.2 MGD. Therefore, permit conditions relevant to major dischargers will apply.

The relatively low dilution of the effluent when mixed with the receiving stream at its 7Q10 low flow potentially creates a chronic exposure to toxicity. So, chronic whole effluent toxicity testing is retained in this permit. Because some forms of toxicity are temperature dependent, monitoring and reporting quarterly provides the permittee with the means of viewing any seasonal toxicity trends in its wastewater characteristics and the means of defending its compliance with water quality criteria year round.

Because the low flow condition provides the least amount of effluent dilution, the solution of effluent at low flow will be the highest concentration of effluent ever available to provide a chronically toxic exposure. This concentration becomes the calculated IC25 endpoint as shown below. Therefore, to demonstrate the absence of chronic toxicity potential, an effluent solution causing a 25% or more reduction in mortality, reproduction and/or growth effects of the organisms in a laboratory test must be in excess of the maximum effluent concentration occurring at the condition of least dilution (the calculated endpoint). Reasonable potential for toxicity will be demonstrated if the IC25 established in the laboratory is less than or equal to the endpoint.

The following calculation is the required dilution at which chronic toxicity testing must meet permit requirements.

$$IC_{25}\% = \frac{SDesign\ Flow}{Stream\ Low\ Flow} \times 100 = \frac{2.2}{47.6} \times 100 = 4.6\%$$

Where:

47.6	= 7Q10 Low Flow (MGD)
2.2	= Design Flow Capacity (MGD)
IC_{25}	= Concentration causing 25% reduction in survival, growth, and reproduction of test organisms

6.9. METALS AND TOXICS

Reasonable potential for heavy metals and other toxic substances to violate water quality standards has been evaluated as part of the permit issuance process and/or due to changes in industrial waste contribution to the POTW. More frequent monitoring will be required in the permit if:

a) The reported concentrations approach or exceed calculated allowable values;
b) Significant amounts of particular pollutants are present which may impact the treatment process sludge character or the receiving stream; or
c) Minimum information is lacking to accurately calculate water quality protection values, in which case additional stream monitoring may also be required.

Appendix 3 lists the metal and toxic parameter calculations and the procedure used to derive the results. The evaluation indicates that the metals and toxics evaluated do not exhibit the potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

6.10. VOLATILE ORGANIC, ACID-EXTRACTABLE, AND BASE-NEUTRAL COMPOUNDS

The Division evaluated effluent concentrations of volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium and thallium for potential to violate water quality criteria using the following mass balance equation:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

Where:

Cm	=	resulting instream concentration after mixing
Cw	=	concentration of pollutant in wastewater
Cs	=	stream background concentration
Qw	=	wastewater flow (STP Design flow)
Qs	=	stream low flow

To protect water quality: $Cw \leq Ca$

Where: $Ca = \frac{(S_A)[Cm(Qs+Qw) - QsCs]}{Qw}$

Ca	=	STP allowable effluent concentration
S_A	=	the percent Stream Allocation

The reasonable potential evaluation uses the following assumptions and procedures:

a) Stream background concentrations, Cs, for all volatile organic, acid-extractable, and base-neutral compounds equal zero unless actual stream data exists to show otherwise. Due to the volatility and reactivity of volatile compounds, the background concentrations used for reasonable potential calculations is always assumed to be below detection.

b) The stream allocation, S_A, is determined based on the size of a receiving stream in accordance with guidance provided in the Division's Reasonable Potential Analysis Procedures and is shown on the Reasonable Potential Spreadsheet in the Appendices.

c) A mass balance equation uses the STP design flow, the receiving stream critical low flow (7Q10 or 1Q10), the state water quality numeric criteria, and the stream allocation safety factor to derive the allowable effluent concentrations.

d) When pollutants have potential to violate standards because the concentrations are below detection limits but could be above the allowable water quality-based effluent concentrations, the pollutants are handled one of three (3) ways:

i. Additional testing of detected and non-detected pollutants is required if contributing industrial processes are likely to contain them and available analysis results were not performed using sufficiently sensitive methods as required by state rule 0400-40-03-.05(8).
ii. If sufficiently sensitive methods have been used with no detection shown and the contributing industrial processes do not reasonably contain that pollutant, the division drops the pollutant from further consideration.
iii. Pollutants detected at levels high enough to violate standards are limited in the permit to the allowable concentration, Cw, based on STP design flow.

Calculations for this permit have been done using a standardized spreadsheet, titled "WQ Based Effluent Calculations - Other Compounds", and are located in Appendix 4. All metals other than antimony, arsenic, beryllium, selenium, and thallium have been evaluated using procedures described in the rationale, or fact sheet, section headed, “METALS AND TOXICS”.

The evaluation indicates that volatile organic, acid-extractable, and base-neutral compounds and antimony, arsenic, beryllium, selenium, and thallium do not exhibit the potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

7. COLLECTION SYSTEMS

7.1. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a Grade II certified collection system operator in accordance with the Water Environmental Health Act of 1984.

7.2. COLLECTION SYSTEM OPERATION

For the purposes of demonstrating proper operation of the collection, transmission and treatment system, the permit treats releases separately from overflows and bypass. State regulations at 0400-40-05-.07(2) establish “standard conditions”. These standard conditions include 0400-40-05-.07(2)(n) that sets forth specific language prohibiting sanitary sewer overflows (defined in the regulations as a “discharge”) and standard conditions in 0400-40-05-.07(2)(l) and (m)

pertaining to bypass. While the regulations prohibit sanitary sewer overflow (*i.e.*, discharges that reach or are likely to reach receiving waters) it does not prohibit "releases" that do not reach or are not likely to reach receiving waters. However, releases that do not reach receiving waters may be indicative of other problems, such as improper operation and maintenance of the sewer system. Whether another violation occurs or whether, for example, there is an unavoidable accident (see, e.g., § 69-3-114(a)), will involve case-specific evaluations. Regardless, the permit assures, without waiving rights to pursue other violations associated with a release, as applicable, that the permittee would, at a minimum be reporting and responding to releases. Any release potentially warrants permittee mitigation of human health risks via direct or indirect contact and may demonstrate a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

Proper operation and maintenance of the collection system may include, but is not limited to:

1. A comprehensive collection system map showing all drainage areas, manholes, pump stations (number and size of pumps), flow meters, chronic overflow and release locations, miles of collection system, material and diameter of construction, and other relevant system elements.
2. Rainfall data at location(s) using method(s) representative of precipitation within the collection system area.
3. Flow meters at locations in the collection system that would enable drainage area analysis and prioritization based on the amount of inflow and infiltration (I/I) observed.
4. A collection system hydraulic model that predicts I/I problems in response to rainfall events and the effects of new conditions.

When determining if a location experiences chronic sanitary sewer overflows or releases, the term "event(s)" includes dry weather overflows, wet weather overflows, dry weather releases and wet weather releases.

7.3. LOW PRESSURE SYSTEM OWNERSHIP/CONTROL

On May 15, 2022, Tennessee Rule 0400-40-05 became effective. In those rules, clarifying language was added regarding low pressure systems. The Board received a comment during the rulemaking process noting that the inclusion of ownership or control of low pressure systems in Tennessee Rule 0400-40-06 governing land based disposal systems should be included Tennessee Rule 0400-40-05 which governs discharging systems. The response to that comment is included below to provide direction to municipal agencies in implementing this condition of the permit.

The Board agrees, and has added the following to Rule 0400-40-05-.07(2)(c) concerning proper operation and maintenance, "Low pressure pumps, low pressure tanks, septic tank effluent pumps (STEP), STEP tanks, and septic tank effluent gravity tanks are integral to the treatment and conveyance of sewage in a low-pressure system design, and shall be owned or under control of the municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area." This permit condition is not applicable to pumps and appurtenances that are service lines to other than a low-pressure public system. This condition applies to sewer projects or extensions that are approved for construction after the effective date of the permit.

While the Board encourages direct ownership of the low pressure pumps and tanks, it does recognize that in some cases, operational control without direct asset ownership may suffice. The Board acknowledges that operational control may be implemented collectively by multiple local agencies. Operational control for privately-owned low pressure pumps and appurtenances appropriately includes the following:

- *Legal mechanism e.g. local regulations, ordinance, plumbing codes, resolution etc. that provides the authority to:*
  - *Deny the use of low pressure pumps and tanks*
  - *Establish and enforce design standards*
  - *Access the site and equipment (including inspection)*
  - *Obtain remedies for non-compliance*
  - *Conduct an emergency response*
- *Plans review process to ensure compliance with the locally established design standards (including inspection of installation)*
- *Construction, inspection, and approval process*
- *Preventative and emergency maintenance program*

In addition, all components of the sewerage system must be owned by a municipality, other body of government, public utility district, or a privately-owned public utility demonstrating lawful jurisdiction over the service area in accordance with Rule 0400-40-16-.02(8).

8. OTHER PERMIT REQUIREMENTS AND CONDITIONS

8.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade III certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984. Operator grades are under jurisdiction of the Water and Wastewater Operators Certification Board. This NPDES permit is under jurisdiction of the Tennessee Board of Water Quality, Oil and Gas. Operator grades

are rated and recommended by the Division of Water Resources pursuant to Rule 0400-49-01 and are included in this fact sheet for reference. The grades are intentionally not specified in the permit so that the operation certification board can authorize changes in grade without conflicting with this permit.

8.2. PRETREATMENT PROGRAM

The City of Bartlett has received an exemption from development of a pretreatment program due to the lack of any significant industrial users.

8.3. BIOSOLIDS MANAGEMENT PRACTICES

The Clean Water Act (CWA) requires that any NPDES permit issued to a publicly owned treatment works or any other treatment works treating domestic sewage shall comply with 40 CFR § 503, the federal regulation governing the use and disposal of sewage sludge. It is important to note that "biosolids" are sewage sludge that have been treated to a level so that they can be land applied.

The language in **section 3.3.** of the permit, relative to biosolids management, a CWA requirement, allows the "permitting authority" under 40 CFR § 503.9(p) to be able to enforce the provisions of § 503. The "permitting authority" relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; for Tennessee it is EPA Region 4.

Tennessee regulates the land application of non-exceptional quality biosolids under state rules, Chapter 0400-40-15. The state rules became effective on June 30, 2013. Under these state rules, all facilities that land apply non-exceptional quality biosolids must obtain a biosolids permit from the division. The land application of non-exceptional quality biosolids under state rules is regulated through either a general permit or by an individual permit. Questions about the division's biosolids regulations and permitting program should be directed to the State Biosolids Coordinator at:

Division of Water Resources
State Biosolids Coordinator
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102
615-532-0625

8.4. PERMIT TERM

In order to meet the target reissuance date for the Loosahatchie watershed and following the directives for the Watershed Management Program initiated in January 1996, the permit will be issued to expire in 2027.

8.5. ELECTRONIC REPORTING

The NPDES Electronic Reporting Rule (eRule), which became effective on December 21, 2016, replaces most paper-based reporting requirements with electronic reporting requirements. NetDMR allows NPDES permittees to submit DMRs electronically to EPA through a secure internet application and has been approved by Tennessee as the official electronic reporting tool for DMRs. The permittee has been reporting electronically via NetDMR since September 13, 2016.

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Reports (DMRs) based on the effluent limits in **section 1.1** of the permit. DMRs and DMR attachments, including laboratory data and overflow reports, shall be submitted electronically in NetDMR or other electronic reporting tool approved by the State, no later than the 15th of the month following the end of the monitoring period. All NPDES program reports must be signed and certified by a responsible official or a duly authorized representative, as defined in 40 CFR § 122.22.

According to 40 CFR § 127.15, states have the flexibility to grant temporary or episodic waivers from electronic reporting to NPDES permittees who are unable to meet the electronic reporting requirements. To obtain an electronic reporting waiver, an electronic reporting waiver request must be submitted by email to DWRwater.compliance@tn.gov or by mail to the following address:

Division of Water Resources
Compliance and Enforcement Unit – NetDMR Waivers
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243-1102

For contact and training information about NetDMR electronic reporting, visit the Division's website here.

The permit language has been modified to accommodate the implementation of the MyTDEC Forms electronic reporting tool. For more information, visit EPA's website on eReporting requirements.

8.6. ANTIDEGRADATION STATEMENT / WATER QUALITY STATUS

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the

purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the Division as segment ID# TN08010209002_2000.

The Division has made a water quality assessment of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be neither an exceptional nor outstanding national resource water. Additionally, this water partially/does not support(s) designated uses due to e. Coli, nutrients, Physical Substrate habitat alterations, and sedimentation/siltation from Channelization, Crop production, Municipal (Urbanized High Density Area), Municipal Point Source Discharges and Land Development/Redevelopment.

Total Maximum Daily Loads (TMDLs) have been developed and approved for this waterbody segment on the following parameters and dates:

Parameter:	TMDL Approval Date:
E coli	7/27/2011

The proposed terms and conditions of this permit comply with the wasteload allocations of these TMDLs.

This permit does not authorize physical substrate habitat alterations to the stream. Sediments/silts are produced as a result of stream channelization and bank erosion. The TSS component of wastewater treatment facility discharges is generally composed of primarily organic material and is considered to be different in nature than the sediments produced from erosional processes. Therefore, TSS discharges from wastewater treatment facilities are not sources of sediment/silt. STPs are sources of pathogens but must meet water quality standards at the end of the discharge pipe by disinfecting the effluent. The permit imposes limits on nutrients to comply with antidegradation provisions of the state water quality standards.

APPENDIX 1 – PREVIOUS PERMIT LIMITS

PARAMETERS	MONTHLY AVERAGE CONCENTRATION (MG/L)	MONTHLY AVERAGE AMOUNT (LB/DAY)	WEEKLY AVERAGE CONCENTRATION (MG/L)	WEEKLY AVERAGE AMOUNT (LB/DAY)	DAILY MAXIMUM CONCENTRATION (MG/L)	DAILY MINIMUM PERCENT REMOVAL	Frequency
$CBOD_5$	20	367	25	459	30	40	3 per week
NH_3-N	5	92	10	183	10	—	3 per week
Total Suspended Solids	30	550	40	734	45	40	3 per week
Dissolved Oxygen (mg/l)	3.0 (daily minimum) instantaneous	—	—	—	—	—	5 per week
Total Nitrogen	Report	Report	—	—	—	—	Monthly
Total Phosphorous	Report	Report	—	—	23725 (lb/yr) (Rolling Average)	Report	Monthly
E. coli (colonies/100ml)	126/100 ml	—	—	—	941/100 ml	—	3 per week
Settleable Solids (ml/l)		—	—	—	1.0 (daily maximum)	—	3 per week
pH (standard units)	6.0-9.0	—	—	—	—	—	5 per week
Flow (MGD):							
Influent	Report	—	—	—	Report	—	Daily
Effluent	Report	—	—	—	Report	—	Daily
Whole Effluent Toxicity:							
IC_{25}	4.6% per sample	—	—	—	—	—	Annual
Sanitary Sewer Overflows			0				Continuous
Dry Weather Overflows, Total Occurrences			0				Continuous
Wet/Dry Weather Overflows (12 month totals, gal/mo)			Report				Continuous
Wet/Dry Weather Releases (Total Occurances, gal/mo)			Report				Continuous
Bypass of Treatment, Total Occurrences			Report				Continuous

APPENDIX 2 – DMR SUMMARY

Row Labels	Average of DMR Value	Max of DMR Value2	Min of DMR Value3
BOD, carbonaceous [5 day, 20 C]	**171.08**	**273.00**	**108.00**
DAILY MX	**196.43**	**273.00**	**146.00**
mg/L	196.43	273.00	146.00
MO AVG	**145.73**	**184.00**	**108.00**
mg/L	145.73	184.00	108.00
Solids, total suspended	**234.42**	**498.00**	**155.00**
DAILY MX	**272.27**	**498.00**	**204.00**
mg/L	272.27	498.00	204.00
MO AVG	**196.57**	**230.00**	**155.00**
mg/L	196.57	230.00	155.00

Row Labels	Average of DMR Value	Max of DMR Value2	Min of DMR Value3
BOD, carbonaceous [5 day, 20 C]	**27.86**	**101.00**	**5.00**
DAILY MX	**5.57**	**13.00**	**5.00**
mg/L	5.57	13.00	5.00
MO AVG	**31.52**	**78.00**	**5.00**
lb/d	58.00	78.00	49.00
mg/L	5.04	6.00	5.00
WKLY AVG	**35.35**	**101.00**	**5.00**
lb/d	65.55	101.00	51.00
mg/L	5.16	7.00	5.00
E. coli	**55.07**	**2420.00**	**1.00**
DAILY MX	**107.35**	**2420.00**	**3.00**
#/100mL	107.35	2420.00	3.00
MO GEOMN	**2.78**	**8.00**	**1.00**
#/100mL	2.78	8.00	1.00

Flow, in conduit or thru treatment plant	**1.71**	**3.11**	**1.19**
DAILY MX	**2.03**	**3.11**	**1.37**
MGD	2.03	3.11	1.37
MO AVG	**1.39**	**1.62**	**1.19**
MGD	1.39	1.62	1.19
IC25 Static Renewal 7 Day Chronic Chrceriodaphnia	**12.46**	**18.40**	**1.00**
MINIMUM	**12.46**	**18.40**	**1.00**
%	12.46	18.40	1.00
IC25 Static Renewal 7 Day Chronic Chrpimephales	**19.70**	**23.60**	**18.40**
MINIMUM	**19.70**	**23.60**	**18.40**
%	19.70	23.60	18.40
Nitrogen, ammonia total [as N]	**7.19**	**55.00**	**0.30**
DAILY MX	**2.58**	**8.30**	**0.70**
mg/L	2.58	8.30	0.70
MO AVG	**6.13**	**35.00**	**0.30**
lb/d	11.27	35.00	4.00
mg/L	0.99	2.90	0.30
WKLY AVG	**10.56**	**55.00**	**0.40**
lb/d	19.43	55.00	5.00
mg/L	1.69	5.40	0.40
Nitrogen, total [as N]	**27.41**	**160.00**	**1.00**
MO AVG	**27.41**	**160.00**	**1.00**
lb/d	50.33	160.00	12.00
mg/L	4.49	14.50	1.00
Oxygen, dissolved [DO]	**5.58**	**7.20**	**5.00**
INST MIN	**5.58**	**7.20**	**5.00**
mg/L	5.58	7.20	5.00
pH	**6.65**	**7.60**	**6.00**
MAXIMUM	**6.98**	**7.60**	**6.50**
SU	6.98	7.60	6.50
MINIMUM	**6.33**	**6.90**	**6.00**
SU	6.33	6.90	6.00
Phosphorus, total [as P]	**15.57**	**130.00**	**0.40**
MO AVG	**15.57**	**130.00**	**0.40**

lb/d	28.47	130.00	5.00
mg/L	2.67	11.00	0.40
Solids, settleable	**0.14**	**2.00**	**0.10**
DAILY MX	**0.14**	**2.00**	**0.10**
mL/L	0.14	2.00	0.10
Solids, total suspended	**31.29**	**208.00**	**2.00**
DAILY MX	**9.24**	**36.00**	**3.00**
mg/L	9.24	36.00	3.00
MO AVG	**29.39**	**117.00**	**2.00**
lb/d	54.08	117.00	25.00
mg/L	4.71	9.00	2.00
WKLY AVG	**44.22**	**208.00**	**2.00**
lb/d	80.73	208.00	27.00
mg/L	7.71	20.00	2.00

Row Labels	Average of DMR Value	Max of DMR Value2	Min of DMR Value3
BOD, carbonaceous, percent removal	**95.62**	**97.00**	**90.00**
DAILY MN	**95.10**	**97.00**	**90.00**
%	95.10	97.00	90.00
MO AV MN	**96.14**	**97.00**	**91.00**
%	96.14	97.00	91.00
Solids, suspended percent removal	**96.32**	**99.00**	**84.00**
DAILY MN	**95.41**	**99.00**	**84.00**
%	95.41	99.00	84.00
MO AV MN	**97.24**	**99.00**	**92.00**
%	97.24	99.00	92.00

Row Labels	Average of DMR Value	Max of DMR Value2	Min of DMR Value3
Phosphorus, total [as P]	**9983.63**	**14629.00**	**1271.00**
ROLL AVG	**9983.63**	**14629.00**	**1271.00**
lb/yr	9983.63	14629.00	1271.00

Row Labels	Average of DMR Value	Max of DMR Value2	Min of DMR Value3
Bypass of Treatment Facility	**0.00**	**0.00**	**0.00**
MO TOTAL	**0.00**	**0.00**	**0.00**
gal/mo	0.00	0.00	0.00
occur/mo	0.00	0.00	0.00
Release [Sewer], Dry Weather	**161.83**	**9000.00**	**0.00**
MO TOTAL	**161.83**	**9000.00**	**0.00**
gal/mo	333.38	9000.00	0.00
occur/mo	0.38	2.00	0.00
Release [Sewer], Wet Weather	**0.00**	**0.00**	**0.00**
MO TOTAL	**0.00**	**0.00**	**0.00**
gal/mo	0.00	0.00	0.00
occur/mo	0.00	0.00	0.00
SSO, Dry Weather	**147.80**	**15460.00**	**0.00**
MO TOTAL	**205.92**	**15460.00**	**0.00**
gal/mo	553.62	15460.00	0.00
occur/mo	0.14	4.00	0.00
TOTAL	**1.55**	**6.00**	**0.00**
occur/12MCT	1.55	6.00	0.00
SSO, Wet Weather	**1434.79**	**76590.00**	**0.00**
MO TOTAL	**2058.99**	**76590.00**	**0.00**
gal/mo	5537.38	76590.00	0.00
occur/mo	0.35	6.00	0.00
TOTAL	**2.79**	**14.00**	**0.00**
occur/12MCT	2.79	14.00	0.00

Violations Report Summary

NPDES ID(s): TN0066800
State: TN
Major/Minor Indicator:
Violation Date: 02/01/2018 -
Violation Type(s):

Environmental Protection Agency
Integrated Compliance Information System
Violations Report

Created Date: 09/15/2010
Refresh Date: 06/09/2022
Version 1.5, Modified: 1/4/2017

TN0066800

Permittee Name:	City of Bartlett	**Primary SIC Code:**	4952	**Permit Issued:**	01/16/2018
Permittee Address:	6400 Stage Road Bartlett, TN 38134	**Primary SIC Desc:**	Sewerage Systems	**Permit Effective:**	02/01/2018
		Primary NAICS	221320	**Permit Expired:**	09/30/2022
Major/Minor Indicator:	Major	**Primary NAICS**	Sewage Treatment Facilities	**Permit Status:**	Effective
Compliance Track. Status	On	**Cognizant Official:**			
DMR Non Receipt Flag:	On	**Cognizant Offcl.**			
RNC Tracking Flag:	On	**Receiving Body:**	Loosahatchie		

Facility Information

Facility Name:	BARTLETT STP NO. 1	**County:**	Shelby	**FRS ID:**	110010947529
Facility Location:	5258 SHELTER RUN LANE BARTLETT, TN 38134	**Region:**	04	**Federal Facility**	N
		State-Region:		**Type of Ownership:**	Municipality

Effluent Violations

Violation Code	Monitoring Period End Date	Limit Set	Parameter	Mon. Loc.	Seas. ID	SNC Group	EA Identifier	Value Type/ Stat. Base	Reported Value/Units	% Exceed.	Limit Value/Units	RNC Det. Code/ RNC Det. Date	RNC Res. Code/ RNC Res. Date
E90	02/28/2022	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	1 occur/mo	2,147,483,650%	<= occur/mo		
E90	10/31/2020	001-G	TRP3B - IC25 Static Renewal 7 Day Chronic Chrceriodaphnia	1	0			C1 MINIMUM	1 %	78%	>=4.6 %		
E90	07/31/2020	001-G	00545 - Solids, settleable	1	0	1		C3 DAILY MX	2 ml/l	100%	<=1 ml/l		
E90	02/29/2020	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	1 occur/mo	2,147,483,650%	<= occur/mo		
E90	09/30/2019	001-G	51040 - E. coli	1	0			C3	1,300	38%	<=941		
E90	05/31/2019	001-G	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	1 occur/mo	2,147,483,650%	<= occur/mo		
E90	02/28/2019	001-G	51040 - E. coli	1	0			C3	>2,420	99,999%	<=941		
E90	07/31/2018	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	1 occur/mo	2,147,483,650%	<= occur/mo		
E90	04/30/2018	001-G	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	2 occur/mo	2,147,483,650%	<= occur/mo		
E90	04/30/2018	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	6 occur/mo	2,147,483,650%	<= occur/mo		
E90	03/31/2018	001-G	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	4 occur/mo	2,147,483,650%	<= occur/mo		
E90	03/31/2018	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	4 occur/mo	2,147,483,650%	<= occur/mo		
E90	02/28/2018	001-G	51926 - SSO, Wet Weather	T	0			Q1 MO TOTAL	4 occur/mo	2,147,483,650%	<= occur/mo		

APPENDIX 3 –
METALS & TOXICS CALCULATIONS

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations:

a) The most recent background conditions of the receiving stream segment are compiled. This information includes:

- 7Q10 of receiving stream (47.6 MGD, USGS)
- Calcium hardness (27.13 mg/L, ambient monitoring data)
- Total suspended solids (140.7 mg/L, ambient monitoring data)
- Background metals concentrations (Copper & Zinc ambient monitoring data, all others ½ water quality criteria)
- Other dischargers impacting this segment (none)
- Downstream water supplies, if applicable

b) The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c) The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc, and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel, and silver.

d) The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e) A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

Where:

Cm = resulting instream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow (STP Design flow)
Qs = stream low flow

To protect water quality:

$$Cw \leq \frac{(S_A)[Cm(Qs + Qw) - QsCs]}{Qw}$$

Where: S_A = the percent "Stream Allocation"

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations". Division policy dictates the following procedures in establishing these permit limits:

1) The critical low flow values are determined using USGS data:

   Fish and Aquatic Life protection:
   7Q10 – Low flow under natural conditions
   1Q10 – Regulated low flow conditions

   Other than Fish and Aquatic Life protection:
   30Q5 – Low flow under natural conditions

2) Fish and Aquatic Life water quality criteria for certain metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3) For criteria that are hardness dependent, chronic and acute concentrations are based on a hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless available ambient monitoring information substantiates a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25

mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4) Background concentrations are determined from the Division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the "stream allocation" is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic "In-stream Allowable" water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has 15 data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "stream background" concentrations of the effluent characteristics.

Column 2: The "chronic" Fish and Aquatic Life water quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp\{m_C[\ln(stream\ hardness)] + b_C\}) * (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life water quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp\{m_A[\ln(stream\ hardness)] + b_A\}) * (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The "Fraction Dissolved" converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{\text{diss}}}{C_{\text{total}}} = \frac{1}{1 + \{[K_{\text{po}}][ss^{(1+a)}][10^{-6}]\}}$$

ss = in-stream suspended solids concentration (mg/L)

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life water quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life water quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. *This is the chronic limit.*

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. *This is the acute limit.*

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both “Recreation” and “Domestic Water Supply”.

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

Column 15: The Effluent Limited criteria. This upper level of allowable pollutant loading is established if (a) the calculated water quality value is greater than accepted removal efficiency values, (b) the treatment facility is properly operated, *and* (c) full compliance with the pretreatment program is demonstrated. This upper level limit is based upon EPA's 40 POTW Survey on levels of metals that should be discharged from a POTW with a properly enforced pretreatment program and considering normal coincidental removals.

The most stringent water quality effluent concentration from Columns 7, 8, 12, 13, 14, and 15 is applied if the receiving stream is designated for domestic water supply. Otherwise, the most stringent effluent concentration is chosen from columns 7, 8, 12, and 15 only.

Water Quality Based Effluent Calculations:

2019 WQC

WATER QUALITY CALCULATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY:	PERMIT #:	DATE:	CALC BY:
Bartlett STP	TN0066800	7/5/2022	AEWF

non-regulated stream worksheet (7Q10)

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Margin of Safety [%]
47.60	**95.20**	**2.20**	**140.7**	**27.13**	**50**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	Stream	Fish/Aqua. Life (F & AL) WQC			F & AL- instream allowable		Calc. Effluent Concentration		Human Health Water Quality Criteria *						effluent	
	Bckgrnd.	lab conditions		Fraction	ambient conditions (Tot)		based on F & AL		In-Stream Criteria			Calc. Effluent Concentration **			limited	
	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS	case	
PARAMETER	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	ug/l	**PARAMETER**
Copper (a,b)	2.310	2.938	3.932	0.213	13.798	18.467	**131.18**	**184.02**	N/A	N/A	N/A	**N/A**	N/A	N/A	**80.0**	**Copper (a,b)**
Chromium III	73.088	25.462	195.745	0.174	146.177	1123.750	**863.77**	**11928.12**	N/A	N/A	N/A	**N/A**	N/A	N/A		**Chromium III**
Chromium VI	5.500	11.000	16.000	1.000	11.000	16.000	**65.00**	**121.59**	N/A	N/A	N/A	**N/A**	N/A	N/A		**Chromium VI**
Chromium, Total		N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**	N/A	N/A	100.0	**N/A**	N/A	2213.64	**60.0**	**Chromium, Total**
Nickel (a,b)	43.749	17.249	155.297	0.197	87.497	787.773	**517.03**	**8442.88**	4600.0	610.0	100.0	**100880.71**	12556.62	1267.08	**180.0**	**Nickel (a,b)**
Cadmium (a,b)	0.416	0.269	0.531	0.323	0.833	1.643	**4.92**	**14.09**	N/A	N/A	5.0	**N/A**	N/A	101.67	**5.0**	**Cadmium (a,b)**
Lead (a,b)	2.530	0.593	15.220	0.117	5.059	129.834	**29.90**	**1442.11**	N/A	N/A	5.0	**N/A**	N/A	55.95	**45.0**	**Lead (a,b)**
Mercury (T) (c)	0.025	0.770	1.400	1.000	0.770	1.400	**8.44**	**15.58**	0.051	0.05	2.0	**0.59**	0.57	43.73	**0.4**	**Mercury (T) (c)**
Silver (a,b,e)	0.171	N/A	0.341	1.000	N/A	0.341	**N/A**	**2.02**	N/A	N/A	N/A	**N/A**	N/A	N/A	**5.0**	**Silver (a,b,e)**
Zinc (a,b)	4.549	39.116	38.799	0.156	250.752	248.718	**2788.85**	**2765.82**	26000.0	7400.0	N/A	**575447.03**	163710.67	N/A	**200.0**	**Zinc (a,b)**
Cyanide (d)	2.600	5.200	22.000	1.000	5.200	22.000	**30.73**	**220.87**	140.0	140.0	200.0	**3042.84**	3042.84	4371.02	**230.0**	**Cyanide (d)**
Toluene	0.000								15000.0	1300.0	1000.0	**332045.45**	28777.27	22136.36	**15.0**	**Toluene**
Benzene	0.000								510.0	22.0	5.0	**11289.55**	487.00	110.68	**3.0**	**Benzene**
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	**N/A**	N/A	4427.27	**30.0**	**1,1,1 Trichloroethane**
Ethylbenzene	0.000								2100.0	530.0	700.0	**46486.36**	11732.27	15495.45	**4.0**	**Ethylbenzene**
Carbon Tetrachloride	0.000								16.0	2.3	5.0	**354.18**	50.91	110.68	**15.0**	**Carbon Tetrachloride**
Chloroform	0.000								4700.0	57.0	N/A	**104040.91**	1261.77	N/A	**85.0**	**Chloroform**
Tetrachloroethylene	0.000								33.0	6.9	5.0	**730.50**	152.74	110.68	**25.0**	**Tetrachloroethylene**
Trichloroethylene	0.000								300.0	25.0	5.0	**6640.91**	553.41	110.68	**10.0**	**Trichloroethylene**
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	**N/A**	3099.09	2213.64	**1.5**	**1,2 trans Dichloroethylene**
Methylene Chloride	0.000								5900.0	46.0	5.0	**130604.55**	1018.27	N/A	**50.0**	**Methylene Chloride**
Total Phenols	0.000								860000.0	10000.0	N/A	**19037272.73**	221363.64	N/A	**50.0**	**Total Phenols**
Naphthalene	0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**1.0**	**Naphthalene**
Total Phthalates	0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**64.5**	**Total Phthalates**
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	**249.00**	**430.09**	N/A	N/A	N/A	**N/A**	N/A	N/A	**N/A**	**Chlorine (T. Res.)**

a Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness.
b The criteria for this metal is in the dissolved form at lab conditions. The calculated effluent concentration is in the total recoverable form.
c The chronic criteria for mercury is not converted to dissolved, since it is based on fish tissue data rather than toxicity.
d The criteria for this parameter is in the total form.
e Silver limit is daily max if column 8 is most stringent.
f When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
g When columns 12, 13 or 14 result in a negative number, use results from columns 9, 10 or 11, respectively, as applicable.

* Domestic supply included in river use so pick from columns 7,8,12,13,14,15 or Domestic supply not included in river use so pick from columns 7, 8, 12 or 15.
** Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

APPENDIX 4 –
WQ BASED EFFLUENT CALCULATIONS (OTHER COMPOUNDS)

2019 WQC

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: Bartlett
PERMIT: TN0066800
DATE: 7/5/22

Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Margin of Safety
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
47.60	95.20	2.20	140.7	27.13	50

	1	2	3	5		6	7		8	9	10	11	12	13	14	15	
	Stream Bckgrnd.	Dectection Levels		Fish/Aqua. Life Water Quality Criteria			Calculated Effluent Concentration			Human Health Water Quality Criteria (30Q5)						Avg. daily effluent	
										In-Stream Criteria			Calculated Effluent Concentration				
	Conc.	Scan MDL	WQC RDL *EPA MDL	Chronic		Acute	Chronic		Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS		
PARAMETER	[µg/l]	[µg/l]	[µg/l]	[µg/l]		[µg/l]	[µg/l]		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	ug/l	**PARAMETER**
ANTIMONY		3.8	3.0							640.0	5.6	6.0	14167.3	124.0	132.8	10.0	ANTIMONY
ARSENIC		1.0	1.0	150.0		340.0	1697.7		3848.2	10.0	10.0	10.0	221.4	221.4	221.4	10.0	ARSENIC
BERYLLIUM		2.0	1.0									4.0			88.5	1.0	BERYLLIUM
SELENIUM (f)		5.0	2.0	1.5	3.1	20.0	17.0	35.1	226.4	4200.0	170.0	50.0	92972.7	3763.2	1106.8	10.0	SELENIUM
THALLIUM		5.0	*							0.47	0.24	2.0	10.4	5.3	44.3	20.0	THALLIUM
ACROLEIN	0.0	50.0	1.0	3.000		3.000	34.0		34.0	9.0	6.0		199.2	132.8		20.0	ACROLEIN
ACRYLONITRILE	0.0	50.0	1.0							2.5	0.51		55.3	11.3		20.0	ACRYLONITRILE
BENZENE	0.0	1.0	1.0							510.0	22.0	5.0	11289.5	487.0	110.7	1.0	BENZENE
BROMOFORM	0.0	1.0	1.0							1400.0	43.0		30990.9	951.9		1.0	BROMOFORM
CARBON TETRACHLORIDE	0.0	1.0	1.0							16.0	2.3	5.0	354.2	50.9	110.7	1.0	CARBON TETRACHLORIDE
CHLOROBENZENE	0.0	1.0	*							1600.0	130.0	100.0	35418.2	2877.7	2213.6	1.0	CLOROBENZENE
CHLORODIBROMO-METHANE	0.0	1.0	*							130.0	4.0		2877.7	88.5		1.0	CHLORODIBROMO-METHANE
CHLOROETHANE	0.0	1.0	*													1.0	CHLOROETHANE
2-CHLORO-ETHYLVINYL ETHER	0.0	1.0	*													5.0	2-CHLORO-ETHYLVINYL ETHER
CHLOROFORM	0.0	5.0	0.5							4700.0	57.0		104040.9	1261.8		1.0	CHLOROFORM
DICHLOROBROMO-METHANE	0.0	1.0	1.0							170.0	5.5		3763.2	121.8		1.0	DICHLOROBROMO-METHANE
1,1-DICHLOROETHANE	0.0	1.0	1.0							NA	NA	NA	NA	NA	NA	1.0	1,1-DICHLOROETHANE
1,2-DICHLOROETHANE	0.0	1.0	1.0							370.0	3.8	5.0	8190.5	84.1	110.7	1.0	1,2-DICHLOROETHANE
TRANS 1,2-DICHLORO-ETHYLENE	0.0	1.0	*							10000	140.0	100.0	221363.6	3099.1	2213.6	1.0	TRANS 1,2-DICHLORO-ETHYLENE
1,1-DICHLOROETHYLENE	0.0	1.0	1.0							7100.0	300.0	7.0	157168.2	6640.9	155.0	1.0	1,1-DICHLOROETHYLENE
1,2-DICHLOROPROPANE	0.0	1.0	*							150.0	5.0	5.0	3320.5	110.7	110.7	1.0	1,2-DICHLOROPROPANE
1,3-DICHLORO-PROPYLENE	0.0	1.0	1.0							210.0	3.4		4648.6	75.3		1.0	1,3-DICHLORO-PROPYLENE
ETHYLBENZENE	0.0	1.0	1.0							2100	530.0	700.0	46486.4	11732.3	15495.5	1.0	ETHYLBENZENE
METHYL BROMIDE	0.0	1.0	*							1500.0	47.0		33204.5	1040.4		1.0	METHYL BROMIDE
METHYL CHLORIDE	0.0	1.0	1.0													10.0	METHYL CHLORIDE
METHYLENE CHLORIDE	0.0	5.0	1.0							5900.0	46.0	5.0	130604.5	1018.3	110.7	5.0	METHYLENE CHLORIDE
1,1,2,2-TETRACHLORO-ETHANE	0.0	1.0	0.5							40.0	1.7		885.5	37.6		1.0	1,1,2,2-TETRACHLORO-ETHANE
TETRACHLORO-ETHYLENE	0.0	1.0	0.5							33.0	6.9	5.0	730.5	152.7	110.7	1.0	TETRACHLORO-ETHYLENE
TOLUENE	0.0	1.0	1.0							15000	1300.0	1000.0	332045.5	28777.3	22136.4	5.0	TOLUENE
1,1,1-TRICHLOROETHANE	0.0	1.0	1.0									200.0			4427.3	1.0	1,1,1-TRICHLOROETHANE
1,1,2-TRICHLOROETHANE	0.0	1.0	0.2							160.0	5.9	5.0	3541.8	130.6	110.7	1.0	1,1,2-TRICHLOROETHANE
TRICHLORETHYLENE	0.0	1.0	1.0							300.0	25.0	5.0	6640.9	553.4	110.7	1.0	TRICHLORETHYLENE
VINYL CHLORIDE	0.0	1.0	2.0							24.0	0.25	2.0	531.3	5.5	44.3	1.0	VINYL CHLORIDE
P-CHLORO-M-CRESOL	0.0	10.0	*													5.0	P-CHLORO-M-CRESOL
2-CHLOROPHENOL	0.0	10.0	*							150.0	81.0		3320.5	1793.0		5.0	2-CHLOROPHENOL
2,4-DICHLOROPHENOL	0.0	10.0	*							290.0	77.0		6419.5	1704.5		5.0	2,4-DICHLOROPHENOL
2,4-DIMETHYLPHENOL	0.0	10.0	*							850.0	380.0		18815.9	8411.8		5.0	2,4-DIMETHYLPHENOL
4,6-DINITRO-O-CRESOL	0.0	10.0	24.0							280.0	13.0		6198.2	287.8		10.0	4,6-DINITRO-O-CRESOL
2,4-DINITROPHENOL	0.0	10.0	42.0							5300.0	69.0		117322.7	1527.4		5.0	2,4-DINITROPHENOL
2-NITROPHENOL	0.0	10.0	*													5.0	2-NITROPHENOL
4-NITROPHENOL	0.0	10.0	*													10.0	4-NITROPHENOL
PENTACHLOROPHENOL	0.0	10.0	5.0	15		19	169.8		215.0	30.0	2.7	1.0	664.1	59.8	22.1	5.0	PENTACHLOROPHENOL
PHENOL	0.0	10.0	*							860000	10000.0		19037272.7	221363.6		5.0	PHENOL

	1	2	3	5	6	7	8	9	10	11	12	13	14	15	
	Stream	Dectection Levels		Fish/Aqua. Life		Calculated Effluent Concentration		Human Health Water Quality Criteria (30Q5)						Avg. daily	
	Bckgrnd.	Scan	WQC RDL	Water Quality Criteria				In-Stream Criteria			Calculated Effluent Concentration			effluent	
	Conc.	MDL	*EPA MDL	Chronic	Acute	Chronic	Acute	Organisms	Water/Org	DWS	Organisms	Water/Org	DWS		
PARAMETER	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	ug/l	**PARAMETER**
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7					24.0	14.0		531.3	309.9		5.0	2,4,6-TRICHLOROPHENOL
ACENAPHTHENE	0.0	10.0	*					990.0	670.0		21915.0	14831.4		2.0	ACENAPHTHENE
ACENAPHTHYLENE	0.0	10.0	2.3											2.0	ACENAPHTHYLENE
ANTHRACENE	0.0	10.0	0.7					40000	8300.0		885454.5	183731.8		2.0	ANTHRACENE
BENZIDINE	0.0	50.0	*					0.0020	0.0009		0.044	0.0		20.0	BENZIDINE
BENZO(A)ANTHRACENE	0.0	10.0	0.3					0.18	0.038		4.0	0.8		2.0	BENZO(A)ANTHRACENE
BENZO(A)PYRENE	0.0	10.0	0.3					0.18	0.038	0.2	4.0	0.8	4.4	2.0	BENZO(A)PYRENE
3,4 BENZO-FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		4.0	0.8		2.0	3,4 BENZO-FLUORANTHENE
BENZO(GHI)PERYLENE	0.0	10.0	*											2.0	BENZO(GHI)PERYLENE
BENZO(K)FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		4.0	0.8		2.0	BENZO(K)FLUORANTHENE
BIS (2-CHLOROETHOXY) METHANE	0.0	10.0	*											5.0	BIS (2-CHLOROETHOXY) METHANE
BIS (2-CHLOROETHYL)-ETHER	0.0	10.0	1.0					5.3	0.30		117.3	6.6		5.0	BIS (2-CHLOROETHYL)-ETHER
BIS (2-CHLOROISO-PROPYL) ETHER	0.0	10.0	*					65000	1400.0		1438863.6	30990.9		5.0	BIS (2-CHLOROISO-PROPYL) ETHER
BIS (2-ETHYLHEXYL) PHTHALATE	0.0	10.0	2.5					22.0	12.0	6.0	487.0	265.6	132.8	10.0	BIS (2-ETHYLHEXYL) PHTHALATE
4-BROMOPHENYL PHENYL ETHER	0.0	10.0	*											5.0	4-BROMOPHENYL PHENYL ETHER
BUTYL BENZYL PHTHALATE	0.0	10.0	*					1900.0	1500.0		42059.1	33204.5		5.0	BUTYL BENZYL PHTHALATE
2-CHLORONAPHTHALENE	0.0	10.0	*					1600.0	1000.0		35418.2	22136.4		5.0	2-CHLORONAPHTHALENE
4-CHLORPHENYL PHENYL ETHER	0.0	10.0	*											5.0	4-CHLORPHENYL PHENYL ETHER
CHRYSENE	0.0	10.0	2.5					0.18	0.038		4.0	0.8		2.0	CHRYSENE
DI-N-BUTYL PHTHALATE	0.0	10.0	2.5					4500.0	2000.0		99613.6	44272.7		5.0	DI-N-BUTYL PHTHALATE
DI-N-OCTYL PHTHALATE	0.0	10.0	*											5.0	DI-N-OCTYL PHTHALATE
DIBENZO(A,H) ANTHRACENE	0.0	10.0	*					0.18	0.038		4.0	0.8		2.0	DIBENZO(A,H) ANTHRACENE
1,2-DICHLOROBENZENE	0.0	1.0	2.0					1300.0	420.0		28777.3	9297.3		5.0	1,2-DICHLOROBENZENE
1,3-DICHLOROBENZENE	0.0	5.0	2.0					960.0	320.0		21250.9	7083.6		5.0	1,3-DICHLOROBENZENE
1,4-DICHLOROBENZENE	0.0	5.0	2.0					190.0	63.0		4205.9	1394.6		5.0	1,4-DICHLOROBENZENE
3,3-DICHLOROBENZIDINE	0.0	10.0	*					0.28	0.2		6.2	4.6		5.0	3,3-DICHLOROBENZIDINE
DIETHYL PHTHALATE	0.0	10.0	1.9					44000	17000.0		974000.0	376318.2		5.0	DIETHYL PHTHALATE
DIMETHYL PHTHALATE	0.0	10.0	1.6					1100000	270000.0		24350000.0	5976818.2		5.0	DIMETHYL PHTHALATE
Di-n-butyl phthalate (84-74-2) (g)	0.0	10.0						4500	2000.0		99613.6	44272.7		5.0	Di-n-butyl phthalate (84-74-2)
2,4-DINITROTOLUENE	0.0	10.0	1.0					34.0	1.1		752.6	24.4		5.0	2,4-DINITROTOLUENE
2,6-DINITROTOLUENE	0.0	10.0	*											5.0	2,6-DINITROTOLUENE
Di-n-octyl phthalate (117-84-0) (g)	0.0	10.0												5.0	Di-n-octyl phthalate (117-84-0)
1,2 DIPHENYLHYDRAZINE	0.0	10.0	*					2.0	0.4		44.3	8.0		5.0	1,2 DIPHENYLHYDRAZINE
FLUORANTHENE	0.0	10.0	2.2					140.0	130.0		3099.1	2877.7		2.0	FLUORANTHENE
FLUORENE	0.0	10.0	0.3					5300.0	1100.0		117322.7	24350.0		2.0	FLUORENE
HEXACHLOROBENZENE	0.0	10.0	1.9					0.0029	0.0028	1.0	0.064	0.1	22.1	5.0	HEXACHLOROBENZENE
HEXACHLOROBUTADIENE	0.0	10.0	5.0					180.0	4.4		3984.5	97.4		5.0	HEXACHLOROBUTADIENE
HEXACHLOROCYCLO-PENTADIENE	0.0	10.0	*					1100.0	40.0	50.0	24350.0	885.5	1106.8	5.0	HEXACHLOROCYCLO-PENTADIENE
HEXACHLOROETHANE	0.0	10.0	0.5					33.0	14.0		730.5	309.9		5.0	HEXACHLOROETHANE
INDENO(1,2,3-CD)PYRENE	0.0	10.0	*					0.18	0.038		4.0	0.8		2.0	INDENO(1,2,3-CD)PYRENE
ISOPHORONE	0.0	10.0	*					9600	350.0		212509.1	7747.7		5.0	ISOPHORONE
NAPHTHALENE	0.0	10.0	*											2.0	NAPHTHALENE
NITROBENZENE	0.0	10.0	10.0					690.0	17.0		15274.1	376.3		5.0	NITROBENZENE
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	*					5.1	0.050		112.9	1.1		5.0	N-NITROSODI-N-PROPYLAMINE
N-NITROSODI- METHYLAMINE	0.0	10.0	*					30.0	0.0069		664.1	0.2		5.0	N-NITROSODI- METHYLAMINE
N-NITROSODI-PHENYLAMINE	0.0	10.0	*					60.0	33.0		1328.2	730.5		10.0	N-NITROSODI-PHENYLAMINE
PHENANTHRENE	0.0	10.0	0.7											2.0	PHENANTHRENE
PYRENE	0.0	10.0	0.3					4000.0	830.0		88545.5	18373.2		2.0	PYRENE
1,2,4-TRICHLOROBENZENE	0.0		*					70.0	35.0	70.0	1549.5	774.8	1549.5	5.0	1,2,4-TRICHLOROBENZENE

a. Columns 7-8, and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.
b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.
c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.
d. All background concentrations for these volatile organic, acid-extractable, and base-neutral compounds are assumed zero in the absence of supporting monitoring data.
e. Other metals for which data were provided on the application are evaluated on the Metals & Toxics spreadsheet.
f. The Water Quality Criteria CCC Value for Selenium is 1.5 µg/l (lentic - Still water aquatic ecosystems such as ponds, lakes, or reservoirs **) and 3.1 µg/l (lotic -** Flowing water aquatic ecosystems such as streams and rivers **).**
g. Form 2C only
f. Reasonable potential does not exist for the following reason(s):

APPENDIX 5 –
RECEIVING STREAM LOW FLOW DETERMINATION

Enter report title:

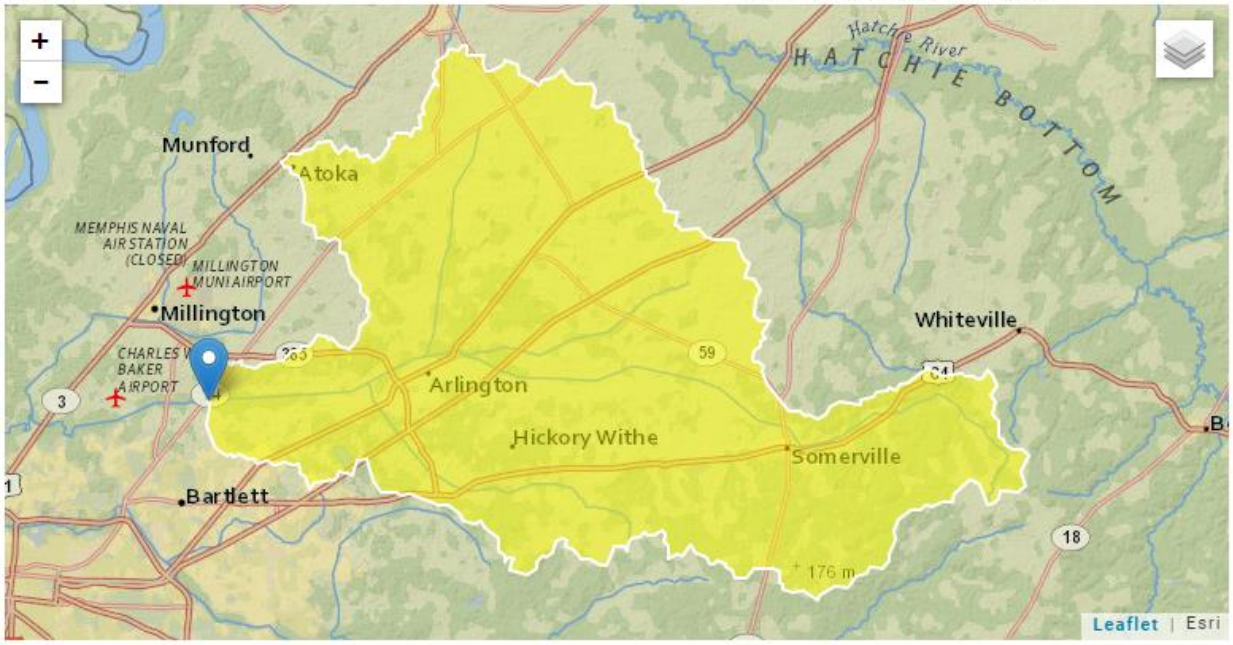
Bartlett StreamStats Report 2022

Enter comments:

No change from 2017 permit will have to adjust to S. Williams recalculation

Bartlett StreamStats Report 2022

Region ID:	TN
Workspace ID:	TN20220609125740194000
Clicked Point (Latitude, Longitude):	35.27649, -89.85198
Time:	2022-06-09 07:58:01 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	526.35	square miles
PERMGTE2IN	Percent of area underlain by soils with permeability greater than or equal to 2 inches per hour	56.098	percent
RECESS	Number of days required for streamflow to recede one order of magnitude when hydrograph is plotted on logarithmic scale	81	days per log cycle

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	526.35	square miles	2	2405
RECESS	Recession Index	81	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	56.098	percent	2	98

Low-Flow Statistics Flow Report [Low Flow West Region 2009 5159]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
7 Day 10 Year Low Flow	28	ft^3/s	123
30 Day 5 Year Low Flow	40.3	ft^3/s	93.5

Low-Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009–5159, 212 p., 1 pl.