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

July 8, 2022

Mr. Shane Horn
City Manager
e-copy: shorn@lakelandtn.org
City of Lakeland
10001 Highway 70
Lakeland, TN 38002

Subject: **NPDES Permit No. TN0078255**
City of Lakeland
Lakeland, Shelby County, Tennessee

Dear Mr. Horn:

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.

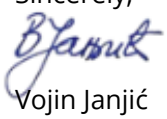
Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office 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. Shannon McClellan at (615) 532-0485 or by E-mail at *Shannon.McClellan@tn.gov*.

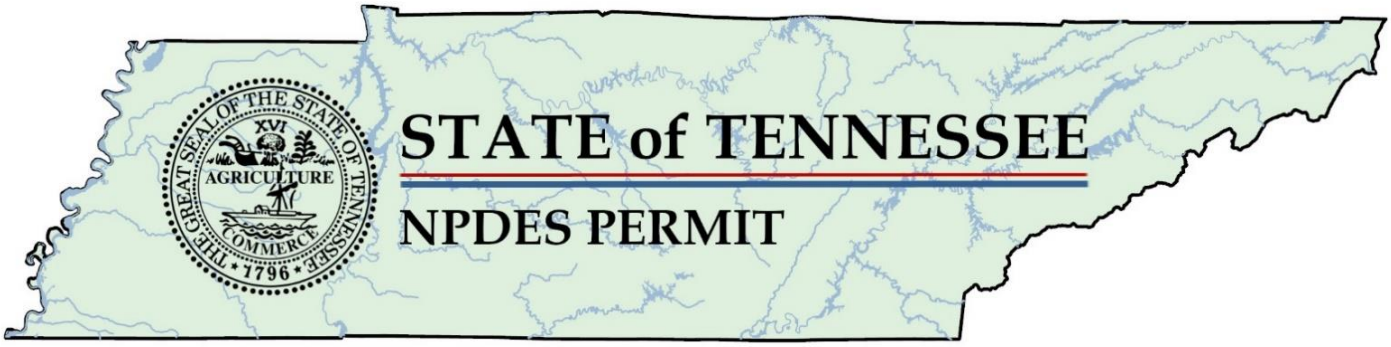
Sincerely,



Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Permit Section File & Memphis Environmental Field Office
NPDES Permit Section, EPA Region IV, r4npdespermits@epa.gov
Mr. Spencer Smalley, ssmalley@lakelandtn.org



Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES) Permit Number TN0078255

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 Lakeland**
Scotts Creek Wastewater Treatment Plant (Lakeland STP)

is authorized to: treated municipal wastewater from Outfall 001

from a facility located at: 10001 Highway 70, Lakeland, Shelby County, Tennessee

to receiving waters named: Loosahatchie River at mile 24.1

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: **July 7, 2022**

for Jennifer Dodd
Director

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PART 1

1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

1.1.1. Numeric Limitations

City of Lakeland is authorized to discharge treated municipal wastewater from Outfall 001 to Loosahatchie River at mile 24.1 from a treatment facility with a design capacity of 4.5 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)	>=	5.0	mg/L	Grab	Five Per Week	Daily 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)	<=	1126	lb/d	Composite	Three Per Week	Monthly Average
00530	Total Suspended Solids (TSS)	<=	1501	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	Daily Maximum
00600	Nitrogen, total (as N)	Report	-	lb/d	Calculated	Monthly	Daily Maximum
00600	Nitrogen, total (as N)	<=	13,946	lb/yr	Calculated	Monthly	Annual Rolling Total
00610	Nitrogen, Ammonia total (as N)	<=	10	mg/L	Composite	Three Per Week	Daily Maximum
00610	Nitrogen, Ammonia total (as N)	<=	7.5	mg/L	Composite	Three Per Week	Weekly Average

00610	Nitrogen, Ammonia total (as N)	<=	281	lb/d	Composite	Three Per Week	Weekly Average
00665	Phosphorus, total (as P)	Report	-	lb/d	Calculated	Monthly	Daily Maximum
00665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Daily Maximum
00665	Phosphorus, total (as P)	<=	11,498	lb/yr	Calculated	Monthly	Annual Rolling Total
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	<=	938	lb/d	Composite	Three Per Week	Monthly Average
80082	CBOD, 5-day, 20 C	<=	1314	lb/d	Composite	Three Per Week	Weekly Average
80082	CBOD, 5-day, 20 C	<=	25	mg/L	Composite	Three Per Week	Monthly Average
80082	CBOD, 5-day, 20 C	<=	35	mg/L	Composite	Three Per Week	Weekly Average
80082	CBOD, 5-day, 20 C	<=	40	mg/L	Composite	Three Per Week	Daily Maximum
TRP3B	IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	11.0	%	Composite	Quarterly	Minimum
TRP6C	IC25 Static Renewal 7 Day Chronic Pimephales promelas	>=	11.0	%	Composite	Quarterly	Minimum

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: Summer, Limit Set Status: Compliance Schedule (See Note)

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00610	Nitrogen, Ammonia total (as N)	<=	3.0	mg/L	Composite	Three Per Week	Monthly Average
00610	Nitrogen, Ammonia total (as N)	<=	108.9	lb/d	Composite	Three Per Week	Monthly Average

Description: External Outfall, Number: 001, Monitoring: Effluent Gross, Season: Winter

Code	Parameter	Qualifier	Value	Unit	Sample Type	Monitoring Frequency	Statistical Base
00610	Nitrogen, Ammonia total (as N)	<=	5.0	mg/L	Composite	Three Per Week	Monthly Average

00610	Nitrogen, Ammonia total (as N)	<=	188	lb/d	Composite	Three Per Week	Monthly Average

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	Minimum
80358	CBOD, 5-day, 20 C, % removal	>=	85	%	Calculated	Three Per Week	Monthly Average Minimum
81011	TSS, % removal	>=	40	%	Calculated	Three Per Week	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
50050	Flow	Report	-	MGD	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	MGD	Continuous	Daily	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.

For $CBOD_5$ and TSS, the treatment facility shall demonstrate a minimum of 85% removal efficiency on a monthly average basis. This is calculated by determining an average of all daily influent concentrations and comparing this to an average of all daily effluent concentrations. The formula for this calculation is as follows:

$$\left(1 - \frac{average\ of\ daily\ effluent\ concentrations}{average\ of\ daily\ influent\ concentrations}\right) * 100\% = \%\ removal$$

This treatment facility will also demonstrate 40% daily minimum removal of $CBOD_5$ and TSS based on each daily composite sample. The formula for this calculation is as follows:

$$\left(1 - \frac{daily\ effluent\ concentration}{daily\ influent\ concentration}\right) * 100\% = \%\ removal$$

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.

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

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.

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

1.1.2. Collection System Requirements

City of Lakeland 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 Event Description	Comments
Comply with Monitoring and Reporting Requirements	The permittee shall submit to the Division a compliance schedule status report one year after the effective date of the permit. The status report shall detail the permittee's proposed plans to meet the new ammonia limits, which will become effective 24 months after the effective date of this permit.
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. 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.

[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.

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.

f) All sampling for total mercury at the municipal wastewater plant (including application, pretreatment, etc.) shall use Methods 1631, 245.7, or any additional method in 40 CFR § 136 with a maximum detection limit of 5 ng/L.

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. If land application activities are suspended permanently and sludge disposal moves to a municipal solid waste landfill, the permittee shall contact the local Division of Solid Waste Management office address for other permitting and approvals.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF SOLID WASTE MANAGEMENT
Memphis Environmental Field Office
8383 Wolf Lake Drive
Bartlett, Tennessee 38133
(901)371-3000

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					
44	**22**	**11.0**	**5.5**	**2.75**	**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 quarterly (1/Quarter) 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 Lakeland
Scotts Creek Wastewater Treatment Plant (Lakeland STP)
(901) 867-2717
NPDES Permit NO. TN0078255
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis

Unpermitted release/overflow point:

UNTREATED WASTEWATER DISCHARGE POINT
City of Lakeland
Scotts Creek Wastewater Treatment Plant (Lakeland STP)
(901) 867-2717
NPDES Permit No. TN0078255
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

City of Lakeland
Scotts Creek Wastewater Treatment Plant (Lakeland STP)
NPDES Permit No. TN0078255
Date: 7/7/2022
Permit Writer: Shannon McClellan

During the public notice period, the permittee requested, via email on 6/1/2022, a reduction of monitoring frequency for settleable solids from five per week to three per week. Additionally, the permittee requested whole effluent toxicity (WET) testing to be reduced from quarterly to semi-annually due to cost concerns.

After reviewing the permittee's Discharge Monitoring Reports (DMRs) from 2018-2022 (See Appendix 2), we agree to reduce monitoring frequency for settleable solids from five per week to three per week. Additionally, we reviewed the DMRs for WET testing, which showed that the permittee failed the WET testing requirement for Ceriodaphnia Dubia (Cd) in September and October 2018. Per the Interim Guidance for Performance-Based Monitoring Reductions (EPA, 1996), "*Facilities would not normally be considered for reductions in monitoring frequencies below once per quarter, except in unusual circumstances of reliable performance at the requisite levels and outstanding compliance/enforcement histories* ". Because the permittee failed the WET test for Cd in 2018, the monitoring frequency will remain at quarterly.

After internal discussion, we calculated and proposes to impose a Total Nitrogen (TN) annual rolling load limit based on current plant average flow, concentration, and lb/day loadings. In previous water quality assessments, we assessed the stream as waters with unavailable conditions due to Total Nitrogen (TN) and/or Total Phosphorus (TP). After reviewing the assessment process, and based on EPA's directions, we 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 assessment status. In order to comply with the antidegradation provision of our state water quality standards (Rule § 0400-40-03-.06), we are required to limit both nitrogen and phosphorus to current loading levels. Such approach will prevent Dyersburg's discharge from contributing to an existing condition of pollution. We calculated the 95th percentile for TN based on the permittee reported DMR data on concentration, loadings, and average flow. The calculation and data is shown below:

	TN	Flow	TN Load
Units	mg/l	MGD	lb/day
Date			
Mar-22	2.86	0.645	15.38
Feb-22	5.21	0.713	30.98
Jan-22	2.89	0.669	16.12
Dec-21	3.28	0.632	17.29
Nov-21	3.08	0.551	14.15
Oct-21	2.89	0.532	12.82
Sep-21	1.98	0.547	9.03
Aug-21	2.86	0.573	13.67
Jul-21	0.477	0.591	2.35
Jun-21	0.572	0.556	2.65
May-21	0.671	0.607	3.40
Apr-21	0.357	0.618	1.84
Mar-21	1.02	0.698	5.94
Feb-21	1.51	0.755	9.51
Jan-21	1.39	0.643	7.45
Dec-20	0.912	0.64	4.87
Nov-20	3.02	0.566	14.26
Oct-20	1.05	0.562	4.92
Sep-20	0.701	0.573	3.35
Aug-20	2.8	0.583	13.61
Jul-20	0.433	0.582	2.10
Jun-20	0.677	0.574	3.24
May-20	0.265	0.585	1.29
Apr-20	0.935	0.698	5.44
Mar-20	2.64	0.721	15.87
Feb-20	4.75	0.704	27.89
Jan-20	15	0.677	84.69
Dec-19	3.55	0.628	18.59
Nov-19	2.84	0.593	14.05
Oct-19	4.83	0.635	25.58
Sep-19	4.37	0.508	18.51
Aug-19	1.3	0.516	5.59
Jul-19	3.35	0.578	16.15
Jun-19	8.89	0.591	43.82
May-19	2.22	0.628	11.63
Apr-19	2.41	0.675	13.57
Feb-19	4.02	0.64	21.46
Jan-19	2.35	0.73	14.31
Dec-18	2.13	0.674	11.97
Nov-18	1.07	0.639	5.70
Oct-18	1.53	0.605	7.72
Sep-18	1.89	0.505	7.96
Aug-18	1.93	0.56	9.01
Jul-18	0.812	0.489	3.31
Jun-18	1.52	0.499	6.33
May-18	9	0.533	40.01
Apr-18	8.76	0.539	39.38
Mar-18	5.7	0.666	31.66
Feb-18	2.9	0.601	14.54
Jan-18	3.11	0.786	20.39
Dec-17	3.27	0.738	20.13
Nov-17	2.88	0.587	14.10
Total	52.00	52.00	52.00
Average	2.90	0.61	14.99
Std dev	2.66	0.07	14.11

from pgs E-5 & E-6 in the TSD:

$x_p = \mu + z_p\sigma$

where:

μ = mean of monthly averages

σ = standard deviation of monthly averages

z_p = pth percentage point for std normal dist

x_{95} = 95th %ile n-day monthly average limit

$= \mu + 1.645\sigma$

Note: $z_p = 1.645$

x95 (mg/l)=	7.28
x95 (lb/day)=	38.21
x95 (lb/yr)=	13945.95

The 95th percentile annual rolling load of 13,946 lb/year for TN will apply to this permit. We have reflected these changes in the permit. Please note, the Rationale is a part of the permit file and cannot be changed once placed on public notice.

RATIONALE

City of Lakeland
Scotts Creek Wastewater Treatment Plant (Lakeland STP)
NPDES Permit No. TN0078255
Date: 5/10/2022
Permit Writer: Shannon McClellan

1. FACILITY INFORMATION

Permittee Name:	**City of Lakeland**
Project Name:	**Scotts Creek Wastewater Treatment Plant (Lakeland STP)**
Location:	10001 Highway 70, Lakeland, Shelby County, Tennessee
Contact:	Mr. Shane Horn - City Manager (901) 867-2717 shorn@lakelandtn.org
Design Flow Rate:	4.5 MGD
Percentage Industrial Flow:	0 %
Certified Operator Grades:	STP: 2; CS: 2; Date Rated: 04/01/1999
Treatment Description:	Sequencing Batch Reactor (SBR) with equalization basin, ultraviolet disinfection, and cascade aeration

The City of Lakeland Sequence Batch Reactor (SBR) system consists of a headworks area that houses a carbon filter, bar screen, and grit chamber. The carbon filter is available to vacuum and filter the odor from the headworks area. From the headworks, the wastewater is pumped to the batch SBR for intensive aeration. After aeration, the wastewater is settled before being decanted into an equalization basin, which then goes through UV disinfection before discharging down aeration steps (for reaeration to enhance dissolved oxygen) and into the river.

2. RECEIVING STREAM INFORMATION

Receiving Waterbody:	**Loosahatchie River at mile 24.1**
Watershed Group:	Loosahatchie
Hydrocode:	08010209
Low Flow:	7Q10 = 36.46 MGD (56.4 CFS)
Low Flow Reference:	USGS StreamStats/ Gage Station 07030280

Stream Designated Uses:

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

Low flows on unregulated streams are estimated using guidance from the EPA document *Low Flow Statistics Tools: A How-To Handbook for NPDES Permit Writers*. When sufficient and representative USGS gage data is available, USGS SWToolbox is used to analyze the flow data and calculate 7Q10 and 30Q5 values. Using these low flow values at the gage, the permit writer then determines the flow at the point of discharge using the following equation:

$$Q_{outfall} = Q_{gage} \times \frac{A_{outfall}}{A_{gage}}$$

Where:

$Q_{outfall}$ = Low flow statistic at outfall location
Q_{gage} = Low flow statistic at gage location
$A_{outfall}$ = Area draining to outfall
A_{gage} = Area draining to gage

In the absence of sufficient gage data, the Division relies on USGS Streamstats to calculate low flows statistics.

In this permit, data from USGS Streamstats delineation and USGS Gage station ID 07030280 was used to delineate the critical low flow at the point of discharge. Appendix 5 shows the Streamstats output and low flow calculation used for this estimation.

3. CURRENT PERMIT STATUS

Permit Type:	Municipal
Classification:	Major
Issuance Date:	01-OCT-17
Expiration Date:	30-SEP-22
Effective Date:	01-NOV-17

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.

Updated water quality criteria for ammonia were adopted in Tennessee Rule 0400-40-03-.03-3(3)(j) on September 11, 2019. These updated criteria have been implemented in the proposed permit, resulting in new ammonia limits. For the permittee to meet the new limits, this permit provides a compliance schedule. See **section 6.4** for more information.

b) Compliance Schedule Summary

Description of Report to be Submitted	Reference Section in Permit
Status report on ammonia limit compliance, one year from permit effective date	1.1.3
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.
Ammonia Compliance Schedule Report submitted within 1 year from effective permit date	6.4

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 2017 to 2022 revealed that the permittee reported violations of permit limits for Ammonia as N, SSO dry weather flow, IC25 Toxicity, 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 January 20, 2022, and the permittee was found to be in compliance. The inspection report described the facility was well kept and all records were readily available for review.

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
$CBOD_5$	25	938	35	1314	40	40	D.O. protection, Refer to 6.1 below
NH_3-N (summer)	3.0	109	7.5	281	10	—	Ammonia Toxicity and D.O. protection, Refer to 6.4 below
NH_3-N (winter)	5	188	7.5	281	10	—	D.O. protection, Refer to 6.4 below
Total Suspended Solids	30	1126	40	1501	45	40	Rule 0400-40-05-.09
Dissolved Oxygen	5.0 (daily minimum) instantaneous	—	—	—	—	—	D.O. protection, Refer to 6.1 below
Total Chlorine Residual	—	—	—	—	NA	—	Refer to 6.5 below
Total Nitrogen	—	—	—	—	Report (qtr avg)	Report (qtr load)	Refer to 6.6 below
Total Phosphorus	11,498 lbs/year						Refer to 6.6 below
E. coli (#/100mL)	126/100 mL	—	—	—	941/100 mL	—	Rule 0400-40-03-.03, Refer to 6.7 below
Settleable Solids (mL/L)		—	—	—	1.0	—	Rule 0400-40-05-.09
pH (standard units)	6.0 - 9.0	—	—	—	—	—	Rule 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}	11.0% per sample	—	—	—	—	—	Refer to 6.8 below

Dry Weather	Overflows		0	Refer to 6.11 below
Wet Weather	Overflows	0	Refer to 6.11 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

A study was conducted on the Loosahatchie River in the fall of 2004 with subsequent QUAL2K modeling to access the impact of the cities that discharge to the river. Lakeland's discharge was included in the modeling with values that are consistent with its current permit. The result of the study was that the limits in the city's permit remain the same. The study can be accessed on the Division's public dataviewer.

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

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

Winter		Summer	
6.26	Concentration [mg/L]	**2.902**	Concentration [mg/L]
235.0	Amount [lb/day]	**108.9**	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:		
	36.46	Critical Low Flow [MGD] (7Q10 value)
	0.1	Background Ammonia Concentration [mg/L]
	4.5	WWTP Design Flow or long-term average flow [MGD]

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

Winter		Summer	
34.73	Concentration [mg/L]	**14.703**	Concentration [mg/L]
1303.3	Amount [lb/day]	**551.8**	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.

Because the NH_3-N concentration limit calculated to protect dissolved oxygen is less restrictive than the summer value calculated above, the monthly average limits for NH_3-N (3.0 mg/L summer, 5.0 mg/L winter) are applied to the permit. Similarly, weekly averages for both winter and summer will be retained in the permit due to anti-backsliding rules. The summer monthly average limits of 3.0mg/L and 109 lb/day are on a compliance schedule of 24 months to give the permittee time to make necessary changes to meet the new limits.

6.5. CHLORINATION

Chlorine limits will continue to not apply to this permit. The system uses UV disinfection and there are back up UV disinfection units on site in case the main UV was to go offline. No chlorine, bleach or other types of disinfectant is located on site.

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.

Watershed analysis for West Tennessee indicates that a majority of the nutrient loading is from non-point source runoff. The Loosahatchie River is impaired for phosphorous due to the Lakeland STP wastewater discharge and MS4 storm water runoff. In the previous permit cycle, the facility was required to report the monthly phosphorous concentration and loading. The annual rolling limit for total phosphorus will be retained at 11,498 lb/yr and nitrogen will continue to be report only.

In the previous permit cycles, the facility has performed nutrient monitoring in relation to the stream impairment for total phosphorous. The new permit will continue the quarterly reporting of total nitrogen concentrations for utilization in a future TMDL. In addition to the quarterly reporting of total nitrogen, the new permit will continue to require a phosphorous limit based on the 95th percentile of data collected in the previous permit. The basis for the limit is the division's antidegradation policy which does not allow new or increased loadings to the stream without going through an approval process that is laid out in the division rules. This permit will retain the annual rolling average of 11,498 lb/yr for Total Phosphorus. This annual limit will require a minimum monthly sampling to calculate the annual rolling average. A Spatially Referenced Regression On Watershed Attributes (SPARROW) model was ran based on technology limits of 8mg/L TN and 1 mg/L TP. Results are shown below:

TENNESSEE SPARROW HUC10 TOTAL NITROGEN ANALYSIS SHEET

LOOSAHATCHIE RIVER WATERSHED (HUC10 - 04) vs 4/21/22

SPARROW Modeled TN Load at Outlet of HUC10 (04)

Source Category	Contribution (%)
Air Deposition ("background")	40.3
Manure	4.8
Fertilizer	32.5
Legume Crops	0.0
Urban	17.6
Wastewater	4.8
Total	100.0

Point Source Load Contribution	Enrichment Factor		
	EF < 2.35	2.35 ≤ EF < 2.66	EF ≥ 2.66
%C ≥ 5.77%	Low	Medium	High
2.27% ≤ %C < 5.77%	Low	Medium	Medium
%C < 2.27%	Low	Low	Low

			TN Enrichment Factor =	Total Current Load / Total "Background" Load =	2.48
Total Load	932,517	lbs/yr			
Drainage Area	278	sq mi			
Unit Area Load	5.237	lbs/ac/yr	Impact Category:		Medium
Mean Annual Streamflow	1025.7	cfs	Proposed WWTP Treatment Performance:		8 mg/L

Point Source Characteristics

Facility	Permit #	Design Flow (MGD)	Average Flow (MGD)	Ratio (Avg/ Design)	Avg TN Conc (mg/L)	Recommended Reduction (%)	# of Samples	Data Source	Discharge to Nutrient Impaired Waterbody (2016)
Galloway STP	TN0062138	0.165	0.125	75.8%	6.6	Cap	3	Permit Application (2017)	Loosahatchie River Mile 34.7
Arlington Mobile Home Park	TN0081027	0.02	0.02		na	na	0	No DMRs available	
Arlington STP	TN0078603	2.5	1.352	54.1%	6.62	Cap	27	DMRs (2018-2022)(dly max)	Loosahatchie River Mile 29.2
Pine Lake Cooperative	TN0061433	0.045	0.045		na	na	0	No DMRs available	
Bartlett STP #1	TN0066800	2.2	1.384	62.9%	4.50	Cap	50	DMRs (2018-2022)	Loosahatchie River Mile 18.4
Bartlett STP #2	TN0068543	0.5	0.318	63.6%	29.9	Cap	17	DMRs (2018-2022)(quarterly dly max)	Loosahatchie River Mile 21.7
Lakeland STP	TN0078255	4.5	0.62	13.8%	2.66	Cap	41	DMRs (2018-2022)(dly max)	Loosahatchie River Mile 24.1
Pleasant Ridge Trailer Park	TN0067482	0.05	0.05		na	na	0	No DMRs available	Loosahatchie River Mile 20.9
E.I. Dupont - Memphis	TN0001091	8	7.01		<0.5	na	1	Application (2017) - stormwater	Loosahatchie River Mile 11.8
Air Liquide America Corp.	TN0000965								
PCS Nitrogen Fertilizer, LP	TN0000141								

* Discharge from Lakeland STP does not require a reduction because the average discharge is significantly less than the design flow.

Recommended Point Source Facility Load

Facility	Permit #	Allowable Annual Load *	Recommended Monitoring
Galloway STP	TN0062138	2,500	monthly grab sample + quarterly in-stream
Arlington Mobile Home Park	TN0081027	2,740	quarterly grab sample
Arlington STP	TN0078603	27,245	semi-monthly grab sample + monthly in-stream
Pine Lake Cooperative	TN0061433	6,164	quarterly grab sample
Bartlett STP #1	TN0066800	18,959	semi-monthly grab sample + monthly in-stream
Bartlett STP #2	TN0068543	28,944	monthly grab sample + quarterly in-stream
Lakeland STP	TN0078255	5,020	semi-monthly grab sample + monthly in-stream
Pleasant Ridge Trailer Park	TN0067482	6,849	quarterly grab sample
E.I. Dupont - Memphis	TN0001091	NA	
Air Liquide America Corp.	TN0000965	**Terminated**	
PCS Nitrogen Fertilizer, LP	TN0000141	**Terminated**	

* Allowable Annual Load calculated based on expected treatment performance (if reduction is recommended) or monitoring data (if no reduction is recommended). In the absence of monitoring data, load is calculated from design flow and a default TN concentration of 45 mg/L.

TENNESSEE SPARROW HUC10 TOTAL PHOSPHORUS ANALYSIS SHEET

LOOSAHATCHIE RIVER WATERSHED (HUC10 - 04) vs 4/21/22

SPARROW Modeled TP Load at Outlet of HUC10 (04)

Source Category	Contribution (%)
Soil Parent Rock ("background")	34.5
Mines	0.0
Manure	4.2
Fertilizer	49.8
Urban	7.1
Wastewater	4.3
Total	99.9

Point Source Load Contribution	Enrichment Factor		
	EF < 2.67	2.67 ≤ EF < 3.05	EF ≥ 3.05
%C ≥ 2.75%	Low	Medium	High
1.29% ≤ %C < 2.75%	Low	Medium	Medium
%C < 1.29%	Low	Low	Low

TP Enrichment Factor = Total Current Load / Total "Background" Load = 2.90

Total Load	404,506	lbs/yr
Drainage Area	278	sq mi
Unit Area Load	2.272	lbs/ac/yr
Mean Annual Streamflow	1025.7	cfs

Impact Category: Medium

Proposed WWTP Treatment Performance: 1 mg/L

Point Source Characteristics

Permittee	Permit #	Design Flow (MGD)	Average Flow (MGD)	Ratio (Avg/ Design)	Avg TP Conc (mg/L)	Recommended Reduction (%)	# of Samples	Data Source	Discharge to Nutrient Impaired Waterbody (2016)
Galloway STP	TN0062138	0.165	0.125	75.8%	2.38	Cap	3	Permit Application (2017)	Loosahatchie River Mile 34.7
Arlington Mobile Home Park	TN0081027	0.02	0.02		na	na	0	No DMRs available	
Arlington STP	TN0078603	2.5	1.352	54.1%	2.33	20.6	27	DMRs (2018-2022)(dly max)	Loosahatchie River Mile 29.2
Pine Lake Cooperative	TN0061433	0.045	0.045		na	na	0	No DMRs available	
Bartlett STP #1	TN0066800	2.2	1.384	62.9%	2.68	40.7	50	DMRs (2018-2020)	Loosahatchie River Mile 18.4
Bartlett STP #2	TN0068543	0.5	0.318	63.6%	4413	Cap	49	DMRs (2018-2022)(rolling avg)	Loosahatchie River Mile 21.7
Lakeland STP	TN0078255	4.5	0.62	13.8%	1.93	Cap	41	DMRs (2018-2022)(dly max)	Loosahatchie River Mile 24.1
Pleasant Ridge Trailer Park	TN0067482	0.05	0.05		na	na	0	No DMRs available	Loosahatchie River Mile 20.9
E.I. Dupont - Memphis	TN0001091	8	7.01		<0.1	na	1	Application (2017) - stormwater	Loosahatchie River Mile 11.8
Air Liquide America Corp.	TN0000965								
PCS Nitrogen Fertilizer, LP	TN0000141								

* Discharge from Lakeland STP does not require a reduction because the average discharge is significantly less than the design flow.

Recommended Point Source Facility Load

Facility	Permit #	Allowable Annual Load *	Recommended Monitoring
Galloway STP	TN0062138	906	monthly grab sample + quarterly in-stream
Arlington Mobile Home Park	TN0081027	304	quarterly grab sample
Arlington STP	TN0078603	7,610	semi-monthly grab sample + monthly in-stream
Pine Lake Cooperative	TN0061433	685	quarterly grab sample
Bartlett STP #1	TN0066800	6,697	semi-monthly grab sample + monthly in-stream
Bartlett STP #2	TN0068543	4,413	monthly grab sample + quarterly in-stream
Lakeland STP	TN0078255	3,643	semi-monthly grab sample + monthly in-stream
Pleasant Ridge Trailer Park	TN0067482	761	quarterly grab sample
E.I. Dupont - Memphis	TN0001091	NA	quarterly grab sample
Air Liquide America Corp.	TN0000965	**Terminated**	
PCS Nitrogen Fertilizer, LP	TN0000141	**Terminated**	

* Allowable Annual Load calculated based on expected treatment performance (if reduction is recommended) or monitoring data (if no reduction is recommended). In the absence of monitoring data, load is calculated from design flow and a default TP concentration of 5 mg/L.

The SPARROW model results in capping the facility at their current lb/day yearly loading limits. An allowable annual load of 5,020 lb/yr (TN) and 3,643 lb/yr (TP) has been suggested from the model. The Division will not enforce these limits at this time, but rather suggest that these limits be a goal for the facility to reach in the future. The Loosahatchie River is in the medium risk category for nutrients, but Lakeland STP is operating at 13.8% of its design flow. Based on this information and the minimal contribution of wastewater and nutrients to the receiving stream, Lakeland STP will be capped at their current nutrient loading limits for total phosphorus.

Load limits, versus concentration limits, give credit for any wastewater diverted from the outfall for reuse and thereby encourages reuse alternatives. Annual rolling average load limits allow operational flexibility in achieving the load limits through optimization of biological removal. Biological treatment can achieve

nutrient removal and is preferred to chemical removal for a couple of reasons. Chemical addition to the treatment processes is potentially a source of added degradation to the receiving stream and biological removal has the capability of recovering energy thereby reducing the carbon footprint of the activity. The Division is encouraging a reduction in nitrogen and phosphorus loading without the use of added chemicals. Annual limits allow for the variability related to seasonal temperatures. Rolling limits, reported monthly, maintain focus on optimization.

In coordination with the NRF and in recognition that meeting nutrient limits may require changes in plant operations, the Division has created the Tennessee Plant Optimization Program (TNPOP), which is a free program created to provide technical assistance and other resources to participating wastewater treatment plants. TNPOP can help wastewater treatment plants optimize energy use and nutrient removal, which can result in cost and energy savings. Interested facilities should visit the Division's TNPOP website for a program description, frequently asked questions, and information on how to apply.

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.

6.9. 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.

In cases where a discharger has characterized its effluent via toxicity test methods acceptable to the Division, reasonable potential to exceed the criterion is evaluated using the following rationale.

EPA's Technical Support Document for Water Quality Based Toxics Control (TSD) recommends that the evaluation of both acute and chronic toxicity be based on the number of observations in the data set, the coefficient of variation and an uncertainty factor. The uncertainty factor value is taken from a chart in the technical support document and the coefficient of variation (C.V.) is based on the following numbers:

Less than ten observations: C.V. = 0.6
More than ten observations: C.V. = Standard Deviation / Mean

The result of each biomonitoring test is converted to toxic units using the equations listed below:

Acute biomonitoring: $TUa = 100 / LC_{50}$
Chronic biomonitoring: $TUc = 100 / IC_{25}$

The highest numerical value of the acute data set (in TUa) is multiplied by the uncertainty factor (U.F.) and the dilution factor to derive the final acute value. The highest numerical value of the chronic data set (in TUc) is also multiplied by the uncertainty factor and the dilution factor to derive the final chronic value.

Dilution Factor (DF) = Design Flow / 7Q10
Final Acute Value = TUa * Uncertainty Factor * Dilution Factor
Final Chronic Value = TUc * Uncertainty Factor * Dilution Factor

The final acute value is compared to the criteria maximum concentration (CMC) for acute toxicity (CMC = 0.3*TUa). The CMC is defined as the highest instream concentration of an effluent to which organisms can be exposed to for a brief period of time without causing an acute effect. The final chronic value is compared to the criteria continuous concentration (CCC) for chronic toxicity (CCC = 1.0*TUc). The CCC is defined as the highest instream concentration of an effluent to which organisms can be exposed indefinitely without causing an unacceptable effect. In the absence of chronic data, an acute to chronic ratio (ACR) of 4.4 is assumed (TSD Appendix A.3).

In this case, 33 observations of chronic are available.

33	=	number of chronic test samples
62.5	=	maximum value, chronic toxicity
2.3	=	chronic coefficient of variation (CVc)
2.0	=	chronic uncertainty factor (UFc)
0.12	=	Dilution Ratio at 7Q10 conditions

Potential instream toxicity after mixing = 62.5 * 2.0 * 0.12 = 15.43
(Final chronic value) = (Max. value, chronic toxicity * UFc * DR)

The potential instream toxicity after mixing, expressed as TUc, exceeds the CCC. Therefore, chronic whole effluent toxicity testing is required.

$$Dilution\ Factor = \frac{Stream\ Low\ Flow + Design\ Flow}{Design\ Flow} = \frac{36.5 + 4.5}{4.5} = 9.1$$

$$IC_{25}\ \% > \frac{100\%}{Dilution\ Factor} > \frac{100\%}{9.1} > 11.0\%$$

Where:

36.5	= 7Q10 Low Flow (MGD)
4.5	= Design Flow Capacity (MGD)
IC_{25}	= Concentration causing 25% reduction in survival, growth, and reproduction of test organisms

6.10. METALS AND TOXICS

Pass-through limitations for heavy metals and other toxic substances have been recalculated 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.

6.11. 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”.

7. COLLECTION SYSTEMS

7.1. COLLECTION SYSTEM CERTIFIED OPERATOR

The collection system shall be operated under the supervision of a Grade 2 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 2 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 Lakeland 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 November 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, sedimentation/siltation, physical substrate habitat alterations from channelization, crop production (non-irrigated), municipal point source discharges, municipal (urbanized high density area), and site clearance (land development). This permit retains the limits on nutrients from the previous permit.

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	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 because of stream channelization and bank erosion. The TSS component of wastewater treatment facility discharges is generally composed of primarily organic material and is 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. This permit continues to limit effluent phosphorus.

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	MEASUREMENT FREQUENCY
$CBOD_5$	25	938	35	1314	40	40	3/week
NH_3-N	5	188	7.5	281	10	—	3/week
Total Suspended Solids	30	1126	40	1501	45	40	3/week
Dissolved Oxygen (mg/L)	5.0 (daily minimum) instantaneous	—	—	—	—	—	5/week
Total Nitrogen	Report	—	—	—	Report	—	1/month
Total Phosphorus	11,498 lb/year						
E. coli (colonies/100ml)	126/100 ml	—	—	—	941/100 ml	—	3/week
Settleable Solids (ml/l)		—	—	—	1.0 (daily maximum)	—	5/week
pH (standard units)	6.0-9.0	—	—	—	—	—	5/week
Flow (MGD):							
Influent	Report	—	—	—	Report	—	7/week
Effluent	Report	—	—	—	Report	—	7/week
Whole Effluent Toxicity:							
IC_{25}	10.8% per sample	—	—	—	—	—	1/quarter
Metals & Toxics:							
Sanitary Sewer Overflows, Total Occurrences			Report				continuous
Dry Weather Overflows, Total Occurrences			Report				continuous
Bypass of Treatment, Total Occurrences			Report				continuous

APPENDIX 2 – DMR SUMMARY

TN0078255- City of Lakeland

Outfall 001

BOD, carbonaceous [5 day, 20 C], Effluent Gross					BOD, carbonaceous [5 day, 20 C], Raw Sewage Influent		BOD, carbonaceous, percent removal, Percent Removal		Bypass of Treatment Facility, See Comments		E.coli, Effluent Gross		Flow, in conduit or thru treatment plant, Effluent Gross		Flow, in conduit or thru treatment plant, Raw Sewage Influent		IC25 Static Renewal 7 Day Chronic Ceriodaphnia, Effluent Gross	IC25 Static Renewal 7 Day Chronic Chirpimepha tes, Effluent Gross	Nitrogen, ammonia total [as N], Effluent Gross					Nitrogen, total [as N], Effluent Gross		Oxygen, dissolved [DO], Effluent Gross		pH, Effluent Gross		Phosphorus, total [as P], Effluent Gross			Release (Sewer), Dry Weather, See Comments		Release (Sewer), Wet Weather, See Comments		Solids, settleable, Effluent Gross	Solids, suspended percent removal, Percent Removal		Solids, total suspended, Effluent Gross					Solids, total suspended, Raw Sewage Influent		SSO, Dry Weather, See Comments		SSO, Wet Weather, See Comments	
Monthly or total (lbs/d)	Weekly or daily (lbs/d)	Monthly average or min. (mg/L)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Monthly average or min. (mg/L)	Daily max. (mg/L)	Monthly average or min. (%)	Daily max. (%)	Monthly or total (occur/mo)	Monthly average or min. (gal/mo)	Monthly average or min. (#/100mL)	Daily max. (#/100mL)	Monthly or total (MGD)	Weekly or daily (MGD)	Monthly or total (MGD)	Weekly or daily (MGD)	Monthly average or min. (%)	Monthly average or min. (%)	Monthly or total (lbs/d)	Weekly or daily (lbs/d)	Monthly average or min. (mg/L)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Weekly or daily (lbs/d)	Daily max. (mg/L)	Monthly average or min. (mg/L)	Monthly average or min. (SU)	Daily max. (SU)	Monthly or total (lbs/yr)	Weekly or daily (lbs/yr)	Daily max. (lbs/yr)	Monthly or total (occur/mo)	Monthly average or min. (gal/mo)	Monthly or total (occur/mo)	Monthly average or min. (gal/mo)	Daily max. (mL/L)	Weekly average or geo. mean (%)	Daily max. (%)	Monthly or total (lbs/d)	Weekly or daily (lbs/d)	Monthly average or min. (mg/L)	Weekly average or geo. mean (mg/L)	Daily max. (mg/L)	Monthly average or min. (mg/L)	Daily max. (mg/L)	Monthly or total (occur/mo)	Monthly average or min. (gal/mo)	Monthly or total (occur/mo)	Monthly average or min. (gal/mo)
29.1	35.8	5.7	7.3	9	138.6	176	96	94			1.7	8	0.645	1.145	0.67	1.107	NODI 9	NODI 9	2.48	5.89	0.49	1.21	1.57	15	2.86	7.2	6	6.88	3078.89	5.2	1					0.1	96	93	46	65	9	13.3	16	220	328	0		0	
35.4	53.3	5.6	6.3	8	146.2	168	96	92			2.6	5	0.713	1.113	0.714	1.109	43.2	43.2	7.57	16.76	1.05	1.88	2.61	43.76	5.21	7.2	6.4	7	3319.45	5.17	1.06					0.1	96	94	59	77	9.6	10.3	12	224	254	3		0	
27.9	32.7	5.1	5.3	6	128.3	145	96	95	0	0	5.7	16	0.669	1.149	0.694	1.156	NODI 9	NODI 9	4.87	6.85	0.87	1.12	1.76	23.6	2.89	7.2	6.6	7.13	3443.94	7.52	1.51	0	0	0	0	0.1	96	94	54	67	9.8	12	15	243	336	0	0	0	0
28.7	32.6	5.6	6.7	10	157.8	228	96	91	0	0	5	33	0.632	0.866	0.643	0.865	43.2	43.2	7.15	23.53	1.49	5.25	5.25	18.52	3.28	6.8	6.8	7.1	3468.04	10.12	2.23	0	0	0	0	0.1	94	84	54	61	10.4	11.7	14	207	266	0	0	0	0
24.4	26.3	5.3	5.7	7	149.9	210	96	96	0	0	1.9	53	0.551	0.748	0.578	0.779	NODI 9	NODI 9	5.54	7.3	1.16	1.82	5.49	13.07	3.08	6.5	6.9	7.11	3196.03	9.23	2.12	0	0	0	0	0.1	95	83	48	58	10.2	11.7	21	236	494	0	0	0	0
26.4	39.2	5.9	8.3	12	134.1	171	96	90	0	0	2.5	14	0.532	0.856	0.546	0.691	NODI 9	NODI 9	10.14	16.69	2.34	4.02	4.36	13.71	2.89	6.2	6.9	7.26	3202.86	11.73	2.87	0	0	0	0	0.1	97	93	32	49	7.3	11	15	216	280	0	0	0	0
25.2	34.2	5.4	7	10	123.8	171	96	92	0	0	1.1	2	0.547	0.71	0.571	0.728	NODI 9	NODI 9	1.83	2.67	0.4	0.59	0.89	7.86	1.98	6.7	6.7	7.14	3027.67	8.65	2.18	0	0	0	0	0.1	96	93	32	43	6.9	9	11	213	296	0	0	0	0
25.8	36.1	5.3	6.3	9	119.8	161	95	93	0	0	2	71	0.573	0.818	0.603	0.825	NODI 9	NODI 9	3.41	8.76	0.62	1.4	3.54	13.12	2.86	6.7	6.9	7.19	2760.94	6.01	1.31	0	0	0	0	0.1	96	90	33	55	6.7	9.3	16	193	262	0	0	0	0
25	26.7	5.1	5.3	6	123.6	152	96	95	0	0	1.6	5	0.591	0.787	0.622	0.894	NODI 9	NODI 9	2.67	3.48	0.56	0.75	1.19	2.14	0.477	6.7	6.8	7.22	2801.91	8	1.77	0	0	0	0	0.1	96	93	36	42	7.4	9.3	12	221	276	0	0	0	0
22.9	26	5	5	5	128.5	157	96	95	0	0	1.2	3	0.556	0.676	0.594	0.684	43.2	43.2	4.88	9.11	1.12	2.27	3.4	2.78	0.572	7	6.8	7.29	2873.01	5.97	1.23	0	0	0	0	0.1	96	91	34	46	7.3	10	13	213	292	0	0	0	0
26.7	32.3	5.1	5.3	6	131.4	169	96	95	0	0	2.4	37	0.607	0.924	0.63	0.871	NODI 9	NODI 9	10.37	25.55	2.06	5.26	12	3.13	0.671	7	6.7	7.11	2876.65	4.83	0.63	0	0	0	0	0.1	96	93	41	48	8.1	10	17	229	300	0	0	0	0
29	38.7	5.5	6.7	7	135.5	181	96	94	0	0	10.6	373	0.618	0.782	0.642	0.812	NODI 9	NODI 9	15.76	48.49	2.85	8.32	8.92	2.3	0.357	7.3	6.7	7.02	2960.23	9.77	1.51	0	0	0	0	0.1	96	88	59	92	10.8	16	27	338	1352	0	0	0	0
31.6	40.5	5.3	6	8	117.7	137	95	93	0	0	1.4	4	0.698	1.414	0.734	1.469	43.2	43.2	11.52	17.71	1.93	2.84	3.98	4.98	1.02	7.4	6.8	7.38	3015.93	15.44	2.43	0	0	0	0	0.1	97	95	47	66	7.6	10.3	16	285	708	0	0	0	0
27.4	30	5.1	5.3	6	131.1	147	96	95	0	0	1.2	3	0.755	1.367	0.779	1.521	NODI 9	NODI 9	4.8	10.44	0.93	1.85	3.24	8.11	1.51	7.2	6.8	7.01	2859.05	11.54	1.79	0	0	0	0	0.1	97	92	32	34	6	7.3	11	216	416	0	0	0	0
28.2	34.5	5.3	6.3	9	158.3	410	96	94	0	0	9.7	148	0.643	1.215	0.658	1.071	NODI 9	NODI 9	3.24	4.25	0.62	0.79	0.83	9.13	1.39	7.7	6.8	6.97	2871.06	9.16	1.58	0	0	0	0	0.3	96	92	44	55	8.3	10.3	14	256	600	0	0	0	0
26	30.9	5	5	5	148.7	179	97	96	0	0	45.8	147	0.64	2.216	0.673	2.115	43.2	43.2	2.71	3.72	0.54	0.75	1.29	3.9	0.912	7.2	6.6	6.99	2883.24	6.79	1.47	0	0	0	0	0.1	97	94	37	56	7	8.7	12	217	264	0	0	0	0
23.4	26.3	5	5	5	146.4	171	97	96	0	0	23.2	378	0.566	0.7	0.577	0.69	NODI 9	NODI 9	13.75	24.56	3.04	5.57	5.72	13.55	3.02	7.3	6.6	7.24	3084.81	10.05	2.19	0	0	0	0	0.1	94	97	34	48	7.1	9.3	13	236	280	0	0	0	0
23.9	29.6	5	5	5	128.2	170	96	95	0	0	29.9	150	0.562	0.911	0.59	0.921	NODI 9	NODI 9	1.55	2.97	0.33	0.7	1.66	4.79	1.05	7.2	6.9	7.1	3113	7.65	1.61	0	0	0	0	0.1	95	77	44	76	9.3	17.3	26	222	294	0	0	0	0
25.4	29.8	5.3	6	7	123.5	148	96	94	0	0	29.4	115	0.573	0.646	0.604	0.699	NODI 9	NODI 9	5.45	7.71	1.14	1.6	2.77	3.7	0.701	6.8	6.5	7.18	3458.9	4.51	1	0	0	0	0	0.1	94	85	64	104	13.3	21.2	36.5	233	312	0	0	0	0
23.8	25.6	5.2	5.7	7	124.8	175	96	94	0	0	29.7	157	0.583	0.861	0.62	0.895	43.2	43.2	4.97	7.58	1.11	1.78	3.06	13.12	2.8	6.7	6.8	7.2	3709.17	4.61	0.94	0	0	0	0	0.1	95	90	50	74	10.8	16.5	22	250	378	0	0	0	0
25.2	26.6	5.1	5.3	6	125.4	156	96	95	0	0	37.3	1553	0.582	0.674	0.621	0.718	NODI 9	NODI 9	6.47	9.34	1.31	1.82	3.45	2	0.433	6.7	6.8	7.1	3734.77	9.97	2.29	0	0	0	0	0.1	94	88	60	98	12.1	18.8	19	204	264	0	0	0	0
29.9	50.7	6.3	10.7	12	127.1	156	95	88	0	0	78	2419	0.574	0.824	0.613	0.786	43.2	43.2	40.65	105.63	8.42	21.5	25.2	3.24	0.677	6.4	6.8	7.35	4058.58	5.66	1.19	0	0	0	0	0.1	96	88	44	86	9.3	18	22.5	213	244	0	0	0	0
25.4	29.2	5.3	6	7	140.1	172	96	95	0	0	27.3	2419	0.585	0.662	0.616	0.687	NODI 9	NODI 9	21.27	58.15	4.35	11.9	12	1.24	0.265	5.8	6.9	7.38	3991.63	5.87	1.22	0	0	0	0	0.1	95	93	48	56	9.9	11.3	14.5	210	330	0	0	0	0
28.4	30.8	5	5	5	126.4	144	96	95	0	0	8.7	28	0.698	1.191	0.709	1.201	NODI 9	NODI 9	12.22	20.53	2.19	3.73	4.97	5.43	0.935	7.4	6.8	7.24	4587.57	9.14	1.59	0	0	0	0	0.1	97	95	37	46	6.6	8.3	10	192	230	0	0	0	0
29.9	30.18	5.3	5.3	8	119.2	145	95	92	0	0	5	73	0.721	0.928	0.745	0.942	NOD! **NP*	43.2	2.88	4.44	0.56	0.889	2.16	14.8	2.64	7.7	6.9	7.32	4673.27	7.38	1.51	0	0	0	0	0.1	95	86	41	80	7.5	13.3	21	173	270	0	0	0	0
35	40.3	5.8	7.7	9	113.8	177	95	92	0	0	7.3	50	0.704	0.951	0.71	0.951	NODI 9	NODI 9	20.86	46.07	3.25	6.73	8.3	27.21	4.75	7.7	7	7.57	4669.17	12.2	1.87	0	0	0	0	0.1	94	78	69	99	11.4	16.3	30	210	298	0	0	0	0
29.4	39.1	5	5	5	150.6	292	96	93	0	0	11.5	83	0.677	0.993	0.673	1.002	NODI 9	NODI 9	41.16	55.51	7.17	8.92	10.6	89.2	15	6	7.1	7.53	4666.83	12.98	1.76	0	0	0	0	0.1	94	88	58	73	10	13.8	20	196	292	0	0	0	0
24.2	24.2	5	5	5	134.5	215	96	95	0	0	9.5	26	0.628	1.114	0.638	1.111	NODI 9	NODI 9	6.23	13.46	1.28	2.78	2.82	17.26	3.55	6.7	6.9	7.38	4527.55	13.61	2.8	0	0	0	0	0.1	97	95	27	34	5.5	7	11	200	268	0	0	0	0
25	30.8	5	5	5	127.7	145	96	95	0	0	4	23	0.593	0.997	0.604	1.024	43.2	43.2	1.36	3.11	0.26	0.53	1.26	12.53	2.84	7.1	7	7.25	4313.59	9.79	2.22	0	0	0	0	0.1	97	96	27	42	5.3	6.7	7	209	390	0	0	0	0
24.2	36.7	5	5	5	134.6	219	96	94	0	0	8.7	56	0.635	1.33	0.45	1.27	NODI 9	NODI 9	12.14	41.36	2.25	5.85	6.83	19.66	4.83	6.5	6.9	7.32	4596.77	14.98	3.68	0	0	0	0	0.1	96	93	36	50	7.7	10.2	13	225	376	0	0	0	0
21.1	22.7	5.1	5.3	6	135.3	158	96	95	0	0	36.5	126	0.508	0.587	0.547	0.61	43.2	43.2	7.51	12.7	1.79	2.03	3.55	17.64	4.37	5.7	7	7.19	4142.74	11.47	2.87	0	0	0	0	0.5	95	92	42	53	10.2	12.2	14	206	282	0	0	0	0
21.3	21.5	5	5	5	123.2	152	96	95	0	0	3.6	185	0.516	0.604	0.567	0.648	NODI 9	NODI 9	11.16	24.13	2.63	5.69	6.41	5.15	1.3	6.4	7	7.24	3932.11	13.03	3.29	0	0	0	0	0.1	97	95	22	29	5.3	7.2	9	167	187	0	0	0	0
24.2	30	5	5	5	120	159	96	93	0	0	1.8	10	0.578	0.873	0.613	0.985	NODI 9	NODI 9	3.37	9.27	0.74	2.03	2.46	14.4	3.35	6.9	6.9	7.1	3662.85	11.79	2.41	0	0	0	0	0.1	97	94	23	29	4.8	6.7	9.5	210	470	0	0	0	0
23.3	23.9	5	5	5	116.2	152	96	95	0	0	1.8	4	0.591	1.22	0.615	0.982	NODI 9	NODI 9	29.35	43.16	6.93	9.5	10.2	42.78	8.69	6.8	6.9	7.28	3465.18	17.23	3.75	0	0	0	0	0.1	97	95	25	43	5.4	9	10	185	254	0	0	0	0
26.9	31.5	5.1	6	6	119.6	171	96	94	0	0	1.3	3	0.628	1.037	0.652	1.008	NODI 9	NODI 9	23.16	39.59	4.78	8.26	9.5	10.61	2.22	7	7.1	7.52	4397.04	8.17	1.71	0	0	0	0	0.1	97	95	39	54	7.3	9	9.5	233	616	0	0	0	0
32.4	40.7	6.3	7.3	8	112.7	135	93	79	0	0	47.4	362	0.675	1.197	0.715	1.24	43.2	43.2	25.31	66.57	4.89	12.49	15.8	10.35	2.41	7.1	6.9	7.48	4588.9	10.48	2.44	0	0	0	0	0.1	96	94	46	58	9.3	11.2	18	224	340	0	0	0	0
34	42.7	6.3	7.7	12	121.8	155	95	92	0	0	81.8	690	0.64	0.847	0.66	0.932	NODI 9	NODI 9	10.28	26.44	1.98	5.1	6.19	27.53	4.02	7.3	6.9	7.66	5089.93	12.12	1.77	0	0	0	0	0.1	92	71	50	62	9	11.3	17	152	223	2	5000	0	0
30	35.3	5.2	5.7	6	114.5	194	95	92	0	0	27.3	816	0.73	1.2	0.736	1.242	NODI 9	NODI 9	4.28	11.93	0.78	2.31	2.76	13.01	2.35	7.2	7	7.3	4980.14	10.36	1.87	0	0	0	0	0.1	95	88	39	43	7	7.8	9	161	372	0	0	0	0
29.1	33.1	5	5	5	119	151	96	95	0	0	6.5	59	0.674	1.032	0.691	0.989	43.2	43.2	11.34	18.06	1.98	3.02	3.59	12.12	2.13	7.2	7	7.43	5347.37	5.31	0.93	0	0	0	0	0.1	96	92	40	63	6.9	9.7	12	176	341	1	50000	0	0
29.1	32.9	5.6	6.3	8	141.8	227	96	94	0	0	23.3	2420	0.639	0.877	0.656	0.934	NODI 9	NODI 9	9.73	28.86	1.84	5.47	6.44	5.45	1.07	5.8	6.9	7.54	5571.3	6.78	1.33	0	0	0	0	0.1	97	91	33	58	6.5	11	15	186	310	0	0	0	0
25.4	28.7	5	5	5	129.3	177	95	96	0	0	5.7	102	0.605	0.875	0.621	0.896	NODI 9	NODI 9	7.43	21.86	1.44	4.05	6.42	9.95	1.53	6.3	6.7	7.24	5331.35	26.41	4.06	0	0	0	0	0.1	87	97	25	32	5.1	6.7	15	164	231	0	0	0	0
20.3	21.3	5	5	5	123.1	183	95	96	0	0	2	9	0.505	0.619	5.26	0.671	1.646	43.2	1.61	2.35	0.39	0.54	1.12	7.77	1.89	6.9	7	7.1		4.93	1.2	0	0	0	0	0	0.1	96	98	19	24	4.6	5.7	8	197	328	0	0	0	0
22.8	26.8	5.2	5.7	7	110.8	170	92	95	0	0	31.7	2420	0.56	0.966	0.609	0.955	2.409	43.2	14.49	31.88	3.42	7.97	9.2	9.74	1.93	6.5	6.9	7.23		9.79	1.22	0	0	0	0	0	0.1	94	97	22	30	4.8	6.3	9	189	269	0	0	0	0
20.4	22.5	5	5	5	106.4	106.4	94	95	0	0	26	980	0.499	0.651	0.558	0.687	NODI 9	NODI 9	12.46	33	2.98	7.38	8.75	3.54	0.812	5.6	6.9	7.18		7.44	1.71	0	0	0	0	0	0.1	96	98	16	20	3.9	5.3	6	168	205	0	0	0	0
20.7	22	5	5	5	119.1	150	95	96	0	0	2	9	0.499	0.867	0.559	0.7	NODI 9	NODI 9	1.41	2.52	0.33	0.55	0.87	7.2	1.52	5.8	6.9	7.04		5.34	1.23	0	0	0	0	0	0.1	95	98	16	20	3.9	4.7	8	191	390	0	0	0	0
28.5	28.5	5.3	6	8	115.1	141	93	95	0	0	112.5	2420	0.533	0.867	0.6	0.935	NODI 9	NODI 9	24.31	38.09	6	9.39	15.2	41.35	9	5.5	6.8	7.11		47.33	10.3	0	0	0	0	0	0.1	90	95	39	61	9	13	18	193	316	0	0	0	0
22.1	23	5	5	5	131.9	166	95	96	0	0	2.4	6	0.539	0.682	0.583	0.765	43.2	43.2	6.59	17.24	1.57	4.16	7.1	35.36	8.76	5.9	6.8	7.1		13.4	3.32	0	0	0	0	0	0.1	94	96	28	32	6.4	7	10	163	260	0	0	0	0
27	34.9	5	5	5	125.2	169	95	96	0	0	2.2	10	0.666	1.286	0.689	1.196	43.2	43.2	5.55	14.97	1.11	3.17	4.59	27.19	5.7	5.5	6.9	7.28		27.96	5.86	0	0	0	0	0	0.1	94	97	22	24	4.2	4.7	9	164	239	0	0	0	0
25.3	32	5	5	5	106.6	134	91	95	0	0	5.1	64	0.601	1.123	0.627	0.99	NODI 9	NODI 9	12.33	38.81	2.49	7.79	12.4	14.46	2.9	5.5	6.9	7.13		6.73	1.35	0	0	0	0	0	0.1	91	97	26	39	5.2	6.3	17	148	208	0	0	0	0
35.8	50.5	5	5	5	107.3	156	90	95	0	0	3.3	17	0.786	1.63	0.8	1.554	NODI 9	NODI 9	7.72	15.05	0.98	1.69	2.06	17.19	3.11	5.3	6.9	6.97		22.89	4.14	0	0	0	0	0	0.1	94	97	40	87	5.3	9	10	159	187	0	0	0	0
28.9	36.5	5	5	5	121.2	172	93	96	0	0	3.4	59	0.738	1.164	0.74	1.13	NODI 9	NODI 9	2.95	5.49	0.55	1.13	1.98	23.2	3.27	5	6.7	7.13		15.4	2.17	0	0	0	0	0	0.1	93	96	33	45	5.5	7.3	9	152	227	0	0	0	0
25.6	32.7	5.3	6	7	134.1	201	92	96	0	0	11.1	1046	0.587	1.044	0.602	0.896	NODI 9	NODI 9	2.66	5.84	0.51	1.22	1.95	11.98	2.88	6.4	6.8	7.08		8.41	2.02	1	5000	0	0	0	0.1	94	97	23	33	4.8	7	10	157	257	0	0	0	0
22.5	24.4	5	5	5	113.8	150	95	93	0	0	9.3	59	0.524	0.737	0.556	0.752	43.2	43.2	3.84	8.27	0.83	1.86	2.67	NOD! **D**	NOD! **D**	7.1	6.9	7.1		12.75	3.14	0	0	0	0	0	0.2	97	94	17	24	3.8	5.7	8	149	191	0	0	0	0

Violations Report Summary

NPDES ID(s): TN0078255
State: TN
Major/Minor Indicator:
Violation Date: 11/01/2017 -
Violation Type(s):

Environmental Protection Agency
Integrated Compliance Information System
Violations Report

Created Date: 09/15/2010
Refresh Date: 04/20/2022
't Version 1.5, Modified: 1/4/2017

TN0078255

Permittee Name:	City of Lakeland	**Primary SIC Code:**	4952	**Permit Issued:**	10/01/2017
Permittee Address:	10001 Highway 70	**Primary SIC Desc:**	Sewerage Systems	**Permit Effective:**	11/01/2017
	Lakeland, TN 38002	**Primary NAICS**	221320	**Permit Expired:**	09/30/2022
Major/Minor Indicator:	Major	**Primary NAICS Desc:**	Sewage Treatment Facilities	**Permit Status:**	Effective
Compliance Track. Status	On	**Cognizant Official:**			
DMR Non Receipt Flag:	On	**Cognizant Offcl. Ph.:**			
RNC Tracking Flag:	On	**Receiving Body:**	Loosahatchie		

Facility Information

Facility Name:	LAKELAND STP	**County:**	Shelby	**FRS ID:**	110035772134
Facility Location:	10001 HIGHWAY 70	**Region:**	4	**Federal Facility**	N
	LAKELAND, TN 38002	**State-Region:**		**Type of Ownership:**	Municipal or Water District

DMR Non-Receipt Violations

Violation Code	Monitoring Period End	DMR Due Date	Limit Set	Parameter	Mon. Loc.	Seas. ID	DMR Value	NODI Code	RNC Det. Code/	RNC Res. Code/ RNC Res. Date	DMR Val. Rec Date
D90	08/31/2020	09/15/2020	001-G	TRP3B - IC25 Static Renew al 7 Day Chronic Chrceriodaphnia	1	0	C1				01/13/2021
D90	08/31/2020	09/15/2020	001-G	TRP6C - IC25 Static Renew al 7 Day Chronic Chrpimephales	1	0	C1				01/13/2021
D90	03/31/2020	04/15/2020	001-G	TRP3B - IC25 Static Renew al 7 Day Chronic Chrceriodaphnia	1	0	C1	**M**			01/13/2021
D90	03/31/2020	04/15/2020	001-G	TRP6C - IC25 Static Renew al 7 Day Chronic Chrpimephales	1	0	C1				01/13/2021
D80	11/30/2017	12/15/2017	001-G	00600 - Nitrogen, total [as N]	1	0	Q2	**E**	K 01/15/2018	0 01/15/2020	12/15/2017
D80	11/30/2017	12/15/2017	001-G	00600 - Nitrogen, total [as N]	1	1	C3	**E**	K 01/15/2018	0 01/15/2020	12/15/2017

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	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	3 occur/mo	21474837	<= occur/mo		
E90	05/31/2021	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	12 mg/l	20%	<=10 mg/l		
E90	04/30/2021	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	8.32 mg/l	11%	<=7.5 mg/l		
E90	07/31/2020	001-G	51040 - E. coli	1	0			C3	1,553	65%	<=941		
E90	06/30/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C1 MO AVG	8.42 mg/l	68%	<=5 mg/l	T 06/30/2020	2 07/31/2020
E90	06/30/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	21.5 mg/l	187%	<=7.5 mg/l		
E90	06/30/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	25.2 mg/l	152%	<=10 mg/l		
E90	06/30/2020	001-G	51040 - E. coli	1	0			C3	2,419	157%	<=941		
E90	05/31/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	11.9 mg/l	59%	<=7.5 mg/l		
E90	05/31/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	12 mg/l	20%	<=10 mg/l		
E90	05/31/2020	001-G	51040 - E. coli	1	0			C3	2,419	157%	<=941		
E90	01/31/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C1 MO AVG	7.17 mg/l	43%	<=5 mg/l	T 06/30/2020	2 07/31/2020
E90	01/31/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	8.92 mg/l	19%	<=7.5 mg/l		
E90	01/31/2020	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	10.6 mg/l	6%	<=10 mg/l		
E90	06/30/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C1 MO AVG	6.33 mg/l	27%	<=5 mg/l		
E90	06/30/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	9.5 mg/l	27%	<=7.5 mg/l		
E90	06/30/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	10.2 mg/l	2%	<=10 mg/l		
E90	05/31/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	8.26 mg/l	10%	<=7.5 mg/l		
E90	04/30/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	12.49 mg/l	67%	<=7.5 mg/l		
E90	04/30/2019	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	15.8 mg/l	58%	<=10 mg/l		
E90	03/31/2019	001-G	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	1 occur/mo	##########	<= occur/mo		
E90	01/31/2019	001-G	51925 - SSO, Dry Weather	U	0			Q1 MO TOTAL	1 occur/mo	##########	<= occur/mo		
E90	12/31/2018	001-G	51040 - E. coli	1	0			C3	2,420	157%	<=941		
E90	10/31/2018	001-G	TRP3B - IC25 Static Renew al 7 Day Chronic Chrceriodaphnia	1	0			C1 MINIMUM	1.646 %	85%	>10.8 %		
E90	09/30/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	7.97 mg/l	6%	<=7.5 mg/l		
E90	09/30/2018	001-G	51040 - E. coli	1	0			C3	2,420	157%	<=941		
E90	09/30/2018	001-G	TRP3B - IC25 Static Renew al 7 Day Chronic Chrceriodaphnia	1	0			C1 MINIMUM	2.409 %	78%	>10.8 %		
E90	08/31/2018	001-G	51040 - E. coli	1	0			C3	980	4%	<=941		
E90	06/30/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C1 MO AVG	6 mg/l	20%	<=5 mg/l		
E90	06/30/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	9.39 mg/l	25%	<=7.5 mg/l		
E90	06/30/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	15.2 mg/l	52%	<=10 mg/l		
E90	06/30/2018	001-G	51040 - E. coli	1	0			C3	2,420	157%	<=941		
E90	03/31/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C2 WKLY AVG	7.79 mg/l	4%	<=7.5 mg/l		
E90	03/31/2018	001-G	00610 - Nitrogen, ammonia total [as N]	1	0	1		C3 DAILY MX	12.4 mg/l	24%	<=10 mg/l		
E90	12/31/2017	001-G	51040 - E. coli	1	0			C3	1,046	11%	<=941		

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 (36.5 MGD, USGS)
- Calcium hardness (25 mg/L, default)
- Total suspended solids (43.5 mg/L)
- Background metals concentrations (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:

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

FACILITY: LAKELAND STP **PERMIT #:TN0078255** **DATE: 4/20/2022** **CALC BY:SDM**

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 [%]
36.46	**46.55**	**4.50**	**43.5**	**25**	**50**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	Stream	Fish/Aqua. Life (F & AL) WQC			F & AL- instream allowable		Calc. Effluent Concentration		Human Health Water Quality Criteria *						effluent	Applicant	
	Bckgrnd.	lab conditions		Fraction	ambient conditions (Tot)		based on F & AL		In-Stream Criteria			Calc. Effluent Concentration **			limited	Reported	
	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS	case	data	
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	ug/l	**PARAMETER**
Copper (a,b)	2.420	2.739	3.640	0.268	10.235	13.600	**36.78**	**52.10**	N/A	N/A	N/A	**N/A**	N/A	N/A	**80.0**	**8.9**	**Copper (a,b)**
Chromium III	1.920	23.813	183.066	0.186	127.852	982.874	**574.15**	**4465.85**	N/A	N/A	N/A	**N/A**	N/A	N/A		**<5**	**Chromium III**
Chromium VI	1.920	11.000	16.000	1.000	11.000	16.000	**42.29**	**65.05**	N/A	N/A	N/A	**N/A**	N/A	N/A		**<5.0**	**Chromium VI**
Chromium, Total	1.920	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**	N/A	N/A	100.0	**N/A**	N/A	557.32	**60.0**	**<5.0**	**Chromium, Total**
Nickel (a,b)	2.700	16.096	144.918	0.289	55.756	501.989	**242.84**	**2273.91**	4600.0	610.0	100.0	**26079.78**	3446.29	553.29	**180.0**	**7.0**	**Nickel (a,b)**
Cadmium (a,b)	0.171	0.253	0.492	0.290	0.871	1.692	**3.27**	**7.01**	N/A	N/A	5.0	**N/A**	N/A	27.48	**5.0**	**<2.0**	**Cadmium (a,b)**
Lead (a,b)	1.310	0.541	13.882	0.144	3.762	96.546	**11.82**	**434.13**	N/A	N/A	5.0	**N/A**	N/A	21.59	**45.0**	**<6.0**	**Lead (a,b)**
Mercury (T) (c)	0.060	0.770	1.400	1.000	0.770	1.400	**3.26**	**6.13**	0.051	0.05	2.0	**-0.02**	-0.03	11.03	**0.4**	**<2.0**	**Mercury (T) (c)**
Silver (a,b,e)	0.148	N/A	0.296	1.000	N/A	0.296	**N/A**	**0.75**	N/A	N/A	N/A	**N/A**	N/A	N/A	**5.0**	**<5.0**	**Silver (a,b,e)**
Zinc (a,b)	6.950	36.498	36.202	0.207	175.974	174.546	**772.80**	**766.30**	26000.0	7400.0	N/A	**147450.46**	41940.95	N/A	**200.0**	**46.8**	**Zinc (a,b)**
Cyanide (d)	2.600	5.200	22.000	1.000	5.200	22.000	**13.13**	**89.60**	140.0	140.0	200.0	**780.71**	780.71	1121.06	**230.0**	**<5.0**	**Cyanide (d)**
Toluene	0.000								15000.0	1300.0	1000.0	**85088.32**	7374.32	5672.55	**15.0**	**<1.0**	**Toluene**
Benzene	0.000								510.0	22.0	5.0	**2893.00**	124.80	28.36	**3.0**	**<1.0**	**Benzene**
1,1,1 Trichloroethane	0.000								N/A	N/A	200.0	**N/A**	N/A	1134.51	**30.0**	**<1.0**	**1,1,1 Trichloroethane**
Ethylbenzene	0.000								2100.0	530.0	700.0	**11912.36**	3006.45	3970.79	**4.0**	**<1.0**	**Ethylbenzene**
Carbon Tetrachloride	0.000								16.0	2.3	5.0	**90.76**	13.05	28.36	**15.0**	**<1.0**	**Carbon Tetrachloride**
Chloroform	0.000								4700.0	57.0	N/A	**26661.01**	323.34	N/A	**85.0**	**<1.0**	**Chloroform**
Tetrachloroethylene	0.000								33.0	6.9	5.0	**187.19**	39.14	28.36	**25.0**	**<1.0**	**Tetrachloroethylene**
Trichloroethylene	0.000								300.0	25.0	5.0	**1701.77**	141.81	28.36	**10.0**	**<1.0**	**Trichloroethylene**
1,2 trans Dichloroethylene	0.000								10000.0	140.0	100.0	**N/A**	794.16	567.26	**1.5**	**<1.0**	**1,2 trans Dichloroethylene**
Methylene Chloride	0.000								5900.0	46.0	5.0	**33468.07**	260.94	N/A	**50.0**	**<1.0**	**Methylene Chloride**
Total Phenols	0.000								860000.0	10000.0	N/A	**4878396.73**	56725.54	N/A	**50.0**	**<5.0**	**Total Phenols**
Naphthalene	0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**1.0**	**<2.0**	**Naphthalene**
Total Phthalates	0.000								N/A	N/A	N/A	**N/A**	N/A	N/A	**64.5**	**<5.0**	**Total Phthalates**
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	**100.13**	**172.96**	N/A	N/A	N/A	**N/A**	N/A	N/A	**N/A**	**NA**	**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)

WATER QUALITY BASED EFFLUENT CALCULATIONS
OUTFALL 001

FACILITY: LAKELAND STP
PERMIT: TN0078255
DATE: SDM

Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Margin of Safety
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
36.46	46.55	4.50	43.5	25	50

	1	2	3	5		6	7		8	9	10	11	12	13	14	15
	Stream Bckgrnd.	Dectection Levels Scan	WQC RDL	Fish/Aqua. Life Water Quality Criteria			Calculated Effluent Concentration			Human Health Water Quality Criteria (30Q5) In-Stream Criteria			Calculated Effluent Concentration			Avg. daily 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
ANTIMONY		3.8	3.0							640.0	5.6	6.0	3630.4	31.8	34.0	<10.0
ARSENIC	1.4	1.0	1.0	150.0		340.0	677.1		1541.9	10.0	10.0	10.0	49.5	49.5	49.5	<10.0
BERYLLIUM		2.0	1.0									4.0			22.7	<10.0
SELENIUM (f)	0.73	5.0	2.0	1.5	3.1	20.0	3.9	11.2	88.1	4200.0	170.0	50.0	23821.0	960.6	279.9	<10.0
THALLIUM	0	5.0	*							0.47	0.24	2.0	2.7	1.4	11.3	<20.0
ACROLEIN	0.0	50.0	1.0	3.000		3.000	13.7		13.7	9.0	6.0		51.1	34.0		<20.0
ACRYLONITRILE	0.0	50.0	1.0							2.5	0.51		14.2	2.9		<20.0
BENZENE	0.0	1.0	1.0							510.0	22.0	5.0	2893.0	124.8	28.4	<1.0
BROMOFORM	0.0	1.0	1.0							1400.0	43.0		7941.6	243.9		<1.0
CARBON TETRACHLORIDE	0.0	1.0	1.0							16.0	2.3	5.0	90.8	13.0	28.4	<1.0
CHLOROBENZENE	0.0	1.0	*							1600.0	130.0	100.0	9076.1	737.4	567.3	<1.0
CHLORODIBROMO-METHANE	0.0	1.0	*							130.0	4.0		737.4	22.7		<1.0
CHLOROETHANE	0.0	1.0	*													<1.0
2-CHLORO-ETHYLVINYL ETHER	0.0	1.0	*													<5.0
CHLOROFORM	0.0	5.0	0.5							4700.0	57.0		26661.0	323.3		5.0
DICHLOROBROMO-METHANE	0.0	1.0	1.0							170.0	5.5		964.3	31.2		<1.0
1,1-DICHLOROETHANE	0.0	1.0	1.0							NA	NA	NA	NA	NA	NA	<1.0
1,2-DICHLOROETHANE	0.0	1.0	1.0							370.0	3.8	5.0	2098.8	21.6	28.4	<1.0
TRANS 1,2-DICHLORO-ETHYLENE	0.0	1.0	*							10000	140.0	100.0	56725.5	794.2	567.3	<1.0
1,1-DICHLOROETHYLENE	0.0	1.0	1.0							7100.0	300.0	7.0	40275.1	1701.8	39.7	<1.0
1,2-DICHLOROPROPANE	0.0	1.0	*							150.0	5.0	5.0	850.9	28.4	28.4	<1.0
1,3-DICHLORO-PROPYLENE	0.0	1.0	1.0							210.0	3.4		1191.2	19.3		<1.0
ETHYLBENZENE	0.0	1.0	1.0							2100	530.0	700.0	11912.4	3006.5	3970.8	<1.0
METHYL BROMIDE	0.0	1.0	*							1500.0	47.0		8508.8	266.6		<1.0
METHYL CHLORIDE	0.0	1.0	1.0													<1.0
METHYLENE CHLORIDE	0.0	5.0	1.0							5900.0	46.0	5.0	33468.1	260.9	28.4	<1.0
1,1,2,2-TETRACHLORO-ETHANE	0.0	1.0	0.5							40.0	1.7		226.9	9.6		<1.0
TETRACHLORO-ETHYLENE	0.0	1.0	0.5							33.0	6.9	5.0	187.2	39.1	28.4	<1.0
TOLUENE	0.0	1.0	1.0							15000	1300.0	1000.0	85088.3	7374.3	5672.6	<1.0
1,1,1-TRICHLOROETHANE	0.0	1.0	1.0									200.0			1134.5	<1.0
1,1,2-TRICHLOROETHANE	0.0	1.0	0.2							160.0	5.9	5.0	907.6	33.5	28.4	<1.0
TRICHLOROETHYLENE	0.0	1.0	1.0							300.0	25.0	5.0	1701.8	141.8	28.4	<1.0
VINYL CHLORIDE	0.0	1.0	2.0							24.0	0.25	2.0	136.1	1.4	11.3	<1.0
P-CHLORO-M-CRESOL	0.0	10.0	*													<5.0
2-CHLOROPHENOL	0.0	10.0	*							150.0	81.0		850.9	459.5		<5.0
2,4-DICHLOROPHENOL	0.0	10.0	*							290.0	77.0		1645.0	436.8		<5.0
2,4-DIMETHYLPHENOL	0.0	10.0	*							850.0	380.0		4821.7	2155.6		<5.0
4,6-DINITRO-O-CRESOL	0.0	10.0	24.0							280.0	13.0		1588.3	73.7		<10.0
2,4-DINITROPHENOL	0.0	10.0	42.0							5300.0	69.0		30064.5	391.4		<5.0
2-NITROPHENOL	0.0	10.0	*													<5.0
4-NITROPHENOL	0.0	10.0	*													<10.0
PENTACHLOROPHENOL	0.0	10.0	5.0	15		19	68.3		86.5	30.0	2.7	1.0	170.2	15.3	5.7	<5.0
PHENOL	0.0	10.0	*							860000	10000.0		4878396.7	56725.5		<5.0
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7							24.0	14.0		136.1	79.4		<5.0
ACENAPHTHENE	0.0	10.0	*							990.0	670.0		5615.8	3800.6		<2.0
ACENAPHTHYLENE	0.0	10.0	2.3													<2.0
ANTHRACENE	0.0	10.0	0.7							40000	8300.0		226902.2	47082.2		<2.0
BENZIDINE	0.0	50.0	*							0.0020	0.0009		0.011	0.0		<20.0
BENZO(A)ANTHRACENE	0.0	10.0	0.3							0.18	0.038		1.0	0.2		<2.0
BENZO(A)PYRENE	0.0	10.0	0.3							0.18	0.038	0.2	1.0	0.2	1.1	<2.0
3,4 BENZO-FLUORANTHENE	0.0	10.0	0.3							0.18	0.038		1.0	0.2		<2.0
BENZO(GHI)PERYLENE	0.0	10.0	*													<2.0
BENZO(K)FLUORANTHENE	0.0	10.0	0.3							0.18	0.038		1.0	0.2		<2.0
BIS (2-CHLOROETHOXY) METHANE	0.0	10.0	*													<5.0
BIS (2-CHLOROETHYL)-ETHER	0.0	10.0	1.0							5.3	0.30		30.1	1.7		<5.0
BIS (2-CHLOROISO-PROPYL) ETHER	0.0	10.0	*							65000	1400.0		368716.0	7941.6		<5.0
BIS (2-ETHYLHEXYL) PHTHALATE	0.0	10.0	2.5							22.0	12.0	6.0	124.8	68.1	34.0	<10.0
4-BROMOPHENYL PHENYL ETHER	0.0	10.0	*													<5.0
BUTYL BENZYL PHTHALATE	0.0	10.0	*							1900.0	1500.0		10777.9	8508.8		<5.0
2-CHLORONAPHTHALENE	0.0	10.0	*							1600.0	1000.0		9076.1	5672.6		<5.0
4-CHLORPHENYL PHENYL ETHER	0.0	10.0	*													<5.0
CHRYSENE	0.0	10.0	2.5							0.18	0.038		1.0	0.2		<2.0
DI-N-BUTYL PHTHALATE	0.0	10.0	2.5							4500.0	2000.0		25526.5	11345.1		<5.0
DI-N-OCTYL PHTHALATE	0.0	10.0	*													<5.0
DIBENZO(A,H) ANTHRACENE	0.0	10.0	*							0.18	0.038		1.0	0.2		<2.0
1,2-DICHLOROBENZENE	0.0	1.0	2.0							1300.0	420.0		7374.3	2382.5		<5.0
1,3-DICHLOROBENZENE	0.0	5.0	2.0							960.0	320.0		5445.7	1815.2		<5.0
1,4-DICHLOROBENZENE	0.0	5.0	2.0							190.0	63.0		1077.8	357.4		<5.0
3,3-DICHLOROBENZIDINE	0.0	10.0	*							0.28	0.2		1.6	1.2		<5.0
DIETHYL PHTHALATE	0.0	10.0	1.9							44000	17000.0		249592.4	96433.4		<5.0
DIMETHYL PHTHALATE	0.0	10.0	1.6							1100000	270000.0		6239809.8	1531589.7		<5.0
Di-n-butyl phthalate (84-74-2) (g)	0.0	10.0								4500	2000.0		25526.5	11345.1		<5.0
2,4-DINITROTOLUENE	0.0	10.0	1.0							34.0	1.1		192.9	6.2		<5.0
2,6-DINITROTOLUENE	0.0	10.0	*													<5.0
Di-n-octyl phthalate (117-84-0) (g)	0.0	10.0														<5.0
1,2 DIPHENYLHYDRAZINE	0.0	10.0	*							2.0	0.4		11.3	2.0		<5.0
FLUORANTHENE	0.0	10.0	2.2							140.0	130.0		794.2	737.4		<2.0
FLUORENE	0.0	10.0	0.3							5300.0	1100.0		30064.5	6239.8		<2.0
HEXACHLOROBENZENE	0.0	10.0	1.9							0.0029	0.0028	1.0	0.016	0.0	5.7	<5.0
HEXACHLOROBUTADIENE	0.0	10.0	5.0							180.0	4.4		1021.1	25.0		<5.0
HEXACHLOROCYCLO-PENTADIENE	0.0	10.0	*							1100.0	40.0	50.0	6239.8	226.9	283.6	<5.0
HEXACHLOROETHANE	0.0	10.0	0.5							33.0	14.0		187.2	79.4		<5.0
INDENO(1,2,3-CD)PYRENE	0.0	10.0	*							0.18	0.038		1.0	0.2		<2.0
ISOPHORONE	0.0	10.0	*							9600	350.0		54456.5	1985.4		<5.0
NAPHTHALENE	0.0	10.0	*													<2.0
NITROBENZENE	0.0	10.0	10.0							690.0	17.0		3914.1	96.4		<5.0
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	*							5.1	0.050		28.9	0.3		<5.0
N-NITROSODI- METHYLAMINE	0.0	10.0	*							30.0	0.0069		170.2	0.0		<5.0
N-NITROSODI-PHENYLAMINE	0.0	10.0	*							60.0	33.0		340.4	187.2		<10.0
PHENANTHRENE	0.0	10.0	0.7													<2.0
PYRENE	0.0	10.0	0.3							4000.0	830.0		22690.2	4708.2		<2.0
1,2,4-TRICHLOROBENZENE	0.0		*							70.0	35.0	70.0	397.1	198.5	397.1	<5.0

APPENDIX 5 –
RECEIVING STREAM LOW FLOW DETERMINATION

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 001	
LONGITUDE	LATITUDE
-89.74092	35.28211

RECEIVING STREAM DISCHARGE ROUTE
Loosahatchie River at mile 24.1

FLOW (MGD)	DISCHARGE SOURCE
4.5000	Treated municipal wastewater
4.5000	TOTAL DISCHARGE

STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
(MGD)	56.42		72.03
	36.46		46.55

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
FISH & AQUATIC LIFE	RECREATION	IRRIGATION	LIVESTOCK & WILDLIFE	DOMESTIC WATER SUPPLY
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: Sequence batch reactor, post equalization basin, and UV disinfection

* Reference: USGS Streamstats and USGS 2009 Low Flow book gage station ID: 07030280.
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Determining low flows on unregulated streams

Step 1: Use USGS StreamStats to find the drainage area ($A_{outfall}$) and calculate low flow at the point of discharge ($Q_{outfall\_streamstats}$).
Use print > print to pdf to save this output and insert it into permit appendix

Step 2: Use USGS StreamStats to explore the watershed and determine if an appropriate gage is available.
A gage is useable when the **drainage area** (A_{gage}) and the **period of record** representative of the point of discharge.
As a rule of thumb, the A_{gage} should be 0.5 to 1.5 times the $A_{outfall}$
The period of record should be > 10 years and "not too old"

Step 3: If enough gage data is available, use SWToolbox to download gage data and calculate the low flow at the gage (Q_{gage})

Step 4: Calculate the flow at the point of discharge using the following equation:

$$Q_{outfall} = Q_{gage} * \frac{A_{outfall}}{A_{gage}}$$

	square miles
A_Outfall:	489.58
A_Gage:	505.01

Where:

Q_Outfall	= Low flow statistic at outfall location	
Q_Gage	= Low flow statistic at gage location (from SWToolbox output)	
A_Outfall	= Area draining to outfall	
A_Gage	= Area draining to gage	

	7Q10		30Q5	
	cfs	MGD	cfs	MGD
Q_Gage:	58.20	37.61	74.30	48.02
Q_Outfall:	56.42	**36.47**	72.03	**46.55**

MNO	STANO	LAT		LNG	STANAM (0 = not used; 1 = used in program; 2 = used in zero-flow screening)							DA	GIS.DA	GIS.GF	GIS.CF	GIS.SF	GIS.SP	YR
	7Q10	30Q5	MA	MS	99.5%	99%	98%	95%	90%	80%	70%	60%	50%	40%		30%	20%	10%
					West Tennessee region—Continued													
345	07030240	35°18'37"		89°38'23"	LOOSAHATCHIE R NEAR ARLINGTON (1)							262	212	145	2.406	56	1.40	32
	72.3	81.1	387	212	65.3	69.5	75.4	78.4	83.5	93.2	100	108	122	140		177	255	606
	23.6	31.7	321	139	22.7	24.7	27.2	32.1	38.2	49.0	61.3	76.2	98.9	136		200	328	701
	15.9	22.8	299	115	14.8	17.2	19.5	23.8	28.3	37.6	49.4	63.4	81.8	119		215	367	696
	0.63	*0.73*	*15.3*	*8.98*	*0.80*	*0.86*	*0.90*	*1.04*	*1.13*	*1.16*	*1.16*	*1.25*	*1.46*	*1.67*		*1.91*	*2.49*	*14.3*
346	07030280	35°16'53"		89°45'56"	LOOSAHATCHIE R AT BRUNSWICK (1)							505	505	83	2.405	56	1.24	31
	58.2	74.3	698	270	52.1	58.1	63.2	74.5	84.1	96.2	106	119	134	163		227	398	1424
	28.6	40.2	714	281	27.7	31.4	35.3	41.3	49.4	64.8	87.1	115	165	245		398	740	1593
	27.2	39.2	702	264	25.4	29.6	33.5	40.6	48.2	65.4	86.3	108	144	224		433	832	1640
	0.49	*0.71*	*13.9*	*13.5*	*0.74*	*1.15*	*1.26*	*1.38*	*1.46*	*1.42*	*1.79*	*2.12*	*2.51*	*2.65*		*3.41*	*4.16*	*14.8*

StreamStats Report

Region ID: TN
Workspace ID: TN20220420171838577000
Clicked Point (Latitude, Longitude): 35.28246, -89.74108
Time: 2022-04-20 12:19:01 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	489.58	square miles
PERMGTE2IN	Percent of area underlain by soils with permeability greater than or equal to 2 inches per hour	55.578	percent
RECESS	Number of days required for streamflow to recede one order of magnitude when hydrograph is plotted on logarithmic scale	84	days per log cycle

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	489.58	square miles	2	2405
RECESS	Recession Index	84	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	55.578	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	26.1	ft^3/s	123
30 Day 5 Year Low Flow	37.8	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. (http://pubs.usgs.gov/sir/2009/5159/)