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

February 24, 2021

Honorable Jeremy Bivens
Mayor, Town of Decatur
e-copy: laurasmith@decaturtn.net
P.O. Box 188
Decatur, TN 37322

Subject: **NPDES Permit No. TN0058521**
**Town of Decatur**
**Decatur, Meigs County, Tennessee**

Dear Mayor Bivens:

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.

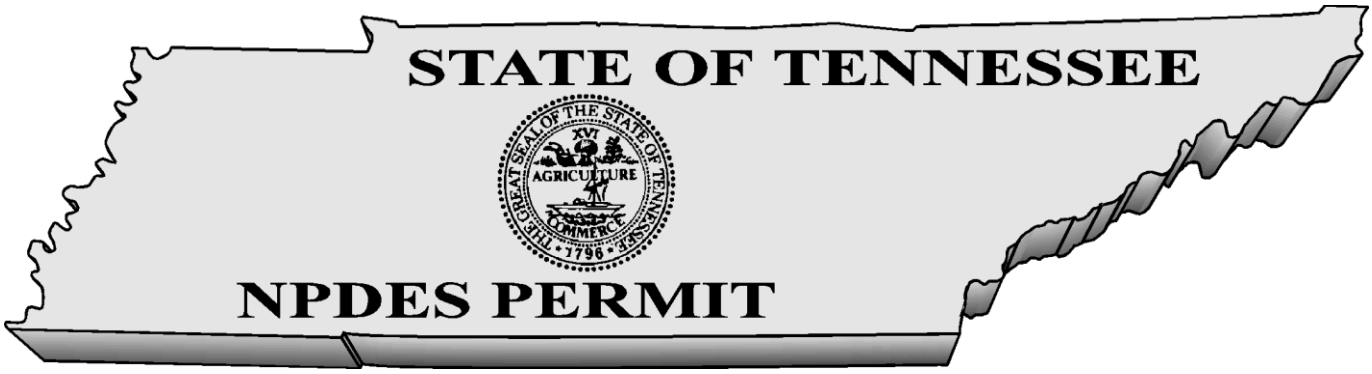
If you have questions, please contact the Chattanooga Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Wade Murphy at (615) 532-0666 or by E-mail at *Wade.Murphy@tn.gov*.

Sincerely,

Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Mr. Rusty Smith, Wastewater Supervisor, rusty70.rs@gmail.com
Ms. Laura Smith, Recorder, City of Decatur, laurasmith@decaturtn.net
EFO-Chattanooga-DWR, angela.oberschmidt@tn.gov
DWR-C&E Unit, sarah.elias@tn.gov
Permit File




# No. TN0058521

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

**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**

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: | **Town of Decatur**<br>**Decatur STP** |
| is authorized to discharge: | **treated domestic wastewater** |
| from a facility located: | **in Decatur, Meigs County, Tennessee** |
| to receiving waters named: | **Tennessee River Mile 514.8** |

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

| | |
|---|---|
| This permit shall become effective on: | **April 01, 2021** |
| This permit shall expire on: | **March 31, 2023** |
| Issuance date: | **February 24, 2021** |

for Jennifer Dodd
Director

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# 1.0. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

## 1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

Decatur (the permittee) is authorized to operate sewage collection system and discharge treated domestic wastewater to the Tennessee River Mile 514.8. Operation and discharges from the collection system shall be limited and monitored by the permittee as specified below:

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

Discharge 001 consists of municipal wastewater from a treatment facility with a design capacity of .53 MGD. Discharge 001 shall be limited and monitored by the permittee as specified below:

| Description : External Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year, Limit Set Status : Active | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Code** | **Parameter** | **Qualifier** | **Value** | **Unit** | **Sample Type** | **Monitoring Frequency** | **Statistical Base** |
| 00300 | Oxygen, dissolved (DO) | >= | 1.0 | mg/L | Grab | Once Per Week | Instantaneous Minimum |
| 00310 | BOD, 5-day, 20 C | <= | 30 | mg/L | Composite | Once Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | <= | 40 | mg/L | Composite | Once Per Week | Weekly Average |
| 00310 | BOD, 5-day, 20 C | <= | 45 | mg/L | Composite | Once Per Week | Daily Maximum |
| 00310 | BOD, 5-day, 20 C | <= | 136 | lb/d | Composite | Once Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | <= | 182 | lb/d | Composite | Once Per Week | Weekly Average |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 00400 | pH | >= | 6.0 | SU | Grab | Once Per Week | Daily Minimum |
| 00400 | pH | <= | 9.0 | SU | Grab | Once Per Week | Maximum |
| 00530 | Total Suspended Solids (TSS) | <= | 30 | mg/L | Composite | Once Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 40 | mg/L | Composite | Once Per Week | Weekly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 45 | mg/L | Composite | Once Per Week | Daily Maximum |
| 00530 | Total Suspended Solids (TSS) | <= | 136 | lb/d | Composite | Once Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | <= | 182 | lb/d | Composite | Once Per Week | Weekly Average |
| 00545 | Settleable Solids | <= | 1.0 | mL/L | Grab | Five Per Week | Daily Maximum |
| 00600 | Nitrogen, total (as N) | Report | - | mg/L | Composite | Quarterly | Daily Maximum |
| 00600 | Nitrogen, total (as N) | Report | - | lb/d | Composite | Quarterly | Daily Maximum |
| 00665 | Phosphorus, total (as P) | Report | - | mg/L | Composite | Quarterly | Daily Maximum |
| 00665 | Phosphorus, total (as P) | Report | - | lb/d | Composite | Quarterly | Daily Maximum |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Monthly Average |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Daily Maximum |
| 50060 | Chlorine, total residual (TRC) | <= | 2.0 | mg/L | Grab | Five Per Week | Daily Maximum |
| 51040 | E. coli | <= | 126 | #/100mL | Grab | Once Per Week | Monthly Geometric Mean |
| 51040 | E. coli | <= | 487 | #/100mL | Grab | Once Per Week | Daily Maximum |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TAA3B | $LC_{50}$ Static 48Hr Acute Ceriodaphnia | >= | 0.13 | % | Grab | Annual | Minimum |
| TAA6C | $LC_{50}$ Static 48Hr Acute Pimephales promelas | >= | 0.13 | % | Grab | Annual | Minimum |

**Description : External Outfall, Number : 001, Monitoring : Percent Removal, Season : All Year, Limit Set Status : Active**

| Code | Parameter | Qualifier | Value | Unit | Sample Type | Monitoring Frequency | Statistical Base |
|---|---|---|---|---|---|---|---|
| 81010 | BOD, 5-day, % removal | >= | 85 | % | Composite | Once Per Week | Monthly Average Minimum |
| 81010 | BOD, 5-day, % removal | >= | 40 | % | Composite | Once Per Week | Daily Minimum |
| 81011 | TSS, % removal | >= | 85 | % | Composite | Once Per Week | Monthly Average Minimum |
| 81011 | TSS, % removal | >= | 40 | % | Composite | Once Per Week | Daily Minimum |

**Description : External Outfall, Number : 001, Monitoring : Raw Sewage Influent, Season : All Year, Limit Set Status : Active**

| Code | Parameter | Qualifier | Value | Unit | Sample Type | Monitoring Frequency | Statistical Base |
|---|---|---|---|---|---|---|---|
| 00310 | BOD, 5-day, 20 C | Report | - | mg/L | Composite | Once Per Week | Monthly Average |
| 00310 | BOD, 5-day, 20 C | Report | - | mg/L | Composite | Once Per Week | Daily Maximum |
| 00530 | Total Suspended Solids (TSS) | Report | - | mg/L | Composite | Once Per Week | Monthly Average |
| 00530 | Total Suspended Solids (TSS) | Report | - | mg/L | Composite | Once Per Week | Daily Maximum |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Monthly Average |
| 50050 | Flow | Report | - | MGD | Continuous | Daily | Daily Maximum |

Notes: The permittee shall achieve 85% removal of $BOD_5$ and TSS on a monthly average basis. The permittee shall report all instances of releases, overflows and/or bypasses. See Part 2.3.3.a for the definition of overflow and Part 1.3.5.1 for reporting requirements.

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 next page for percent removal calculations.

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, Part 136 as amended. The method detection level (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 higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit.

Monitoring and reporting requirements for both total nitrogen (TN) and total phosphorus (TP) begin the effective date of the permit. Each daily load is calculated by multiplying the day's sample concentration (mg/L) by the effluent flow rate (MGD) for the day of the sample was collected by 8.34.

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

| Status | Comments |
|---|---|
| Active - Permit Requirement | The permittee shall submit the results of an Industrial Waste Survey (IWS) 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. 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. |
| Active - Permit Requirement | Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. |

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the *E. coli* group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for *E. coli* within the required reporting period. The permittee may collect more samples than specified as the monitoring frequency. 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 one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the *E. coli* group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

There shall be no 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.

There shall be no total suspended solids, turbidity or color in such amounts or character that will result in any objectionable appearance to the water, considering the nature and location of the water.

The wastewater discharge shall not 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, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

For the purpose of evaluating compliance with the permit limits established herein, where certain limits are below the State of Tennessee published required detection levels (RDLs) for any given effluent characteristics, the results of analyses below the RDL shall be reported as Below Detection Level (BDL), unless in specific cases other detection limits are demonstrated to be the best achievable because of the particular nature of the wastewater being analyzed.

For $BOD_5$ 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:

$$\left[1 - \frac{\text{average of daily effluent concentration}}{\text{average of daily influent concentration}}\right] \times 100\% = \% \text{ removal}$$

The treatment facility will also demonstrate 40% minimum removal of the $BOD_5$ and TSS based upon each daily composite sample. The formula for this calculation is as follows:

$$\left[1 - \frac{\text{daily effluent concentration}}{\text{daily influent concentration}}\right] \times 100\% = \% \text{ removal}$$

## 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 storm water 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, calibrated[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 less than plus or minus 10% from the true discharge rates throughout the range of expected discharge volumes.

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 change:

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 disinfection and the actual discharge.

[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. On page 120, the documents states, in part: "The facility must ensure that their flow measurement systems are calibrated by a qualified source at least once a year to ensure their accuracy."

c. The dissolved oxygen can drop in the outfall line; therefore, D.O. 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, dissolved oxygen must be measured after this step and as close to the end of the outfall line as possible.

d. Total suspended solids 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

Where the permit requires sampling and monitoring of a particular effluent characteristic(s) at a frequency of less than once per day or daily, the permittee is precluded from marking the “No Discharge” block on the Discharge Monitoring Report if there has been any discharge from that particular outfall during the period which coincides with the required monitoring frequency; i.e. if the required monitoring frequency is once per month or 1/month, the monitoring period is one month, and if the discharge occurs during only one day in that period then 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 according to methods prescribed in Title 40, CFR, Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

c. Composite samples must be proportioned by flow at time of sampling. Aliquots may be collected manually or automatically. The sample aliquots must be maintained at ≤ 6 degrees Celsius during the compositing period.

d. If the MDLs 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 stated MDL shall be used.

e. Where the analytical results are below method detection or practical quantitation limits, the permittee shall report the actual laboratory MDL and/or PQL values for the analyses that were performed following the instructions on the discharge monitoring report.

f. Where necessary, the permittee may request approval of alternate methods or for alternative MDLs and PQLs for any approved analytical method. Approval of alternate laboratory MDLs or PQLs is not necessary if the laboratory reported

MDLs and PQLs are less than or equal to the permit limit or the applicable water quality criteria, if any, stated in Chapter 0400-04-03. Approval of an alternative method is not necessary if the analytical method is in accordance with 40 CFR 136.

### 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:

a. The exact place, date and time of sampling or measurements;

b. The exact person(s) collecting samples or measurements;

c. The dates and times the analyses were performed;

d. The person(s) or laboratory who performed the analyses;

e. The analytical techniques or methods used, and;

f. The results of all required analyses.

### 1.2.5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

## 1.3. REPORTING

### 1.3.1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using NetDMR. Submittals shall be no later than 15 days after the completion of the reporting period. If NetDMR is not functioning, a completed DMR with an original signature shall be submitted to the following address:

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

If NetDMR is not functioning, a copy of the completed and signed DMR shall be mailed to the Chattanooga Environmental Field Office (EFO) at the following address:

**STATE OF TENNESSEE**
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**DIVISION OF WATER RESOURCES**
**Chattanooga Environmental Field Office**
**1301 Riverfront Parkway, Suite 206**
**Chattanooga, Tennessee 37402**

In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

For purposes of determining compliance with this permit, data provided to the division electronically is legally equivalent to data submitted on signed and certified DMR forms.

### 1.3.2. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

### 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 Section 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 to angela.oberschmidt@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*
*Chattanooga Environmental Field Office*
*1301 Riverfront Parkway, Suite 206*
*Chattanooga, Tennessee, 37402*

### 1.3.5. Bypass, Release and Overflow Reporting

#### 1.3.5.1. Event Report Requirements

For the purpose of this section, “events” are known as instances of sanitary sewer overflows, releases, 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 2.3.2.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 1.8**.

#### 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.

#### 1.3.5.3. Anticipated Bypass Notification

If, because of unavoidable maintenance or construction, the permittee has need to create an in-plant bypass which would cause an effluent violation, the permittee must notify the division as soon as possible, but in any case, no later than 10 days prior to the date of the bypass.

### 1.3.6. Reporting Less Than Detection; Reporting Significant Figures

A permit limit may be less than the accepted detection level. If the samples are below the detection level, then report “BDL” or “NODI =B” on the DMRs. The permittee must use the correct detection levels in all analytical testing required in the permit.

For example, if the limit is 0.02 mg/L with a detection level of 0.05 mg/L and detection is shown; 0.05 mg/L must be reported. In contrast, if nothing is detected reporting “BDL” or “NODI =B” is acceptable.

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.

## 1.4. 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.

## 1.5. 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.

## 1.6. 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.

## 1.7. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit.

## 1.8. 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.

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.

# 2.0. GENERAL PERMIT REQUIREMENTS

## 2.1. GENERAL PROVISIONS

### 2.1.1. Duty to Reapply

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 Director of the Division of Water Resources (the "director") no later than 180 days prior to the expiration date. Such forms shall be properly signed and certified.

### 2.1.2. 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:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

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

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

### 2.1.3. 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 offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

### 2.1.4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process 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. Backup continuous pH and flow monitoring equipment are not required.

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

### 2.1.5. 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.

### 2.1.6. 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.

### 2.1.7. 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.

### 2.1.8. 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 in 40 CFR 122.29(b); or

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).

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.

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. The permittee shall also furnish to the director, upon request, copies of records required to be kept by 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 on 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

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 the 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 director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), “Signatories to permit applications”; and, 9) 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 caseof any noncompliance which could cause a threat to public drinking supplies or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate EFO within 24 hours from the time the permittee becomes aware of the circumstances. The EFO should be contacted for names and phone numbers of the environmental response team.

A written submission must be provided via MyTDEC Forms within five days of the time the permittee becomes aware of the circumstances unless the Director on a case-by-case basis waives this requirement. The permittee shall provide the Director with the following information:

i. A description of the discharge and cause of noncompliance;
ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting:

For instances of noncompliance which do not cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health

or the environment, the permittee shall report the noncompliance on the DMR. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

### 2.3.2. Overflows and Releases

a. Sanitary sewer overflows, including dry-weather overflows, are prohibited.

b. 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). Releases caused by improper operation or maintenance of the permittee's collection, transmission, and treatment system are prohibited.

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

d. 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 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.

e. 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.

f. Unpermitted discharges from the collection or treatment system of industrial facilities are prohibited.

### 2.3.3. Upset

a. "***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.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such 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."

### 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. "***Bypass***" is the intentional diversion of waste streams from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless all of the following 3 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 construction and 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;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be submitted to the director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding permit limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 2.3.6.b.iii, above.

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

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate Environmental Field Office within 24 hours by telephone. A written submission must be provided within five days. The washout must be noted on the discharge monitoring report. 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 "***Bypassing*****,**" "***Overflow,"*** and "***Upset*****,**" 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.

# 3.0. 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 has been delegated the primary responsibility and therefore becomes the "control authority" for enforcing the 40 CFR 403 General Pretreatment Regulations. Where multiple plants are concerned the permittee is responsible for the Pretreatment Program for all plants within its jurisdiction. The permittee shall implement and enforce the Industrial Pretreatment Program in accordance with Section 403(b)(8) of the Clean Water Act, the Federal Pretreatment Regulations 40 CFR 403, Tennessee Water Quality Control Act Part 69-3-123 through 69-3-128, and the legal authorities, policies, procedures, and financial provisions contained in its approved Pretreatment Program, except to the extent this permit imposed stricter requirements. Such implementation shall require but not limit the permittee to do the following:

   i. Carry out inspection, surveillance, and monitoring procedures which will determine, independent of information supplied by the industrial user (IU), whether the IU is in compliance with the pretreatment standards;

   ii. Require development, as necessary, of compliance schedules for each IU for the installation of control technologies to meet applicable pretreatment standards;

   iii. Require all industrial users to comply with all applicable monitoring and reporting requirements outlined in the approved pretreatment program and IU permit;

   iv. Maintain and update, as necessary, records identifying the nature and character of industrial user discharges, and retain such records for a minimum of three (3) years;

   v. Obtain appropriate remedies for noncompliance by an IU with any pretreatment standard and/or requirement;

vi. Publish annually, pursuant to 40 CFR 403.8 (f)(2)(viii), a list of industrial users that have significantly violated pretreatment requirements and standards during the previous twelve-month period.

vii. Maintain an adequate revenue structure for continued operation of the pretreatment program.

viii. Update its Industrial Waste Survey at least once every five years. Results of this update shall be submitted 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.

ix. Submit a written technical evaluation of the need to revise local limits within 120 days of the effective date of this permit to the state pretreatment program coordinator. The evaluation shall include the most recent pass-through limits proposed by the division. The technical evaluation shall be based on practical and specialized knowledge of the local program and not be limited by a specified written format.

b. The permittee shall enforce 40 CFR 403.5, "prohibited discharges". Pollutants introduced into the POTW by a non-domestic source shall not cause pass through or interference as defined in 40 CFR Part 403.3. 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 in the waste treatment system:

i. Pollutants which create a fire or explosion hazard in the POTW;

ii. Pollutants which will cause corrosive structural damage to the treatment works, but in no case discharges with pH less than 5.0 unless the system is specifically designed to accept such discharges.

iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the treatment system 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 treatment works.

v. Heat in amounts which will inhibit biological activity in the treatment works resulting in interference, but in no case heat in such quantities that the temperature at the treatment works exceeds 40°C (104°F) unless the works are designed to accommodate such heat.

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;

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

c. The permittee shall notify the Tennessee Division of Water Resources 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.

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 the permit is issued.

This notice will include information on the quantity and quality of the wastewater introduced by the new source into the publicly owned treatment works, 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.

d. Reporting Requirements

As of December 21, 2020, all semi-annual must be submitted electronically. Prior to December 21, 2020, reports may be submitted electronically when electronic reporting is available. The electronic submission of a pretreatment report will be accepted only if formally approved beforehand by the division. Prior to electronic reporting approval, the report shall be submitted to the Division of Water Resources, Central Office and a copy to the appropriate Environmental Field Office no later than the 28th day of the month following each reporting period. Large programs with more than 20 SIUs will be granted an additional 15 days for report submittal.

The permittee shall provide a semiannual report briefly describing the permittee's pretreatment program activities over the previous six-month period. Reporting periods shall end on the last day of the months of March and September. For

control authorities with multiple STPs, one report should be submitted with a separate Form 1 for each STP. Prior to approval of electronic reporting, each report shall conform to the format set forth in the State POTW Pretreatment Semiannual Report Package which contains information regarding:

i. An updated listing of the permittee's industrial users.

ii. Results of sampling of the influent and effluent of the wastewater treatment plant. At least once each reporting period, the permittee shall analyze the wastewater treatment plant influent and effluent for the following pollutants, using the prescribed sampling procedures:

| **Pollutant** | **Sample Type** |
|---|---|
| chromium, trivalent | 24-hour composite |
| chromium, hexavalent | Per method requirements [2] |
| total chromium | 24-hour composite |
| copper | 24-hour composite |
| lead | 24-hour composite |
| nickel | 24-hour composite |
| zinc | 24-hour composite |
| cadmium | 24-hour composite |
| mercury | Per method requirements[2] |
| silver | 24-hour composite |
| total phenols | grab |
| cyanide | grab |

If any particular pollutant is analyzed more frequently than is required, the permittee shall report the maximum and average values on the semiannual report. All upsets, interferences, and pass-through violations must also be reported on the semiannual report, the actions that were taken to determine the causes of the incidents and the steps that have been taken to prevent the incidents from recurring.

At least once during the term of this permit, the permittee shall analyze the effluent from the STP (and report the results in the next regularly scheduled report) for the following pollutants:

[2] When a composite sample would compromise sample integrity refer to 40 CFR Part 136.3 Table II including footnotes.

| | | |
|---|---|---|
| chromium III | cyanide | phthalates, sum of the following: |
| chromium VI | silver | bis (2-ethylhexyl) phthalate |
| copper | benzene | butyl benzylphthalate |
| lead | carbon tetrachloride | di-n-butylphthalate |
| nickel | chloroform | diethyl phthalate |
| zinc | ethylbenzene | 1,2 trans-dichloroethylene |
| cadmium | methylene chloride | tetrachloroethylene |
| mercury | naphthalene | toluene |
| phenols, total | 1,1,1 trichloroethane | trichloroethylene |
| chromium, total | | |

iii. Compliance with categorical and local standards, and review of industrial compliance, which includes a summary of the compliance status for all permitted industries. Also included is information on the number and type of major violations of pretreatment regulations, and the actions taken by the POTW to obtain compliance. The effluent from all significant industrial users must be analyzed for the appropriate pollutants at least once every 12 months.

iv. A list of industries in significant non-compliance as published in local newspapers in accordance with the requirements set forth in 40 CFR 403.8(f)(2)(viii).

v. A description of all substantive changes made to the permittee's pretreatment program. Any such changes shall receive prior approval. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure, local limits, or a change in the method of funding the program.

vi. Summary of permittee's industrial user inspections, which includes information on the number and type of industry inspected. All significant industrial users must be inspected at least once per year.

## 3.3. BIOSOLIDS MANAGEMENT PRACTICES

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

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

a. Reopener: If an applicable "acceptable management practice" or numerical limitation for pollutants in sewage sludge promulgated under Section 405(d)(2) of the Clean Water Act, as amended by the Water Quality Act of 1987, is more stringent than the sludge pollutant limit or acceptable management practice in this permit, or controls a pollutant not limited in this permit, this permit shall be promptly modified or revoked and reissued to conform to the requirements promulgated

under Section 405(d)(2). The permittee shall comply with the limitations by no later than the compliance deadline specified in the applicable regulations as required by Section 405(d)(2) of the Clean Water Act.

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

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

| Division of Solid Waste Management | | | |
|---|---|---|---|
| **Office** | **Location** | **Zip Code** | **Phone No.** |
| Chattanooga | 1301 Riverfront Parkway, Suite 206 | 37402 | (423) 634-5745 |
| Jackson | 1625 Hollywood Drive | 38305 | (731) 512-1300 |
| Cookeville | 1221 South Willow Avenue | 38506 | (931) 520-6688 |
| Columbia | 1421 Hampshire Pike | 38401 | (931) 380-3371 |
| Johnson City | 2305 Silverdale Road | 37601 | (423) 854-5400 |
| Knoxville | 3711 Middlebrook Pike | 37921 | (865) 594-6035 |
| Memphis | 8383 Wolf Lake Drive, Bartlett | 38133 | (901) 371-3000 |
| Nashville | 711 R.S. Gass Boulevard | 37216 | (615) 687-7000 |

## 3.4. BIOMONITORING REQUIREMENTS, Acute

The permittee shall conduct a 48-hour static acute toxicity test on two test species on samples of final effluent from Outfall 001. The test species to be used are Water Fleas (Ceriodaphnia dubia) and Fathead Minnows (Pimephales promelas).

The measured endpoint for toxicity will be the concentration causing 50% lethality ($LC_{50}$) of the test organisms. The $LC_{50}$ shall be determined based on a 50% lethality as compared to the controls, and as derived from linear interpolation.

Test shall be conducted and its 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** | | | | | |
| **0.52** | **0.26** | **0.13** | **0.07** | **0.03** | **0** |

The dilution/control water used will be moderately hard water as described in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA-821-R-02-012 (or the most current edition). An acute 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 $LC_{50}$ is less than or equal to the permit limit indicated for each outfall in the above table(s).

All tests will be conducted using four separate grab samples of final effluent, to be used in four separate tests, and shall be collected at evenly spaced (6-hour) intervals over a 24-hour period. If in any control, more than 10% of the test organisms die in 48 hours, 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 Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA-821-R-02-012 (or the most current edition), 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 annually (1/Year) 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 and determination of effluent lethality values will be made in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA-821-R-02-012, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analysis shall be compiled in a report. The report shall be written in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA-821-R-02-012, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address (see table below):

| **Division of Water Resources** | | | |
|---|---|---|---|
| **Office** | **Location** | **Zip Code** | **Phone No.** |
| Chattanooga | 1301 Riverfront Pkwy., Suite 206 | 37402 | (423) 634-5745 |
| Jackson | 1625 Hollywood Drive | 38305 | (731) 512-1300 |
| Cookeville | 1221 South Willow Avenue | 38506 | (931) 520-6688 |
| Columbia | 1421 Hampshire Pike | 38401 | (931) 380-3371 |
| Johnson City | 2305 Silverdale Road | 37601 | (423) 854-5400 |
| Knoxville | 3711 Middlebrook Pike | 37921 | (865) 594-6035 |
| Memphis | 8383 Wolf Lake Drive, Bartlett | 38133 | (901) 371-3000 |
| Nashville | 711 R.S. Gass Boulevard | 37216 | (615) 687-7000 |

## 3.5. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign at each overflow/release point in the collection system. For the purposes of this requirement, any point that has had a total of five (5) or more overflows plus releases in the last year must be so posted. The permittee shall place and maintain a sign at each outfall. 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 is given as an example of the minimal amount of information that must be included on the sign:

**Unpermitted release/overflow point:**

**UNTREATED WASTEWATER DISCHARGE POINT**
**Town of Decatur**
**Decatur STP**
**(423) 334-5716**
**NPDES Permit NO. TN0058521**
**TENNESSEE DIVISION OF WATER RESOURCES**
**1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Chattanooga**

**NPDES Permitted Municipal/Sanitary Outfall:**

**TREATED MUNICIPAL/SANITARY WASTEWATER**
**Town of Decatur**
**Decatur STP**
**(423) 334-5716**
**NPDES Permit NO. TN0058521**
**TENNESSEE DIVISION OF WATER RESOURCES**
**1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Chattanooga**

No later than sixty (60) days from the effective date of this permit, the permittee shall have the above sign(s) on display in the location specified.

## 3.6. ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled "Tennessee Antidegradation Statement," which prohibits the degradation of exceptional Tennessee waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

# 4.0. DEFINITIONS AND ACRONYMS

## 4.1. DEFINITIONS

"***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.

A "***bypass***" is defined as the intentional diversion of waste streams from any portion of a treatment facility.

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

A "***composite sample***" is a combination of not less than 8 influent or effluent portions, of at least 100 ml, collected over a 24-hour period. Under certain circumstances a lesser time period may be allowed, but in no case, less than 8 hours.

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 concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

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

A "***dry weather overflow***" is a type of sanitary sewer overflow and is defined as one day or any portion of a day in which unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall occurs and is not directly related to a rainfall event. Discharges from more than one point within a 24-hour period shall be counted as separate overflows.

***"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***” - 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 ONRWs the mitigation must occur within the ONRW.

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 is 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 (0) shall be considered to be one (1).

A "***grab sample***" is a single influent or effluent sample collected at a particular time.

The "***instantaneous maximum concentration***" is a limitation on the concentration, in milligrams per liter, of any pollutant contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

The "***instantaneous minimum concentration***" is the minimum allowable concentration, in milligrams per liter, of a pollutant parameter contained in the wastewater discharge determined from a grab sample taken from the discharge at any point in time.

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

The "***monthly average concentration***", other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

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

"***Pollutant***" means sewage, industrial wastes, or other wastes.

A "***quarter***" is defined as 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.

A "***rainfall event***" is defined as 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.

A "***rationale***" (or "fact sheet") is 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 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.

A "***release***" is the flow of sewage from any portion of the collection or transmission system owned or operated by the permittee other than through permitted outfalls that does not add pollutants to 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 and transmission system owned or operated by the permittee. A "release" does not include backups into a building or private property caused by blockages or other malfunctions originating in a private lateral.

A **"*sanitary sewer overflow (SSO*)"** is defined as an unpermitted discharge of wastewater from the collection or treatment system other than through the permitted outfall.

"***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.

"***Severe property damage***" when used to consider the allowance of a bypass or SSO 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 or SSO. Severe property damage does not mean economic loss caused by delays in production.

"***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.

A "***subecoregion***" is a smaller, more homogenous area that has been delineated within an ecoregion.

"***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 activated sludge plants and is defined as 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.

The "***weekly average amount***", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar week when the measurements were made.

The "***weekly average concentration***", is the arithmetic mean of all the composite samples collected in a one-week period. The permittee must report the highest weekly average in the one-month period.

## 4.2. ACRONYMNS 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 level

$BOD_5$ – 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*

EFO – environmental field office

LB(lb) - pound

$IC_{25}$ – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms

IU – industrial user

IWS – industrial waste survey

$LC_{50}$ – acute test causing 50% lethality

MDL – method detection level

MGD – million gallons per day

MG/L(mg/L) – milligrams per liter

ML – minimum level of quantification

ml – milliliter

MLSS – mixed liquor suspended solids

MOR – monthly operating report

NODI – no discharge

NPDES – national pollutant discharge elimination system

PL – permit limit

POTW – publicly owned treatment works

RDL – required detection limit

SAR – semi-annual [pretreatment program] report

SIU – significant industrial user

SSO – sanitary sewer overflow

STP – sewage treatment plant

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

# RATIONALE

**Town of Decatur**
**Decatur STP**
**NPDES Permit No. TN0058521**
**Date: 01/12/21**
**Permit Writer: Wade Murphy**

## 1. FACILITY INFORMATION

**Town of Decatur**
**Decatur STP**
**Honorable Jeremy Bivens - Mayor**
**Decatur, Meigs County, Tennessee**
**(423) 334-5716**
**Treatment Plant Average Design Flow: 0.53 MGD**
**Percentage Industrial Flow: 10.7% of average flow of 0.477 MGD**
**Treatment Description: Extended aeration activated sludge plant with chlorination**
**Certified Operator Grades: STP: III; CS: II; Date Rated: 04/01/91**

## 2. RECEIVING STREAM INFORMATION

**Tennessee River Mile 514.8**
**Watershed Group: Tennessee River (Meigs & Rhea County)**
**Hydrocode: 06020001**
**Low Flow: 1Q10 = 1381 MGD (2138 CFS); 30Q5 = 4519 MGD**
**Low Flow Reference: USGS SWStat Ver. 5.0 /Gage Station #03543005**
**Water Quality Designation: Exceptional TN Water**

**Stream Classification Categories:**

| Domestic Wtr Supply | Industrial | Fish & Aquatic | Recreation |
|---|---|---|---|
| X | X | X | X |
| **Livestock Wtr & Wlife** | **Irrigation** | **Navigation** | |
| X | X | X | |

**Water Quality Assessment: Fully supporting**

In this permit, USGS Gage Station 03543005 provides sufficient data to characterize the low flow of the receiving stream. Gage data was analyzed with USGS SWStat Ver. 5.0 and used to calculate the 1Q10 and 30Q5 above from data collected between 1974 and 1993. Appendix 5 details the SWStat outputs used for this calculation.

## 3. CURRENT PERMIT STATUS

| | |
|---|---|
| **Permit Type:** | **Municipal** |
| **Classification:** | **Minor** |
| **Issuance Date:** | **01-FEB-16** |
| **Expiration Date:** | **31-MAR-21** |
| **Effective Date:** | **01-APR-16** |

## 4. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY

a. This permit eliminates the load limits for the former 0.34 MGD facility now that the new 0.53 MGD design is in operation. This permit incorporates additional changes as summarized below.

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.

The permit language utilizes a new reporting term for raw sewage that leaves the collection system but does not reach waters of the state. Refer to Section 6.9 for more detailed discussion.

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.

This permit imposes annual monitoring and reporting of whole effluent toxicity rather than allow Decatur to obtain the testing needed to comply with application requirements at its discretion. Refer to Section 6.6 for additional discussion.

The permit reduces monitoring frequency for many parameters based on the analysis below:

In its application for renewal, the permittee requested that the monitoring frequencies be reduced where possible. The EPA Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies, dated April 19, 1996, allows for reductions based on long-term average effluent being 75% or less of the effluent limit. The guidance recommends a minimum of 24 months to calculate long-term averages. The division conducted this analysis and presents the results in the table below. For the standard monitoring frequency of 3/week, 4/week and 5/week, the guidance recommends reduction to 1/week when

the long term average is less than 25% of the limit. Therefore, this permit is reducing the monitoring frequency of $BOD_5$ and TSS to weekly.

The division does not generally consider chlorine, dissolved oxygen, pH and *E. coli* eligible for any reduction. Monitoring of these pollutants is often necessary to ensure and demonstrate protection of the swimming and fishing uses of the water. However, because the dilution ratio in the receiving stream is greater than 500:1, the permit also reduces the dissolved oxygen, pH and *E. coli* sampling to weekly. The permit maintains chlorine monitoring at 5/week because of the importance of regulating disinfecting to achieve pathogen kill. The permit retains settleable solids at 5/week because of the potential for inflow and infiltration induced hydraulic upsets at the plant.

| | Conventional pollutants | | | | | | Non-conventional pollutants | |
|---|---|---|---|---|---|---|---|---|
| | **$BOD_5$** | **% Removal** | **TSS** | **% Removal** | **pH min** | **pH max** | **D.O.** | **Settleable Solids** |
| **Effluent limits** | 30 | 85 | 30 | 85 | 6 | 9 | 1 | 1 |
| **Sig. Non-Compli.** | 42 | 61 | 42 | 61 | 4.3 | 12.6 | 0.8 | 1.2 |
| **Date** | | | | | | | | |
| Dec/18 | 5.43 | 91.3 | 4.67 | 91.2 | 7.2 | 7.6 | 3.4 | 0.01 |
| Jan/19 | 4.11 | 89.6 | 6.36 | 87.6 | 7.1 | 7.6 | 3.7 | 0.01 |
| Feb/19 | 6 | 86.8 | 5.17 | 90.2 | 7 | 7.4 | 3.3 | 0.01 |
| Mar/19 | 3.77 | 93.1 | 4.77 | 91.4 | 7 | 7.4 | 3.7 | 0.01 |
| Apr/19 | 4.25 | 94.6 | 4.08 | 91.1 | 7 | 7.5 | 3.9 | 0.04 |
| May/19 | 4.33 | 96.2 | 6.4 | 94.1 | 7 | 7.3 | 2.8 | 0.5 |
| Jun/19 | 7.42 | 95.4 | 9 | 91 | 7 | 7.6 | 4.1 | 0.03 |
| Jul/19 | 6.9 | 95.4 | 8.23 | 89.8 | 7.1 | 7.7 | 2.5 | 0.1 |
| Aug/19 | 7.93 | 95.6 | 6.36 | 92.6 | 7.3 | 7.5 | 3.1 | 0.03 |
| Sep/19 | 6.75 | 97.8 | 7.25 | 95.4 | 7 | 7.6 | 3 | 0.01 |
| Oct/19 | 6.14 | 96.8 | 7.71 | 93.7 | 7.1 | 7.5 | 3.4 | 0.06 |
| Nov/19 | 5.65 | 97.5 | 7.62 | 93.4 | 7.1 | 7.7 | 3.9 | 0.01 |
| Dec/19 | 4.33 | 91.6 | 7 | 88.6 | 7.1 | 7.4 | 2.4 | 0.01 |
| Jan/20 | 6.34 | 93 | 7.2 | 89.4 | 6.8 | 7.4 | 1.9 | 0 |
| Feb/20 | 4.83 | 96.9 | 10.25 | 74.6 | 7.1 | 7.7 | 1.8 | 1 |
| Mar/20 | 6.5 | 94.5 | 7 | 90.6 | 7 | 7.4 | 2.3 | 0.05 |
| Apr/20 | 4.93 | 93.1 | 4.5 | 96.2 | 7.1 | 7.3 | 2.2 | 0 |
| May/20 | 8 | 92.1 | 4.46 | 96.9 | 7 | 7.4 | 3.2 | 0 |
| Jun/20 | 5.83 | 96.4 | 4.42 | 96.3 | 6.9 | 7.5 | 2.7 | 0 |
| Jul/20 | 4.98 | 97.3 | 4.33 | 97.7 | 7 | 7.4 | 3.9 | 0 |
| Aug/20 | 9.13 | 93.5 | 4.17 | 97.4 | 7.2 | 7.5 | 2.9 | 0 |
| Sep/20 | 8.92 | 94.7 | 4.08 | 97.2 | 7 | 7.4 | 1.7 | 0 |
| Oct/20 | 8.64 | 94.2 | 4.43 | 96.4 | 7 | 7.3 | 2.4 | 0 |
| Nov/20 | 5.71 | 96 | 4.08 | 96.9 | 7.2 | 7.9 | 2.7 | 0 |
| Total | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| Average | 6.1 | 94.3 | 6.0 | 92.5 | 7.1 | 7.5 | 3.0 | 0.1 |
| Std dev | 1.6 | 2.7 | 1.8 | 4.9 | 0.1 | 0.2 | 0.7 | 0.2 |
| C.V. | 0.3 | 0.0 | 0.3 | 0.1 | 0.0 | 0.0 | 0.2 | 2.8 |
| % Limit | 20.4 | NA | 19.9 | NA | NA | NA | NA | 7.8 |

b. Compliance Schedule Summary

| Description of Report to be Submitted | Reference Section in Permit |
|---|---|
| Monthly Discharge Monitoring Reports | 1.3.1 |
| Monthly Operational Reports | 1.3.4 |
| Monthly Bypass and Overflow Summary Report | 1.3.5.1 |
| Industrial Waste Survey Report within 120 days of the effective permit date | 3.2.a |
| Technical review of the need to recalculate local limits within 120 days of the permit effective date | 3.2.a |
| Biomonitoring Report beginning within 90 days of the effective permit date | 3.4 |

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

## 5. PREVIOUS PERMIT DISCHARGE MONITORING REPORT REVIEW

A review of the DMR summary from September 2017 through November 2020 indicate that the facility generally meets its effluent limits but has a significant inflow and infiltration problem. Data supporting this conclusion are that influent $BOD_5$ and TSS have been as low as 50 and 65 mg/L respectively, monthly average percent removal rates are not meet met on occasion, and the facility reported 79 overflows for the reporting period with all but one of them being attributed to wet weather conditions.

A complete discharge monitoring report summary is located in Appendix 2.

## 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 |
|---|---|---|---|---|---|---|---|
| $BOD_5$ | 30 | 136 | 40 | 182 | 45 | 40 | T.C.A. 0400-40-05-.09 |
| Total Suspended Solids | 30 | 136 | 40 | 182 | 45 | 40 | T.C.A. 0400-40-05-.09 |
| Dissolved Oxygen (mg/L) | 1.0 (daily minimum) instantaneous | — | — | — | — | — | D.O. protection, Refer to 6.1 below |
| Total Chlorine Residual (mg/L) | — | — | — | — | 2.0 (daily maximum) | — | Refer to 6.3 below |
| Total Nitrogen | — | — | — | — | Report (qtr avg) | Report (qtr load) | Refer to 6.4 below |
| Total Phosphorus | — | — | — | — | Report (qtr avg) | Report (qtr load) | Refer to 6.4 below |
| *E. coli* (#/100ml) | 126/100 ml | — | — | — | 487/100 ml | — | T.C.A. 0400-40-03-.03, Refer to 6.5 below |
| Settleable Solids (ml/l) | | — | — | — | 1.0 (daily maximum) | — | T.C.A. 0400-40-05-.09 |
| pH (standard units) | 6.0-9.0 | — | — | — | — | — | T.C.A. 0400-40-03-.03 |
| Flow (MGD): | | | | | | | |
| Influent | Report | — | — | — | Report | — | Used to quantify pollutant load |
| Effluent | Report | — | — | — | Report | — | Used to quantify pollutant load |
| Whole Effluent Toxicity: | | | | | | | |
| 48 hour $LC_{50}$ | 0.13% per sample | — | — | — | — | — | Refer to 6.6 below |
| Metals & Toxics: | | | | | | | Refer to 6.7 below |

| | Monthly Total | | Volume (gal/mo) | 12 Month Cumulative Total | |
|---|---|---|---|---|---|
| | | | | | Refer to 6.9 below |
| Dry Weather | Overflows | 0 | Report | Report | Refer to 6.9 below |
| Wet Weather | Overflows | 0 | Report | Report | Refer to 6.9 below |

Note: Weekly limitations on $BOD_5$ 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 $BOD_5$ 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 $BOD_5$ 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. $BOD_5$, DISSOLVED OXYGEN, AND PERCENT REMOVALS REQUIREMENTS

a. Biochemical oxygen demand, or BOD, is a measure of the oxygen used when biological processes break down organic pollutants in wastewater. The amount of oxygen used is more specifically referred to as the five-day biochemical oxygen demand, or $BOD_5$. This parameter is used in the wastewater industry to measure both the strength of wastewater and the performance of wastewater treatment processes.

Limits on the oxygen demand remaining in the treated wastewater is often necessary to prevent pollutants in the wastewater from driving oxygen in the receiving stream down below the levels necessary to support fish and aquatic life. For this facility, the monthly average $BOD_5$ limit of 30 mg/L is a technology-based effluent limit for conventional secondary treatment plants (0400-40-05-.09).

The dissolved oxygen effluent limitation of 1.0 mg/L is a practical limit achievable by the facility rather than a water-quality based limit necessary to protect fish and aquatic life. A minimum oxygen level of 1.0 mg/L is necessary in a treatment system to prevent nuisance conditions associated with anaerobic conditions.

b. The treatment facility is required to remove 85% of the $BOD_5$ 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 40 Part 133.102. The reasons stated by the U.S.E.P.A. for these requirements are to achieve these two basic objectives:

(1) To encourage municipalities to correct excessive inflow and infiltration (I/I) problems in their sanitary sewer systems, and
(2) 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 $BOD_5$ 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 $BOD_5$ and/or TSS removal is less than 40%) will be reported on the Discharge Monitoring Report.

## 6.2. $NH_3$-N TOXICITY

To assess toxicity impacts, the state utilizes the EPA Ambient Water Quality Criteria for Ammonia (https://www.epa.gov/wqc/aquatic-life-criteria-ammonia), which is promulgated in Tennessee Rules, Chapter 0400-40-03-.03-3(3)(j), dated *September 11, 2019*, and assumed stream temperatures of 25°C and 15°C and pH of 8.0 to derive an allowable instream protection value protective of chronic exposure to a continuous discharge. A mass balance equation with sewage treatment facility and stream flows and this allowable value determines the monthly average permit limit. The criteria continuous concentrations (CCC) derived from assumed temperature and pH values are as follows:

**CCC values based on temperature and pH, in mg/L:**

| Temperature (°C) | 7.5 pH | 8.0 pH |
|---|---|---|
| 25 | 1.01 | 0.56 |
| 27 | 0.89 | 0.49 |
| 30 | 0.73 | 0.41 |

| Temperature (°C) | 7.5 pH | 8.0 pH |
|---|---|---|
| 15 | 1.92 | 1.07 |
| 17 | 1.69 | 0.94 |
| 20 | 1.39 | 0.78 |

The mass balance equation is as follows:

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

where:

CCC = Criteria continuous concentration (mg/L)
$Q_S$ = 1Q10 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)

$$C_{STP} = \frac{0.56\ (1381\ MGD + 0.53\ MGD) - (1381\ MGD \times 0.1 mg/L)}{0.53\ MGD} = 1{,}199\ mg/L\ (summer)$$

$$C_{STP} = \frac{1.07\ (1381\ MGD + 0.53\ MGD) - (1381\ MGD \times 0.1 mg/L)}{0.53\ MGD} = 2{,}528\ mg/L\ (winter)$$

The application for renewal indicates that the effluent ammonia averages 3.31 mg/l with a maximum of 7.5 mg/L on the basis of three samples. Additionally, raw municipal wastewater generally has ammonia concentrations of 20 to 40 mg/L prior to biological treatment and conversion of ammonia to other forms of nitrogen. The calculations show that there is no reasonable potential for this discharge to have quantities of ammonia sufficient to violate the ammonia water quality criteria. Therefore, this permit does not propose limiting or monitoring for ammonia.

## 6.3. CHLORINATION

Chlorination is used to disinfect the wastewater in order to protect the receiving stream from pathogens. Because chlorine can be toxic to aquatic life, the division limits residual chlorine. However, when water quality is not the limiting factor due to the large dilution afforded by the receiving stream, an effluent concentration of 2.0 mg/L shall not be exceeded as an operational control of treatment facilities.

$$\frac{0.019\ (Qd + Qs)}{Qd} = \text{Limit (mg/L)} = \frac{0.019(0.53 + 1381)}{0.53} = 49 \text{ mg/L} \approx 2.0 \text{ mg/L}$$

where:

| | | |
|---|---|---|
| 0.019 | = | instream protection value (acute) |
| 0.53 | = | Qd, design flow of STP (MGD) |
| 1381 | = | Qs, 1Q10 flow of receiving stream (MGD) |

This calculation shows that the effluent limit of 2.0 mg/L that is based on good operational practices is more stringent than the calculated water-quality based effluent limit. Therefore, the 2.0 mg/L applies.

## 6.4. TOTAL NITROGEN AND TOTAL PHOSPHORUS MONITORING/REPORTING

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 document 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 potentially recommends 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. Therefore, for purposes of implementing this strategy, the division is imposing a minimum of quarterly effluent characterization for total nitrogen and total phosphorus on all discharges of treated domestic wastewater. These values will be used to reevaluate the nutrient loads from discharges within a watershed over time for comparison with those loads from non-point sources. The framework may be reviewed on the division's webpage at http://www.tn.gov/environment/article/wr-ws-tennessee-nutrient-reduction-framework.

## 6.5. *E. COLI* REQUIREMENTS

Disinfection of wastewater is required to protect the receiving stream from pathogenic microorganisms. Fecal coliform and *E. coli* are indicator organisms used as a measure of bacteriological health of a receiving stream and the effectiveness of disinfection.

As of September 30, 2004, the criterion for fecal coliform has been removed from the State's Water Quality Standards. Thus, the division imposes an *E. coli* limit on discharges of treated sewage for the protection of recreational use of the stream in lieu of the fecal coliform limit. The *E. coli* daily maximum limit of 487 colonies per 100 ml applies to lakes and exceptional Tennessee waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

## 6.6. 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.

a. Toxicity is suspected or demonstrated.
b. A pretreatment program is required.
c. The design capacity of the facility is greater than 1.0 MGD.

The previous permit included acute whole effluent toxicity testing conditions. Rather than specify a specific monitoring frequency, the previous permit conditions required the permittee to test as needed to comply with application requirements for renewal of the NPDES permit. The NPDES permit application requires either quarterly tests for a year or annual tests for four years with all results being less than four and ½ years old at the time of application submission. The permittee's file record, including DMR reporting, does not reflect the submission of any whole effluent toxicity testing. Rather than backlog the permit for a year to obtain this information, this permit imposes annual testing in this permit cycle. Objections to this arrangement will necessitate taking into consideration the failure to comply with the whole effluent toxicity testing requirements in the current, expiring, permit.

Since the receiving stream is the facility's water source, the following equations are used to determine whole effluent toxicity limit(s).

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

$$\text{DILUTION FACTOR} = \frac{\text{Low Flow}}{\text{Design Flow}} = \frac{1381}{0.53} = 2606$$

$$LC_{50}\ \% = \frac{100\%}{0.3 \times \text{Dilution Factor}} = \frac{100}{0.3 \times 2606} = 0.13\%$$

where:

| | | |
|---|---|---|
| 1381 | = | Low Flow - 1Q10 (MGD) |
| 0.53 | = | Design Flow Capacity (MGD) |
| 0.3 | = | Conversion factor to toxic units, acute |
| $LC_{50}$ | = | Lethality concentration to 50% of test organisms |

The acute toxicity endpoint ($LC_{50}$) is a *calculated* effluent concentration based on the dilution afforded by the effluent in the receiving stream at an assumed, worse case, condition (facility design flow discharging into the stream low flow). The calculated endpoint is taken to be an effluent concentration having the reasonable potential to cause acute toxicity when mixed into the receiving stream at its low flow. Because the low flow condition provides the least amount of effluent dilution, the endpoint based on it will be the *highest* concentration of an effluent ever *available* to provide acutely toxic exposure. Therefore, to demonstrate the *absence* of acutely toxic exposure, an effluent solution causing lethality in 50% or more of the organisms in a laboratory test must require an effluent concentration *in excess* of the acutely toxic concentration *available* at the condition of least dilution. Reasonable potential for toxicity will be demonstrated if the $LC_{50}$ established in the laboratory is *less than or equal to* the endpoint.

## 6.7. 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. This POTW is required to implement/maintain a pretreatment program. 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.

A summary of the semi-annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. Appendix 3 lists the metal and toxic parameters calculations and the procedure used to derive the results.

## 6.8. 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 in-stream 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 = STP effluent concentration allowable

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

and ($S_A$) = 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. Use of the effluent concentrations of such pollutants contributed by upstream dischargers as background is not justifiable due to the volatility and reactivity of these pollutants.

b. The stream allocation, $S_A$ , is 90% and is used as a factor of safety.

c. A mass balance 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 the scan detection levels 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 the effluent scans have not met the minimum required detection levels (RDL) in the state water quality standards or approximated the method detection limits (MDL) of the approved test methods for the pollutants in 40 CFR Part 136.
    ii. If the required RDL has been used and resulted in non-detection, or if an MDL has been used with non-detection 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 & TOXICS”.

The evaluation indicates that volatile organic, acid extractable, and base neutral compounds and antimony, arsenic, beryllium, selenium, and thallium do not exhibit the

potential to violate water quality criteria and thus will not be given effluent limitations and monitoring requirements in the permit.

## 6.9. OVERFLOW (SANITARY SEWER AND DRY-WEATHER), RELEASE AND BYPASS REPORTING

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 receiving waters) it does not prohibit “releases” that do not 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 demonstrates a hydraulic problem in the system that warrants permittee consideration as part of proper operation and maintenance of the system.

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. OTHER PERMIT REQUIREMENTS AND CONDITIONS

## 7.1. CERTIFIED WASTEWATER TREATMENT OPERATOR

The waste treatment facilities shall be operated under the supervision of a Grade III certified wastewater treatment operator in accordance with the Water Environmental Health Act of 1984. Operator grades are under jurisdiction of the Water and Wastewater Operators Certification Board. This NPDES permit is under jurisdiction of the Tennessee Board of Water Quality, Oil and Gas. Operator grades are rated and recommended by the Division of Water Resources pursuant to Rule 0400-49-01 (formerly 1200-05-03) 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.

## 7.2. COLLECTION SYSTEM CERTIFIED OPERATOR

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

## 7.3. PRETREATMENT PROGRAM

The Town of Decatur has an approved pretreatment program. An updated Industrial Waste Survey must be completed within 120 days of the effective date of the permit, unless such a survey has been submitted within 3 years of the effective date.

At least once each reporting period, all permittees with approved pretreatment programs are required to analyze the STP influent and effluent for the following pollutant parameters: chromium (trivalent and hexavalent and total if drinking water use applies), copper, lead, nickel, zinc, silver, cadmium, mercury, total phenols, and cyanide. These pollutants were selected because, historically, they are the ones that tend to be predominant in industrial wastewaters. Other pollutants may be added to the list, as required.

During preparation of this permit, data from ten previous semiannual reports were analyzed. If any particular value of a pollutant equals or exceeds 85% of the pass-through limit, the pollutant was added to the list of those that are required to be sampled. Based on our review of the semiannual reports and other documents, sampling for additional pollutants is not required at this time.

## 7.4. 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 Part 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 subpart 3.3 of the permit, relative to biosolids management, a CWA requirement, allows the “permitting authority” under 40 CFR Part 503.9(p) to be able to enforce the provisions of Part 503. The “permitting authority” relative to Part 503 is either a state that has been delegated biosolids management authority or the applicable EPA Region; in the case of 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:

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
(615) 532-0625

## 7.5. PERMIT TERM

In order to meet the target reissuance date for the Tennessee River (Meigs & Rhea County) watershed and following the directives for the Watershed Management Program initiated in January, 1996, the permit will be issued to expire in 2023.

## 7.6. ELECTRONIC REPORTING

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.

The NPDES Electronic Reporting Rule, 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.

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*
*William R. Snodgrass Tennessee Tower*
*312 Rosa L. Parks Avenue, 11th Floor*
*Nashville, TN 37243*

For contact and training information about NetDMR electronic reporting, visit TDEC's website at http://tn.gov/environment/topic/wr-netdmr-and-electronic-reporting.

## 8. 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# TN06020001020_1000.

The Department has made a determination of the receiving waters associated with the subject discharge(s) and has found the (stream or river) to be an exceptional Tennessee water. No permanent degradation of water quality above the level of de minimis will be allowed unless the applicant demonstrates to the Department that the degradation is for necessary economic or social development and will not interfere with or become injurious to any existing uses. The specific requirements for this demonstration are described in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06(4).

No TMDLs have been developed and approved for this waterbody segment.

On October 01, 2020, the permittee provided an update to its analysis of alternatives to degradation. The City of Decatur concludes that treating and discharging wastewater continues to be the only practical and feasible alternative at this time.

# 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 |
|---|---|---|---|---|---|---|---|
| $BOD_5$ | 30 | 136 | 40 | 182 | 45 | 40 | 3/week |
| Total Suspended Solids | 30 | 136 | 409 | 182 | 45 | 40 | 3/week |
| Dissolved Oxygen (mg/L) | 1.0 (daily minimum) instantaneous | — | — | — | — | — | 5/week |
| Total Chlorine Residual (mg/L) | — | — | — | — | 2.0 (daily maximum) | — | 5/week |
| Total Nitrogen | Report | — | — | — | Report | — | 1/month |
| Total Phosphorus | Report | — | — | — | Report | — | 1/month |
| *E. coli* (colonies/100ml) | 126/100 ml | — | — | — | 487/100 or 94100 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: | | | | | | | |
| 48 hour $LC_{50}$ | Report % per sample | — | — | — | — | — | Per NPDES application requirements |
| Sanitary Sewer Overflows, Total Occurrences | | | Report | | | | continuous |
| Dry Weather Overflows, Total Occurrences | | | Report | | | | continuous |
| Bypass of Treatment, Total Occurrences | | | Report | | | | continuous |

# APPENDIX 2
# Discharge Monitoring Report Summary

| | Flow (MGD) | | Biochemical Oxygen Demand | | | | Suspended Solids | | | | Effluent (mg/l) | | | | | | | | | Overflow and Bypass |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Influent | Effluent (mg/l) | | % | Influent | Effluent (mg/l) | | % | Settleable | pH | | $Cl_2$ | Ammonia | | D.O. | E. coli | | |
| | Monthly Average | Daily Max | (mg/l) | Monthly Average | Daily Max | Removal | (mg/l) | Monthly Average | Daily Max | Removal | Solids (ml/l) | (std. units) Min | Max | Daily Max | Monthly Average | Daily Max | Daily Min | Monthly Average | Daily Max | |
| Limits | Report | Report | Report | | | 85 | Report | | | 85 | 1.0 | 6.0 | 9.0 | | | | 1.0 | 126 | 487 | |
| Summer | | | | 30 | 45 | | | 30 | 45 | | | | | 2.0 | | | | | | |
| Winter | | | | 30 | 45 | | | 30 | 45 | | | | | 2.0 | | | | | | |
| Average | 0.393 | 0.671 | 148 | 6 | 13 | 93 | 131.6 | 7 | 17 | 91 | 0.1 | 7.0 | 7.5 | 1.77 | | | 3.1 | 27 | 109 | |
| Maximum | 0.636 | 1.001 | 344 | 10 | 19 | 98 | 211.0 | 14 | 42 | 98 | 1.0 | 7.3 | 7.9 | 2.00 | | | 5.9 | 99 | 472 | |
| Minimum | 0.208 | 0.305 | 50 | 4 | 6 | 80 | 65.0 | 4 | 6 | 67 | 0.0 | 6.7 | 7.2 | 0.10 | | | 1.7 | 6 | 39 | |
| + = Exceedence | | | | | | 1 | | | | 2 | | | | | | | | | | 79 |
| Date | | | | | | | | | | | | | | | | | | | | |
| Sep/17 | 0.254 | 0.470 | 221 | 5 | 7 | 96.6 | 158 | 9 | 18 | 91.6 | 0.0 | 6.9 | 7.3 | 2.00 | | | 2.3 | 15.07 | 49 | |
| Oct/17 | 0.286 | 0.615 | 167 | 4.1 | 8 | 80 + | 198 | 12 | 37 | 66.7 + | 0.0 | 6.9 | 7.4 | 2.00 | | | 2.5 | 9.59 | 49 | |
| Nov/17 | 0.273 | 0.651 | 136 | 7.71 | 15 | 91.6 | 114 | 7 | 18 | 91 | 1.0 | 7.0 | 7.2 | 2.00 | | | 3.4 | 17.18 | 49 | |
| Dec/17 | 0.322 | 0.701 | 117 | 4 | 6 | 95.4 | 158 | 5 | 9 | 95.7 | 0.0 | 6.8 | 7.4 | 2.00 | | | 4.2 | 8.42 | 49 | |
| Jan/18 | 0.244 | 0.688 | 151 | 8 | 17 | 94.2 | 185 | 8 | 12 | 92.7 | 0.0 | 6.9 | 7.9 | 2.00 | | | 4.0 | 14.88 | 49 | |
| Feb/18 | 0.557 | 0.741 | 61 | 6 | 13 | 88.6 | 170 | 8 | 38 | 89.3 | 0.0 | 6.9 | 7.4 | 2.00 | | | 2.7 | 34.83 | 119 | 1 |
| Mar/18 | 0.435 | 0.751 | 124 | 10 | 18 | 90 | 138 | 14 | 42 | 87.9 | 0.0 | 6.8 | 7.5 | 1.85 | | | 2.6 | 27.7 | 49 | |
| Apr/18 | 0.498 | 0.743 | 81 | 7 | 14 | 88.3 | 139 | 9 | 13 | 90.8 | 0.0 | 6.9 | 7.4 | 0.63 | | | 5.5 | 25.16 | 49 | |
| May/18 | 0.326 | 0.634 | 97 | 8 | 19 | 89.9 | 168 | 11 | 36 | 90.8 | 0.0 | 6.7 | 7.2 | 1.85 | | | 3.4 | 32.01 | 49 | |
| Jun/18 | 0.406 | 0.732 | 92 | 7 | 16 | 92.1 | 152 | 8 | 31 | 88.7 | 1.0 | 6.9 | 7.4 | 2.00 | | | 2.4 | 16.51 | 49 | |
| Jul/18 | 0.312 | 0.569 | 118 | 9 | 17 | 89.2 | 155 | 8 | 15 | 89.2 | 0.0 | 6.9 | 7.3 | 1.63 | | | 2.6 | 34.54 | 49 | |
| Aug/18 | 0.379 | 0.711 | 79 | 9 | 16 | 86.6 | 126 | 8 | 16 | 89.2 | 0.0 | 7.0 | 7.5 | 2.00 | | | 1.8 | 18.03 | 49 | |
| Sep/18 | 0.332 | 0.734 | 92 | 5 | 8 | 94.3 | 84 | 4 | 9 | 93.6 | 0.0 | 7.1 | 7.3 | 1.83 | | | 5.9 | 24.32 | 49 | 2 |
| Oct/18 | 0.335 | 0.651 | 71 | 5 | 12 | 90.5 | 78 | 6 | 20 | 87.5 | 0.0 | 7.0 | 7.5 | 1.95 | | | 3.5 | 16.06 | 70 | |
| Nov/18 | 0.488 | 0.733 | 230 | 5 | 13 | 95.7 | 101 | 5 | 24 | 91.6 | 0.0 | 7.2 | 7.5 | 0.10 | | | 2.9 | 15.15 | 49 | |
| Dec/18 | 0.574 | 0.767 | 87 | 5 | 14 | 91.3 | 71 | 5 | 15 | 91.2 | 0.0 | 7.2 | 7.6 | 2.00 | | | 3.4 | 6.37 | 49 | 3 |
| Jan/19 | 0.522 | 0.736 | 100 | 4 | 10 | 89.6 | 80 | 6 | 24 | 87.6 | 0.0 | 7.1 | 7.6 | 2.00 | | | 3.7 | 10.64 | 49 | 20 |
| Feb/19 | 0.557 | 0.727 | 50 | 6 | 16 | 86.8 | 80 | 5 | 10 | 90.2 | 0.0 | 7.0 | 7.4 | 2.00 | | | 3.3 | 30.25 | 49 | 23 |
| Mar/19 | 0.470 | 0.720 | 87 | 4 | 8 | 93.1 | 80 | 5 | 13 | 91.4 | 0.0 | 7.0 | 7.4 | 2.00 | | | 3.7 | 25.62 | 49 | 15 |
| Apr/19 | 0.457 | 1.001 | 115 | 4 | 10 | 94.6 | 95 | 4 | 10 | 91.1 | 0.0 | 7.0 | 7.5 | 2.00 | | | 3.9 | 18.37 | 139 | 2 |
| May/19 | 0.378 | 0.711 | 153 | 4 | 13 | 96.2 | 130 | 6 | 30 | 94.1 | 0.5 | 7.0 | 7.3 | 1.87 | | | 2.8 | 26.47 | 93 | |
| Jun/19 | 0.291 | 0.466 | 197 | 7 | 13 | 95.4 | 112 | 9 | 23 | 91 | 0.0 | 7.0 | 7.6 | 1.71 | | | 4.1 | 55.29 | 275 | |
| Jul/19 | 0.324 | 0.714 | 176 | 7 | 13 | 95.4 | 112 | 8 | 20 | 89.8 | 0.1 | 7.1 | 7.7 | 2.00 | | | 2.5 | 31.15 | 196 | |
| Aug/19 | 0.208 | 0.381 | 192 | 8 | 13 | 95.6 | 109 | 6 | 12 | 92.6 | 0.0 | 7.3 | 7.5 | 1.35 | | | 3.1 | 36.78 | 105 | |
| Sep/19 | 0.221 | 0.305 | 344 | 7 | 13 | 97.8 | 184 | 7 | 19 | 95.4 | 0.0 | 7.0 | 7.6 | 1.73 | | | 3.0 | 43.61 | 244 | |
| Oct/19 | 0.306 | 0.696 | 334 | 6 | 11 | 96.8 | 180 | 8 | 20 | 93.7 | 0.1 | 7.1 | 7.5 | 2.00 | | | 3.4 | 31.05 | 105 | 1 |
| Nov/19 | 0.389 | 0.733 | 233 | 6 | 14 | 97.5 | 117 | 8 | 14 | 93.4 | 0.0 | 7.1 | 7.7 | 1.76 | | | 3.9 | 39.76 | 208 | |
| Dec/19 | 0.542 | 0.735 | 86 | 4 | 19 | 91.6 | 65 | 7 | 10 | 88.6 | 0.0 | 7.1 | 7.4 | 2.00 | | | 2.4 | 98.81 | 472 | |
| Jan/20 | 0.599 | 0.735 | 130 | 6 | 15 | 93 | 94 | 7 | 12 | 89.4 | | 6.8 | 7.4 | 2.00 | | | 1.9 | 24.65 | 116 | |
| Feb/20 | 0.626 | 0.753 | 185 | 5 | 11 | 96.9 | 78 | 10 | 27 | 74.6 + | 1.0 | 7.1 | 7.7 | 1.21 | | | 1.8 | 51.09 | 372 | 12 |
| Mar/20 | 0.636 | 0.744 | 114 | 7 | 19 | 94.5 | 119 | 7 | 12 | 90.6 | 0.1 | 7.0 | 7.4 | 1.87 | | | 2.3 | 65.44 | 291 | |
| Apr/20 | 0.509 | 0.751 | 116 | 5 | 12 | 93.1 | 132 | 5 | 8 | 96.2 | | 7.1 | 7.3 | 2.00 | | | 2.2 | 7.13 | 75 | |
| May/20 | 0.445 | 0.798 | 118 | 8 | 18 | 92.1 | 170 | 4 | 9 | 96.9 | | 7.0 | 7.4 | 2.00 | | | 3.2 | 6.81 | 39 | |
| Jun/20 | 0.305 | 0.615 | 218 | 6 | 13 | 96.4 | 154 | 4 | 6 | 96.3 | | 6.9 | 7.5 | 2.00 | | | 2.7 | 22.08 | 71 | |
| Jul/20 | 0.216 | 0.362 | 219 | 5 | 9 | 97.3 | 211 | 4 | 6 | 97.7 | | 7.0 | 7.4 | 2.00 | | | 3.9 | 14.18 | 71 | |
| Aug/20 | 0.273 | 0.490 | 170 | 9 | 17 | 93.5 | 173 | 4 | 6 | 97.4 | | 7.2 | 7.5 | 1.73 | | | 2.9 | 29.3 | 87 | |
| Sep/20 | 0.295 | 0.635 | 204 | 9 | 17 | 94.7 | 182 | 4 | 6 | 97.2 | | 7.0 | 7.4 | 0.97 | | | 1.7 | 29.77 | 104 | |
| Oct/20 | 0.378 | 0.738 | 175 | 9 | 19 | 94.2 | 138 | 4 | 6 | 96.4 | | 7.0 | 7.3 | 1.10 | | | 2.4 | 42.56 | 103 | |
| Nov/20 | 0.369 | 0.730 | 140 | 6 | 10 | 96 | 142 | 4 | 7 | 96.9 | | 7.2 | 7.9 | 1.98 | | | 2.7 | 13.47 | 64 | |
| Dec/20 | | | | | | | | | | | | | | | | | | | | |

# APPENDIX 3
# Metal and Toxic Parameter Calculations

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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:

   * 1Q10 of receiving stream (1381 MGD, USGS)
   * Calcium hardness (84 mg/L, ambient)
   * Total suspended solids (38 mg/L, ambient)
   * Background metals concentrations (ambient, 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 50%.

The following formulas are used to evaluate water quality protection:

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

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

***to protect water quality:***

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

where ($S_A$) is 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 & 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 STORET or Water Supply intake data substantiate 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 is10 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 fifteen (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:

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

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:

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

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:

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

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.

# WQ Based Effluent Calculations

2019 WQC

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

**FACILITY:** Decatur STP **PERMIT #: TN0058521** **DATE: 12/30/20** **CALC BY: WDM**

regulated stream worksheet (1Q10)

| Stream (1Q10) [MGD] | Stream (30Q5) [MGD] | Waste Flow [MGD] | Ttl. Susp. Solids [mg/l] | Hardness (as CaCO3) [mg/l] | Margin of Safety [%] |
|---|---|---|---|---|---|
| **1,381.00** | **4,519.00** | **0.53** | **38** | **84** | **50** |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stream | Fish/Aqua. Life (F & AL) WQC | | | F & AL- instream allowable | | Calc. Effluent Concentration | | Human Health Water Quality Criteria * | | | | | | effluent | |
| | Bckgrnd. | lab conditions | | Fraction | ambient conditions (Tot) | | based on F & AL | | In-Stream Criteria | | | Calc. Effluent Concentration ** | | | limited | |
| | Conc. | Chronic | Acute | Dissolved | Chronic | Acute | Chronic | Acute | Organisms | Water/Organisms | DWS | Organisms | Water/Organisms | DWS | case | |
| **PARAMETER** | [ug/l] | [ug/l] | [ug/l] | [Fraction] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | [ug/l] | ug/l | **PARAMETER** |
| **Copper (a,b)** | 0.869 | 7.716 | 11.403 | 0.196 | 39.355 | 58.161 | **50160.47** | **74670.22** | N/A | N/A | N/A | **NA** | NA | NA | **80.0** | **Copper (a,b)** |
| **Chromium III** | 0.655 | 64.252 | 493.946 | 0.031 | 2076.090 | 15960.169 | **2704977.55** | **20800516.94** | N/A | N/A | N/A | **NA** | NA | NA | **Report** | **Chromium III** |
| **Chromium VI** | 0.655 | 11.000 | 16.000 | 1.000 | 11.000 | 16.000 | **13483.28** | **19999.93** | N/A | N/A | N/A | **NA** | NA | NA | **Report** | **Chromium VI** |
| **Chromium, Total** | 0.655 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 100.0 | **NA** | NA | 423578.35 | **60.0** | **Chromium, Total** |
| **Nickel (a,b)** | 0.788 | 44.874 | 404.022 | 0.158 | 284.214 | 2558.890 | **369397.66** | **3334052.19** | 4600.0 | 610.0 | 100.0 | **19609695.31** | 2597502.20 | 423011.35 | **180.0** | **Nickel (a,b)** |
| **Cadmium (a,b)** | 0.139 | 0.630 | 1.530 | 0.178 | 3.548 | 8.616 | **4442.74** | **11048.61** | N/A | N/A | 5.0 | **NA** | NA | 20725.95 | **5.0** | **Cadmium (a,b)** |
| **Lead (a,b)** | 1.722 | 2.080 | 53.388 | 0.084 | 24.771 | 635.662 | **30041.10** | **826233.92** | N/A | N/A | 5.0 | **NA** | NA | 13977.29 | **45.0** | **Lead (a,b)** |
| **Mercury (T) (c)** | 0.018 | 0.770 | 1.400 | 1.000 | 0.770 | 1.400 | **980.11** | **1801.21** | 0.051 | 0.05 | 2.0 | **140.71** | 136.45 | 8450.68 | **0.4** | **Mercury (T) (c)** |
| **Silver (a,b,e)** | 1.192 | N/A | 2.383 | 1.000 | NA | 2.383 | **N/A** | **1553.71** | N/A | N/A | N/A | **NA** | NA | NA | **5.0** | **Silver (a,b, e)** |
| **Zinc (a,b)** | 8.189 | 101.914 | 101.087 | 0.085 | 1196.899 | 1187.188 | **1549285.65** | **1536628.82** | 26000.0 | 7400.0 | N/A | **110821484.82** | 31516524.44 | NA | **200.0** | **Zinc (a,b)** |
| **Cyanide (d)** | 2.600 | 5.200 | 22.000 | 1.000 | 5.200 | 22.000 | **3389.96** | **25285.91** | 140.0 | 140.0 | 200.0 | **585834.72** | 585834.72 | 841657.17 | **230.0** | **Cyanide (d)** |
| **Toluene** | | | | | | | | | 15000.0 | 1300.0 | 1000.0 | **63955613.21** | 5542819.81 | 4263707.55 | **15.0** | **Toluene** |
| **Benzene** | | | | | | | | | 510.0 | 22.0 | 5.0 | **2174490.85** | 93801.57 | 21318.54 | **3.0** | **Benzene** |
| **1,1,1 Trichloroethane** | | | | | | | | | N/A | N/A | 200.0 | **NA** | NA | 852741.51 | **30.0** | **1,1,1 Trichloroethane** |
| **Ethylbenzene** | | | | | | | | | 2100.0 | 530.0 | 700.0 | **8953785.85** | 2259765.00 | 2984595.28 | **4.0** | **Ethylbenzene** |
| **Carbon Tetrachloride** | | | | | | | | | 16.0 | 2.3 | 5.0 | **68219.32** | 9806.53 | 21318.54 | **15.0** | **Carbon Tetrachloride** |
| **Chloroform** | | | | | | | | | 4700.0 | 57.0 | N/A | **20039425.47** | 243031.33 | NA | **85.0** | **Chloroform** |
| **Tetrachloroethylene** | | | | | | | | | 33.0 | 6.9 | 5.0 | **140702.35** | 29419.58 | 21318.54 | **25.0** | **Tetrachloroethylene** |
| **Trichloroethylene** | | | | | | | | | 300.0 | 25.0 | 5.0 | **1279112.26** | 106592.69 | 21318.54 | **10.0** | **Trichloroethylene** |
| **1,2 trans Dichloroethylene** | | | | | | | | | 10000.0 | 140.0 | 100.0 | **NA** | 596919.06 | 426370.75 | **1.5** | **1,2 trans Dichloroethylene** |
| **Methylene Chloride** | | | | | | | | | 5900.0 | 46.0 | 5.0 | **25155874.53** | 196130.55 | NA | **50.0** | **Methylene Chloride** |
| **Total Phenols** | | | | | | | | | 860000.0 | 10000.0 | N/A | **3666788491** | 42637075.47 | NA | **50.0** | **Total Phenols** |
| **Naphthalene** | | | | | | | | | N/A | N/A | N/A | **NA** | NA | NA | **1.0** | **Naphthalene** |
| **Total Phthalates** | | | | | | | | | N/A | N/A | N/A | **NA** | NA | NA | **64.5** | **Total Phthalates** |
| **Chlorine (T. Res.)** | 0.000 | 11.000 | 19.000 | 1.000 | 11.000 | 19.000 | **28673.26** | **49526.55** | NA | NA | NA | **NA** | NA | NA | **n/a** | **Chlorine (T. Res.)** |

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

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

# SAR Summary

| TN 0058521 | PTL 11/20/2015 | 85% PTL | PTL 12/30/2020 | Oct-20 | Apr-20 | Oct-19 | Apr-19 | Oct-18 | Apr-18 | Oct-17 | Apr-17 | Oct-16 | Apr-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COPPER | **0.08000** | **0.06800** | **0.08000** | 0.03000 | 0.00100 | 0.01000 | 0.00100 | 0.01000 | 0.01000 | 0.01000 | **0.07000** | 0.02000 | 0.03000 |
| CHROMIUM, III | **report** | **n/a** | **report** | 0.01000 | 0.00100 | 0.00100 | 0.00100 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 |
| CHROMIUM, VI | **report** | **n/a** | **report** | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 |
| CHROMIUM, TOTAL | **0.06000** | **0.05100** | **0.06000** | 0.01000 | 0.00100 | 0.00100 | 0.00100 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 |
| NICKEL | **0.18000** | **0.15300** | **0.18000** | 0.09000 | 0.08000 | 0.03500 | 0.00100 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | **0.03000** | 0.01000 |
| CADMIUM | **0.00500** | **0.00425** | **0.00500** | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | **0.01000** | **0.01000** | **0.01000** | **0.01000** | 0.01000 |
| LEAD | **0.04500** | **0.03825** | **0.04500** | 0.03000 | 0.03000 | 0.00100 | 0.00100 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 | 0.01000 |
| MERCURY | **0.00040** | **0.00034** | **0.00040** | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00200 | **0.00200** | 0.00020 |
| SILVER | **0.00500** | **0.00425** | **0.00500** | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.00100 | 0.01000 |
| ZINC | **0.20000** | **0.17000** | **0.20000** | 0.04000 | 0.02000 | 0.05100 | 0.00100 | 0.01000 | 0.00800 | 0.05000 | 0.01000 | 0.06000 | 0.05000 |
| CYANIDE | **0.23000** | **0.19550** | **0.23000** | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 | 0.02000 |
| TOLUENE | **0.01500** | **0.01275** | **0.01500** | | | | | | | | | | |
| BENZENE | **0.00300** | **0.00255** | **0.00300** | | | | | | | | | | |
| 1,1,1 TRICHLOROETHANE | **0.03000** | **0.02550** | **0.03000** | | | | | | | | | | |
| ETHYLBENZENE | **0.00400** | **0.00340** | **0.00400** | | | | | | | | | | |
| CARBON TETRACHLORIDE | **0.01500** | **0.01275** | **0.01500** | | | | | | | | | | |
| CHLOROFORM | **0.08500** | **0.07225** | **0.08500** | | | | | | | | | | |
| TETRACHLOROETHYLENE | **0.02500** | **0.02125** | **0.02500** | | | | | | | | | | |
| TRICHLOROETHYLENE | **0.01000** | **0.00850** | **0.01000** | | | | | | | | | | |
| 1,2 TRANSDICHLOROETHYL | **0.00150** | **0.00128** | **0.00150** | | | | | | | | | | |
| METHYLENE CHLORIDE | **0.05000** | **0.04250** | **0.05000** | | | | | | | | | | |
| TOTAL PHENOLS | **0.05000** | **0.04250** | **0.05000** | **0.05000** | **0.07000** | 0.05000 | 0.05000 | **0.05000** | **0.09000** | **0.09000** | **0.05000** | **0.05000** | **0.05000** |
| NAPHTHALENE | **0.00100** | **0.00085** | **0.00100** | | | | | | | | | | |
| TOTAL PHTHALATES | **0.06450** | **0.05483** | **0.06450** | | | | | | | | | | |

**Bolded in effluent data exceeds 85% of proposed PTLs**
**Shaded means detection level**

# APPENDIX 4
# WQ Based Effluent Calculations- Other Compounds

2019 WQC

**WATER QUALITY BASED EFFLUENT CALCULATIONS**
**OUTFALL 001**

**FACILITY: Decatur**
**PERMIT: TN0052521**
**DATE: January 05, 2021**

| Stream (1Q10) | Stream (30Q5) | Waste Flow | Ttl. Susp. Solids | Hardness (as CaCO3) | Margin of Safety |
|---|---|---|---|---|---|
| [MGD] | [MGD] | [MGD] | [mg/l] | [mg/l] | [%] |
| 1381 | 2138 | 0.53 | 38 | 84 | 50 |

| | 1 | 2 | 3 | 5 | | 6 | 7 | | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stream | Dectection Levels | | Fish/Aqua. Life | | | Calculated Effluent Concentration | | | Human Health Water Quality Criteria (30Q5) | | | | | | Avg. daily |
| | Bckgrnd. | Scan | WQC RDL | Water Quality Criteria | | | | | | In-Stream Criteria | | | Calculated Effluent Concentration | | | effluent |
| | Conc. | MDL | *EPA MDL | Chronic | | Acute | Chronic | | Acute | Organisms | Water/Org | DWS | Organisms | Water/Org | DWS | |
| **PARAMETER** | [µg/l] | [µg/l] | [µg/l] | [µg/l] | | [µg/l] | [µg/l] | | [µg/l] | [µg/l] | [µg/l] | [µg/l] | [µg/l] | [µg/l] | [µg/l] | ug/l |
| ANTIMONY | 2.8 | 3.8 | 3.0 | | | | | | | 640.0 | 5.6 | 6.0 | 1285540.4 | 5650.3 | 6457.3 | <10 |
| ARSENIC | 0.48 | 1.0 | 1.0 | 150.0 | | 340.0 | 194874.2 | | 442506.9 | 10.0 | 10.0 | 10.0 | 19206.7 | 19206.7 | 19206.7 | <10 |
| BERYLLIUM | 2 | 2.0 | 1.0 | | | | | | | | | 4.0 | | | 4036.0 | <10 |
| SELENIUM (f) | 0.57 | 5.0 | 2.0 | 1.5 | 3.1 | 20.0 | 1212.4 | 3297.7 | 25324.0 | 4200.0 | 170.0 | 50.0 | 8472271.1 | 341822.1 | 99724.4 | <10 |
| THALLIUM | 0.12 | 5.0 | * | | | | | | | 0.47 | 0.24 | 2.0 | 706.2 | 242.2 | 3792.9 | <10 |
| ACROLEIN | 0.0 | 50.0 | 1.0 | 3.000 | | 3.000 | 3910.0 | | 3910.0 | 9.0 | 6.0 | | 18157.3 | 12104.9 | | <10 |
| ACRYLONITRILE | 0.0 | 50.0 | 1.0 | | | | | | | 2.5 | 0.51 | | 5043.7 | 1028.9 | | <10 |
| BENZENE | 0.0 | 1.0 | 1.0 | | | | | | | 510.0 | 22.0 | 5.0 | 1028915.4 | 44384.6 | 10087.4 | <5 |
| BROMOFORM | 0.0 | 1.0 | 1.0 | | | | | | | 1400.0 | 43.0 | | 2824473.6 | 86751.7 | | <5 |
| CARBON TETRACHLORIDE | 0.0 | 1.0 | 1.0 | | | | | | | 16.0 | 2.3 | 5.0 | 32279.7 | 4640.2 | 10087.4 | <10 |
| CHLOROBENZENE | 0.0 | 1.0 | * | | | | | | | 1600.0 | 130.0 | 100.0 | 3227969.8 | 262272.5 | 201748.1 | <5 |
| CHLORODIBROMO-METHANE | 0.0 | 1.0 | * | | | | | | | 130.0 | 4.0 | | 262272.5 | 8069.9 | | <5 |
| CHLOROETHANE | 0.0 | 1.0 | * | | | | | | | | | | | | | <10 |
| 2-CHLORO-ETHYLVINYL ETHER | 0.0 | 1.0 | * | | | | | | | | | | | | | <10 |
| CHLOROFORM | 0.0 | 5.0 | 0.5 | | | | | | | 4700.0 | 57.0 | | 9482161.3 | 114996.4 | | <5 |
| DICHLOROBROMO-METHANE | 0.0 | 1.0 | 1.0 | | | | | | | 170.0 | 5.5 | | 342971.8 | 11096.1 | | <10 |
| 1,1-DICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | | | | NA | NA | NA | NA | NA | NA | <5 |
| 1,2-DICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | | | | 370.0 | 3.8 | 5.0 | 746468.0 | 7666.4 | 10087.4 | <5 |
| TRANS 1,2-DICHLORO-ETHYLENE | 0.0 | 1.0 | * | | | | | | | 10000 | 140.0 | 100.0 | 20174811.3 | 282447.4 | 201748.1 | <5 |
| 1,1-DICHLOROETHYLENE | 0.0 | 1.0 | 1.0 | | | | | | | 7100.0 | 300.0 | 7.0 | 14324116.0 | 605244.3 | 14122.4 | <5 |
| 1,2-DICHLOROPROPANE | 0.0 | 1.0 | * | | | | | | | 150.0 | 5.0 | 5.0 | 302622.2 | 10087.4 | 10087.4 | <5 |
| 1,3-DICHLORO-PROPYLENE | 0.0 | 1.0 | 1.0 | | | | | | | 210.0 | 3.4 | | 423671.0 | 6859.4 | | <5 |
| ETHYLBENZENE | 0.0 | 1.0 | 1.0 | | | | | | | 2100 | 530.0 | 700.0 | 4236710.4 | 1069265.0 | 1412236.8 | <10 |
| METHYL BROMIDE | 0.0 | 1.0 | * | | | | | | | 1500.0 | 47.0 | | 3026221.7 | 94821.6 | | <10 |
| METHYL CHLORIDE | 0.0 | 1.0 | 1.0 | | | | | | | | | | | | | <5 |
| METHYLENE CHLORIDE | 0.0 | 5.0 | 1.0 | | | | | | | 5900.0 | 46.0 | 5.0 | 11903138.7 | 92804.1 | 10087.4 | <10 |
| 1,1,2,2-TETRACHLORO-ETHANE | 0.0 | 1.0 | 0.5 | | | | | | | 40.0 | 1.7 | | 80699.2 | 3429.7 | | <5 |
| TETRACHLORO-ETHYLENE | 0.0 | 1.0 | 0.5 | | | | | | | 33.0 | 6.9 | 5.0 | 66576.9 | 13920.6 | 10087.4 | <5 |
| TOLUENE | 0.0 | 1.0 | 1.0 | | | | | | | 15000 | 1300.0 | 1000.0 | 30262217.0 | 2622725.5 | 2017481.1 | <5 |
| 1,1,1-TRICHLOROETHANE | 0.0 | 1.0 | 1.0 | | | | | | | | | 200.0 | | | 403496.2 | <5 |
| 1,1,2-TRICHLOROETHANE | 0.0 | 1.0 | 0.2 | | | | | | | 160.0 | 5.9 | 5.0 | 322797.0 | 11903.1 | 10087.4 | <10 |
| TRICHLORETHYLENE | 0.0 | 1.0 | 1.0 | | | | | | | 300.0 | 25.0 | 5.0 | 605244.3 | 50437.0 | 10087.4 | <5 |
| VINYL CHLORIDE | 0.0 | 1.0 | 2.0 | | | | | | | 24.0 | 0.25 | 2.0 | 48419.5 | 504.4 | 4035.0 | <5 |
| P-CHLORO-M-CRESOL | 0.0 | 10.0 | * | | | | | | | | | | | | | <10 |
| 2-CHLOROPHENOL | 0.0 | 10.0 | * | | | | | | | 150.0 | 81.0 | | 302622.2 | 163416.0 | | <10 |
| 2,4-DICHLOROPHENOL | 0.0 | 10.0 | * | | | | | | | 290.0 | 77.0 | | 585069.5 | 155346.0 | | <10 |
| 2,4-DIMETHYLPHENOL | 0.0 | 10.0 | * | | | | | | | 850.0 | 380.0 | | 1714859.0 | 766642.8 | | <10 |
| 4,6-DINITRO-O-CRESOL | 0.0 | 10.0 | 24.0 | | | | | | | 280.0 | 13.0 | | 564894.7 | 26227.3 | | <50 |
| 2,4-DINITROPHENOL | 0.0 | 10.0 | 42.0 | | | | | | | 5300.0 | 69.0 | | 10692650.0 | 139206.2 | | <50 |
| 2-NITROPHENOL | 0.0 | 10.0 | * | | | | | | | | | | | | | <50 |
| 4-NITROPHENOL | 0.0 | 10.0 | * | | | | | | | | | | | | | <50 |
| PENTACHLOROPHENOL | 0.0 | 10.0 | 5.0 | 15 | | 19 | 19550.0 | | 24763.3 | 30.0 | 2.7 | 1.0 | 60524.4 | 5447.2 | 2017.5 | <20 |
| PHENOL | 0.0 | 10.0 | * | | | | | | | 860000 | 10000.0 | | 1735033773.6 | 20174811.3 | | <10 |
| 2,4,6-TRICHLOROPHENOL | 0.0 | 10.0 | 2.7 | | | | | | | 24.0 | 14.0 | | 48419.5 | 28244.7 | | <10 |

Continued next page:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACENAPHTHENE | 0.0 | 10.0 | * | | | | | 990.0 | 670.0 | | 1997306.3 | 1351712.4 | | <10 |
| ACENAPHTHYLENE | 0.0 | 10.0 | 2.3 | | | | | | | | | | | <10 |
| ANTHRACENE | 0.0 | 10.0 | 0.7 | | | | | 40000 | 8300.0 | | 80699245.3 | 16745093.4 | | <10 |
| BENZIDINE | 0.0 | 50.0 | * | | | | | 0.0020 | 0.0009 | | 4.035 | 1.7 | | <80 |
| BENZO(A)ANTHRACENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| BENZO(A)PYRENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | 0.2 | 363.1 | 76.7 | 403.5 | <10 |
| 3,4 BENZO-FLUORANTHENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| BENZO(GHI)PERYLENE | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| BENZO(K)FLUORANTHENE | 0.0 | 10.0 | 0.3 | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| BIS (2-CHLOROETHOXY) METHANE | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| BIS (2-CHLOROETHYL)-ETHER | 0.0 | 10.0 | 1.0 | | | | | 5.3 | 0.30 | | 10692.7 | 605.2 | | <10 |
| BIS (2-CHLOROISO-PROPYL) ETHER | 0.0 | 10.0 | * | | | | | 65000 | 1400.0 | | 131136273.6 | 2824473.6 | | <10 |
| BIS (2-ETHYLHEXYL) PHTHALATE | 0.0 | 10.0 | 2.5 | | | | | 22.0 | 12.0 | 6.0 | 44384.6 | 24209.8 | 12104.9 | <10 |
| 4-BROMOPHENYL PHENYL ETHER | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| BUTYL BENZYL PHTHALATE | 0.0 | 10.0 | * | | | | | 1900.0 | 1500.0 | | 3833214.2 | 3026221.7 | | <10 |
| 2-CHLORONAPHTHALENE | 0.0 | 10.0 | * | | | | | 1600.0 | 1000.0 | | 3227969.8 | 2017481.1 | | <10 |
| 4-CHLORPHENYL PHENYL ETHER | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| CHRYSENE | 0.0 | 10.0 | 2.5 | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| DI-N-BUTYL PHTHALATE | 0.0 | 10.0 | 2.5 | | | | | 4500.0 | 2000.0 | | 9078665.1 | 4034962.3 | | <10 |
| DI-N-OCTYL PHTHALATE | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| DIBENZO(A,H) ANTHRACENE | 0.0 | 10.0 | * | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| 1,2-DICHLOROBENZENE | 0.0 | 1.0 | 2.0 | | | | | 1300.0 | 420.0 | | 2622725.5 | 847342.1 | | <10 |
| 1,3-DICHLOROBENZENE | 0.0 | 5.0 | 2.0 | | | | | 960.0 | 320.0 | | 1936781.9 | 645594.0 | | <10 |
| 1,4-DICHLOROBENZENE | 0.0 | 5.0 | 2.0 | | | | | 190.0 | 63.0 | | 383321.4 | 127101.3 | | <10 |
| 3,3-DICHLOROBENZIDINE | 0.0 | 10.0 | * | | | | | 0.28 | 0.2 | | 564.9 | 423.7 | | <20 |
| DIETHYL PHTHALATE | 0.0 | 10.0 | 1.9 | | | | | 44000 | 17000.0 | | 88769169.8 | 34297179.2 | | <10 |
| DIMETHYL PHTHALATE | 0.0 | 10.0 | 1.6 | | | | | 1100000 | 270000.0 | | 2219229245.3 | 544719905.7 | | <10 |
| Di-n-butyl phthalate (84-74-2) (g) | 0.0 | 10.0 | | | | | | 4500 | 2000.0 | | 9078665.1 | 4034962.3 | | |
| 2,4-DINITROTOLUENE | 0.0 | 10.0 | 1.0 | | | | | 34.0 | 1.1 | | 68594.4 | 2219.2 | | <10 |
| 2,6-DINITROTOLUENE | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| Di-n-octyl phthalate (117-84-0) (g) | 0.0 | 10.0 | | | | | | | | | | | | |
| 1,2 DIPHENYLHYDRAZINE | 0.0 | 10.0 | * | | | | | 2.0 | 0.4 | | 4035.0 | 726.3 | | <10 |
| FLUORANTHENE | 0.0 | 10.0 | 2.2 | | | | | 140.0 | 130.0 | | 282447.4 | 262272.5 | | <10 |
| FLUORENE | 0.0 | 10.0 | 0.3 | | | | | 5300.0 | 1100.0 | | 10692650.0 | 2219229.2 | | <10 |
| HEXACHLOROBENZENE | 0.0 | 10.0 | 1.9 | | | | | 0.0029 | 0.0028 | 1.0 | 5.851 | 5.6 | 2017.5 | <10 |
| HEXACHLOROBUTADIENE | 0.0 | 10.0 | 5.0 | | | | | 180.0 | 4.4 | | 363146.6 | 8876.9 | | <10 |
| HEXACHLOROCYCLO-PENTADIENE | 0.0 | 10.0 | * | | | | | 1100.0 | 40.0 | 50.0 | 2219229.2 | 80699.2 | 100874.1 | <10 |
| HEXACHLOROETHANE | 0.0 | 10.0 | 0.5 | | | | | 33.0 | 14.0 | | 66576.9 | 28244.7 | | <2 |
| INDENO(1,2,3-CD)PYRENE | 0.0 | 10.0 | * | | | | | 0.18 | 0.038 | | 363.1 | 76.7 | | <10 |
| ISOPHORONE | 0.0 | 10.0 | * | | | | | 9600 | 350.0 | | 19367818.9 | 706118.4 | | <10 |
| NAPHTHALENE | 0.0 | 10.0 | * | | | | | | | | | | | <10 |
| NITROBENZENE | 0.0 | 10.0 | 10.0 | | | | | 690.0 | 17.0 | | 1392062.0 | 34297.2 | | <10 |
| N-NITROSODI-N-PROPYLAMINE | 0.0 | 10.0 | * | | | | | 5.1 | 0.050 | | 10289.2 | 100.9 | | <10 |
| N-NITROSODI- METHYLAMINE | 0.0 | 10.0 | * | | | | | 30.0 | 0.0069 | | 60524.4 | 13.9 | | <10 |
| N-NITROSODI-PHENYLAMINE | 0.0 | 10.0 | * | | | | | 60.0 | 33.0 | | 121048.9 | 66576.9 | | <10 |
| PHENANTHRENE | 0.0 | 10.0 | 0.7 | | | | | | | | | | | <10 |
| PYRENE | 0.0 | 10.0 | 0.3 | | | | | 4000.0 | 830.0 | | 8069924.5 | 1674509.3 | | <10 |
| 1,2,4-TRICHLOROBENZENE | 0.0 | | * | | | | | 70.0 | 35.0 | 70.0 | 141223.7 | 70611.8 | 141223.7 | <10 |

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

# APPENDIX 5
# Receiving Stream Low flow Determination

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Program SWStat U.S. GEOLOGICAL SURVEY Seq 00001
Ver. 5.0 Log-Pearson & Pearson Type III Statistics Run Date / Time
03/13/2018 based on USGS Program A193 12/30/2020 6:42 PM

Notice -- Log-Pearson Type III or Pearson Type III distributions are used
for these computations. Users are responsible for assessment
and interpretation.

Description: 03543005 TENNESSEE RIVER AT WATTS BAR DAM (TAILWATER), TN
Year Boundaries: April 1 - March 31
Period in report: April 1, 1975 - March 31, 1993
Parameter: 1-day low
Non-zero values: 18
Zero values: 0
Negative values: 0 (ignored)

Input time series (zero and negative values not included in listing.)

5500.000 6440.000 9960.000 6040.000 12800.000 4400.000 4600.000 4310.000
8920.000 5840.000 3070.000 2660.000 2870.000 2760.000 3230.000 3930.000
3670.000 1180.000

LOG PEARSON TYPE III Frequency Curve Parameters
(based on logs of the non-zero values)

| | |
|---|---|
| Mean (logs) | 3.647 |
| Variance (logs) | 0.059 |
| Standard Deviation (logs) | 0.243 |
| Skewness (logs) | -0.211 |
| Standard Error of Skewness (logs) | 0.536 |
| Serial Correlation Coefficient (logs) | 0.493 |
| Coefficient of Variation (logs) | 0.067 |

Frequency Curve - Parameter values at selected probabilities

| Non-exceedance Probability | Recurrence Interval | Parameter | Variance of Estimate | 95-Pct Confidence Intervals Lower | Upper |
|---|---|---|---|---|---|
| 0.1000 | 10.00 | 2137.900 (CFS) | 1.009 | 1191.700 | 2931.300 |

Program SWStat U.S. GEOLOGICAL SURVEY Seq 00001
Ver. 5.0 Log-Pearson & Pearson Type III Statistics Run Date / Time
03/13/2018 based on USGS Program A193 12/30/2020 6:43 PM

Notice -- Log-Pearson Type III or Pearson Type III distributions are used
for these computations. Users are responsible for assessment
and interpretation.

Description: 03543005 TENNESSEE RIVER AT WATTS BAR DAM (TAILWATER), TN
Year Boundaries: April 1 - March 31
Period in report: April 1, 1975 - March 31, 1993
Parameter: 30-day low
Non-zero values: 18
Zero values: 0
Negative values: 0 (ignored)

Input time series (zero and negative values not included in listing.)

16246.000 12013.000 22147.000 11250.000 24120.000 10950.000 7803.300 7462.300
13697.000 15889.000 6311.700 5383.700 9214.000 5125.000 10708.000 10863.000
16581.000 4759.700

LOG PEARSON TYPE III Frequency Curve Parameters
(based on logs of the non-zero values)

| | |
|---|---|
| Mean (logs) | 4.021 |
| Variance (logs) | 0.044 |
| Standard Deviation (logs) | 0.210 |
| Skewness (logs) | -0.057 |
| Standard Error of Skewness (logs) | 0.536 |
| Serial Correlation Coefficient (logs) | 0.108 |
| Coefficient of Variation (logs) | 0.052 |

Frequency Curve - Parameter values at selected probabilities

| Non-exceedance Probability | Recurrence Interval | Parameter Value | Variance of Estimate | 95-Pct Confidence Intervals Lower | Upper |
|---|---|---|---|---|---|
| 0.2000 | 5.00 | 6994.600 (CFS) | 1.036 | 4978.500 | 8965.300 |