



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

November 14, 2018

Mr. Don Hudgins  
Plant Administrator  
e-copy: [donald.hudgins@memphistn.gov](mailto:donald.hudgins@memphistn.gov)  
City of Memphis Environmental Division  
2303 N. Second St.  
Memphis, TN 38127

Subject: **Draft of NPDES Permit No. TN0020711**  
**City of Memphis**  
**Memphis, Shelby County, Tennessee**

Dear Mr. Hudgins:

Enclosed please find a draft copy of the NPDES Permit No. TN0020711, that the Division of Water Resources proposes to issue. This draft copy is furnished to you solely for your review of its provisions. No wastewater discharges are authorized by this draft permit. The issuance of this permit is contingent upon your meeting all of the requirements of the Tennessee Water Quality Control Act and the Rules and Regulations of the Tennessee Water Quality, Oil and Gas Board.

Also enclosed is a copy of the public notice that announces our intent to issue this permit. The notice affords the public an opportunity to review the draft permit and, if necessary, request a public hearing on this issuance process. If you disagree with the provisions and requirements contained in the draft permit, you have thirty (30) days from the date of this correspondence to notify the division of your objections. If your objections cannot be resolved, you may appeal this permit upon issuance. This appeal should be filed in accordance with Section 69-3-110 of the Tennessee Code Annotated.

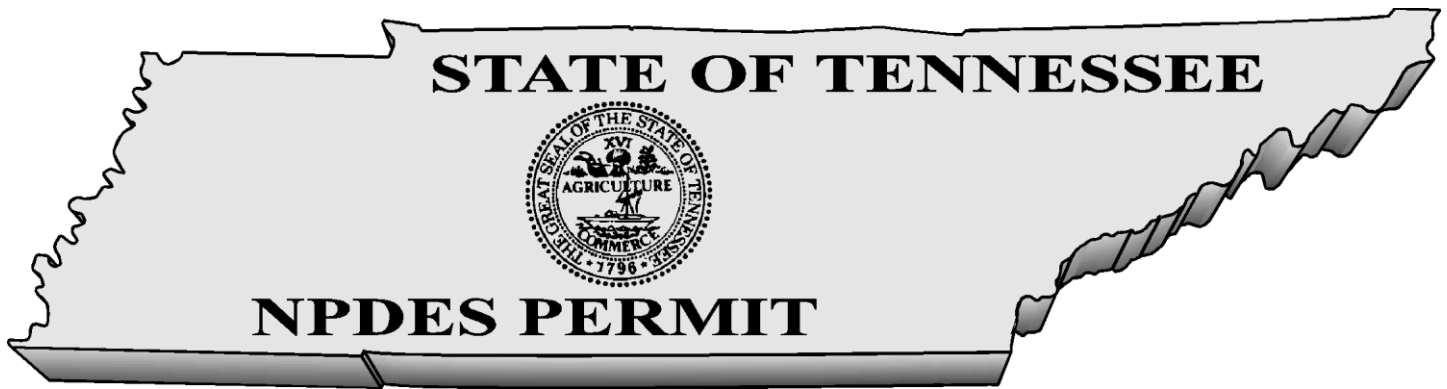
If you have questions, please contact the Memphis Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Mr. Robert O'Dette, P.E. at (615) 253-5319 or by E-mail at [Robert.Odette@tn.gov](mailto:Robert.Odette@tn.gov).

Sincerely,

Vojin Janjic  
Manager, Water-Based Systems

Enclosure

cc: Permit Section File  
Memphis Environmental Field Office  
Mr. Robert Knecht, Public Works Director, City of Memphis Department of Public Works, [robert.knecht@memphistn.gov](mailto:robert.knecht@memphistn.gov)  
NPDES Permit Section, EPA Region IV, [r4npdespermits@epa.gov](mailto:r4npdespermits@epa.gov)  
Mr. Paul Patterson, Administrator of Environmental Engineering, Maynard C. Stiles Wastewater Facility,  
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Mr. Christopher Provost, CDM Smith, [provostca@cdmsmith.com](mailto:provostca@cdmsmith.com)



**No. TN0020711**

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, 11<sup>th</sup> Floor  
Nashville, Tennessee 37243-1102**

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

Discharger: **City of Memphis - Maynard C. Stiles STP North Plant**

is authorized to discharge: **treated municipal wastewater from Outfall 001**

from a facility located: **in Memphis, Shelby County, Tennessee**

to receiving waters named: **Mississippi River at mile 738.8**

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

This permit shall become effective on:

This permit shall expire on:

Issuance date:

\_\_\_\_\_  
for Jennifer Dodd  
Director

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## 1.0. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

### 1.1. NUMERIC AND NARRATIVE EFFLUENT LIMITATIONS

The City of Memphis is authorized to discharge its M.C. Stiles treated municipal wastewater from Outfall 001 to the Mississippi River at mile 738.8. Discharge 001 consists of municipal wastewater from the M.C. Stiles wastewater treatment facility with a design capacity of 135 MGD. Outfall 001 Discharge shall be limited and monitored by the permittee as specified below:

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
300	Oxygen, dissolved (DO)	>=	1.0	mg/L	Grab	Daily	Instantaneous Minimum
310	BOD, 5-day, 20 C (e)	<=	40	mg/L	Composite	Daily	Weekly Average
310	BOD, 5-day, 20 C (e)	<=	30	mg/L	Composite	Daily	Monthly Average
400	pH	>=	6.0	SU	Grab	Daily	Minimum
400	pH	<=	9.0	SU	Grab	Daily	Maximum
530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Daily	Weekly Average
530	Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Daily	Monthly Average
545	Settleable Solids	<=	1.0	mL/L	Composite	Daily	Daily Maximum
600	Nitrogen, total (as N)	Report	-	lb/d	Composite	Monthly	Monthly Average
600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Monthly	Daily Maximum
600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Monthly	Monthly Average
610	Nitrogen, Ammonia total (as N)	Report	-	lb/d	Composite	Monthly	Monthly Average
610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Composite	Monthly	Daily Maximum
610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Composite	Monthly	Monthly Average
665	Phosphorus, total (as P)	Report	-	lb/d	Composite	Monthly	Monthly Average
665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Daily Maximum
665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Monthly Average
3610	Dioxin	<=	0.000000001	mg/L	Grab	Annual	Monthly Average
3610	Dioxin	<=	0.000000001	mg/L	Grab	Annual	Daily Maximum
39120	Benzidine	Report	-	mg/L	Grab	Annual	Daily Maximum
39120	Benzidine	Report	-	mg/L	Grab	Annual	Monthly Average

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
39516	Polychlorinated biphenyls (PCBs)	<=	0.00000064	mg/L	Composite	Annual	Monthly Average
39516	Polychlorinated biphenyls (PCBs)	<=	0.00000064	mg/L	Composite	Annual	Daily Maximum
39700	Hexachlorobenzene	Report	-	mg/L	Grab	Annual	Daily Maximum
39700	Hexachlorobenzene	Report	-	mg/L	Grab	Annual	Monthly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Weekly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
51032	Chlordane, total	<=	0.0000081	mg/L	Composite	Annual	Monthly Average
51032	Chlordane, total	<=	0.0000081	mg/L	Composite	Annual	Daily Maximum
51704	Sewer Backups in Buildings	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51929	Bypass of Treatment Facility	Report		occur/mo	Visual	Continuous	Monthly Total
51929	Bypass of Treatment Facility	Report		gal/mo	Estimate	Continuous	Monthly Total
51925	SSO, Dry Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51925	SSO, Dry Weather	Report		occur/12 Mo Cumulative Total	Calculated	Continuous	Total
51925	SSO, Dry Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report		occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51926	SSO, Wet Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51926	SSO, Wet Weather	Report		occur/12 Mo Cumulative Total	Calculated	Continuous	Total
51926	SSO, Wet Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report		occur/mo	Occurrences	Continuous	Monthly Total

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
71900	Mercury, total (as Hg)	Report	-	mg/L	Composite	Annual	Daily Maximum
71900	Mercury, total (as Hg)	Report	-	mg/L	Composite	Annual	Monthly Average
00139	Hydrogen peroxide (a)	Report		mg/L	Grab	See Permit	Daily Maximum
00139	Hydrogen peroxide (a)	Report		mg/L	Grab	See Permit	Monthly Average
51040	<i>E. coli</i> (b)	Report		#/100mL	Grab	Daily	Daily Maximum
51040	<i>E. coli</i> (b)	Report		#/100mL	Grab	Daily	Monthly Geometric Mean
51674	Peracetic Acid (PAA) (c)	Report		mg/L	Grab	See Permit	Daily Maximum
51674	Peracetic Acid (PAA) (c)	Report		mg/L	Grab	See Permit	Monthly Average
81010	BOD, 5-day, % removal	>=	40.0	%	Composite	Daily	Daily Minimum
81010	BOD, 5-day, % removal	>=	85.0	%	Composite	Daily	Monthly Average Minimum
81011	TSS, % removal	>=	85.0	%	Composite	Daily	Monthly Average Minimum
81011	TSS, % removal	>=	40.0	%	Composite	Daily	Daily Minimum
TAA3B	LC <sub>50</sub> Static 48Hr Acute Ceriodaphnia (d)	Report	-	%	Composite	Annual	Minimum
TAA6C	LC <sub>50</sub> Static 48Hr Acute Pimephales promelas (d)	Report	-	%	Composite	Annual	Minimum

- (a) Per Permit Section 1.6, Hydrogen Peroxide sampling shall occur at a frequency of 5 per week applicable following compliance schedule.
- (b) Per Permit Section 1.6, *E. coli* reporting required during compliance schedule with limits (126 #/100 monthly geo. mean and 487 #/100 ml daily maximum) applicable following compliance schedule.
- (c) Per Permit Section 1.6, Peracetic Acid sampling shall occur at a frequency of 5 per week applicable following compliance schedule.
- (d) Acute aquatic toxicity (48 hour LC50) collected via single 24 hour composite
- (e) Per Permit Section 1.6 upon completion of the construction of the disinfection system a BOD allowance of 20 mg/L will be granted for the duration of the commissioning process and BOD allowance study.

Notes: The permittee shall achieve **85%** removal of BOD<sub>5</sub> and TSS on a monthly average basis. The permittee shall report all instances of overflow 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.

<b>Narrative Condition Description</b>	<b>Schedule (Due) Date</b>	<b>Schedule Event Description</b>	<b>Comments</b>
Compliance Schedule	31-JUL-19	Status/Progress Report	Semi-Annual update of PAA Compliance Schedule per Part 1.6 of this permit.
Compliance Schedule	01-DEC-19	Study Plan	Submit Scope for "BOD allowance" Study per Part 1.6 of this permit.
Compliance Schedule	31-JAN-20	Status/Progress Report	Semi-Annual update of PAA Compliance Schedule per Part 1.6 of this permit.
Compliance Schedule	31-MAR-20	Complete Required Work or On-Site Construction	Complete Construction of Disinfection Facility per Part 1.6 of this permit.
Compliance Schedule	31-MAR-20	Commence Effluent Monitoring Study	Implement approved effluent monitoring study for "BOD allowance".
Compliance Schedule	31-JUL-20	Status/Progress Report	Semi-Annual update of PAA Compliance Schedule per Part 1.6 of this permit.
Compliance Schedule	31-JUL-20	Compliance Schedule	Commission PAA System per Part 1.6 of this permit.
Compliance Schedule	31-OCT-21	Complete Effluent Monitoring Study	Final Report of effluent monitoring "BOD Allowance" Study per Part 1.6 of this permit.

Once the conditions of Part 1.6 have been met, 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 floating scum, oil or other matter contained in the wastewater discharge. The wastewater discharge must not cause an objectionable color contrast in the receiving stream.

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.

Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act. (40 C.F.R. 125.98(b)(1))

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<sub>5</sub> 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<sub>5</sub> 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 insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure 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.
- 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, monthly 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  $\leq 6$  degrees Celsius during the compositing period.
- d. In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).
- e. All sampling for total mercury at the municipal wastewater plant (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L. For test methods requiring collection of a grab sample, the analysis may be conducted on a single grab or on a set of grabs composited in the testing lab in compliance with the quality control procedures prescribed by the method for each grab sample. When a single grab sample is analyzed, it shall be collected at such time that the treatment plant effluent would be expected to include the most likely sources of mercury in the municipal system.

### **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;
- b. The exact person(s) collecting samples;
- 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 Memphis Environmental Field Office (EFO) at the following address:

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

A copy should be retained for the permittee's files. 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 specifically limited by this permit 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 shall be submitted on standard forms to the appropriate Division of Water Resources Environmental Field Office in Jackson, Nashville, Chattanooga, Columbia, Cookeville, Memphis, Johnson City, or Knoxville. Reports shall be submitted by the 15th day of the month following data collection.

### **1.3.5. Bypass, Release and Overflow Reporting**

#### **1.3.5.1. Report Requirements**

A summary report of known instances of sanitary sewer overflows, releases, and bypasses shall accompany the Discharge Monitoring Report (DMR). The report must contain the date(s), estimated duration in hours, estimated quantity of wastewater in gallons, location and if applicable, the receiving stream for each instance of sanitary sewer overflow, release, or bypass. For each sanitary sewer overflow and release, the report shall identify (using the permittee's naming conventions) the next downstream pump station. For each sanitary sewer overflow, the report shall also identify whether it was a dry weather overflow.

The report must also detail activities undertaken during the reporting period to correct the reported sanitary sewer overflows and releases.

On the DMR, the permittee must separately report: the total number of sanitary sewer overflows for the reporting month and the cumulative total for the previous 12 months; the total number of dry-weather overflows for the reporting month and the cumulative total for the previous 12 months; the total number of releases for the reporting month; and the total number of bypasses for the reporting month. On the DMR, sanitary sewer overflows are coded "SSO, Dry Weather and SSO, Wet Weather" and releases are coded "Release [Sewer], Dry Weather and Release [Sewer], Wet Weather." Estimated total monthly volume for each type of event will be reported as gallons per month. Each release due to improper operation or maintenance shall be reported as such. Each discrete location of a sanitary sewer overflow or a release shall be reported as a separate value.

#### **1.3.5.2. 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. The required detection levels are listed in the Rules of the Department of Environment and Conservation, Division of Water Resources, Chapter 0400-40-03-.05(8).

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. COMPLIANCE WITH SECTION 208**

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

**1.5. REOPENER CLAUSE**

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 307(a)(2) and 405(d)(2)(D) of the Clean Water Act, as amended, if the effluent standard, limitation or sludge disposal requirement so issued or approved:

- a. Contains different conditions or is otherwise more stringent than any condition in the permit; or
- b. Controls any pollutant or disposal method not addressed in the permit.

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

**1.6. SCHEDULE OF COMPLIANCE**

The compliance schedule dates are included as narrative criteria in Part 1 of this permit. Upon the commissioning of the PAA system, the monitoring requirements and limitations for the following parameters will become effective on the first day of the following month:

- Hydrogen Peroxide,
- *E. Coli*
- Peracetic Acid

The following details the treated effluent *E. Coli* disinfection work tasks:

**SEMI-ANNUAL UPDATE OF PAA COMPLIANCE SCHEDULE**

The permittee shall provide the division with a written progress status report every January and July until the PAA system is commissioned.

**STUDY PLAN**

The permittee shall develop and submit a BOD “allowance” study to determine the impact of PAA on BOD creation in the final effluent. The plan must include:

- Description of study objective and technical procedure.
- A 12 month sampling and analytical program and should include at a minimum:

- Sampling locations prior to and immediately following PAA disinfection to determine actual impact on the effluent.
- Frequency of sampling with details on how the chosen frequency is adequate to accommodate any daily or seasonal variations.
- Sampling protocols and analytical techniques.

**COMPLETE CONSTRUCTION OF DISINFECTION FACILITY.**

Complete Construction of Disinfection Facility and submit a final progress report.

Upon the completion of construction of the disinfection facility, the permittee shall submit a letter to the division indicating that the construction is complete and the permittee has begun the commissioning the system as well as implementing approved effluent monitoring study plan for BOD “allowance”.

**COMMISSION PAA SYSTEM**

During the commissioning of the PAA system, the facility will determine the appropriate operational protocols. The permittee will submit a final report briefly describing the commissioning phase activities and the results. This report may be combined with the Status/Progress report. Upon the commissioning of the system, the monitoring requirements and limitations for Hydrogen Peroxide, *E. Coli* and Peracetic Acid will become effective the first day of the following month.

**FINAL REPORT OF EFFLUENT MONITORING BOD “ALLOWANCE” STUDY**

The permittee will submit a final report of the BOD “Allowance” study. This report shall include at a minimum:

- Brief executive summary.
- Certification Statement signed by the cognizant official.
- Relevant documentation.



## **2.0. GENERAL PERMIT REQUIREMENTS**

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### **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. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and
- c. To sample at reasonable times any discharge of pollutants.

#### **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 State of 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).

### **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. Effect of Noncompliance**

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable state and federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

#### **2.3.2. Reporting of Noncompliance**

- a. 24-Hour Reporting

In the case of 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 Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response team).

A written submission must be provided 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 location, 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 Discharge Monitoring Report. 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.

### **2.3.3. Overflow**

- a. Sanitary sewer overflows, including dry-weather overflows, are prohibited.
- b. The permittee shall operate the collection 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 and transmission 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 or transmission system that experiences greater than 5 sanitary sewer overflows and/or releases per 12 month period<sup>1</sup> 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

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<sup>1</sup> This includes dry weather overflows, wet weather overflows, dry weather releases and wet weather releases.

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 of 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 a Monthly Operating Report submitted to the local TDEC Environmental Field Office. 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 the Division of Water Resources EFO staff to petition for a waiver based on mitigating evidence.

#### 2.3.4. 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."

### 2.3.5. 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.

### 2.3.6. 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.

### 2.3.7. 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**

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#### **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, non-biodegradable 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 annual reports 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 Memphis Environmental Field Office no later than 45 days after the end of the reporting period. Large programs with more than 20 SIUs will be granted an additional 15 days for report submittal.

The permittee shall provide an annual report briefly describing the permittee's pretreatment program activities over the previous twelve-month period. Reporting periods shall end on December 31st. 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/Annual 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:

<b>Pollutant</b>	<b>Sample Type</b>
chromium, trivalent	24-hour composite
chromium, hexavalent	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
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 annual report. All upsets, interferences, and pass-through violations must also be reported on the annual 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:

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

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

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) 432-4015
Columbia	2484 Park Plus Drive	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	37243	(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<sub>50</sub>) of the test organisms. The LC<sub>50</sub> 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					
Value	0.50 X Value	0.25 X Value	0.125 X Value	0.0625 X Value	Control
<b>% effluent</b>					
<b>100</b>	<b>50</b>	<b>25</b>	<b>12.5</b>	<b>6.25</b>	<b>0</b>

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<sub>50</sub> is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a 24-hour, flow proportionate composite sample of final effluent. 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.

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	540 McCallie Avenue, Suite 550	37402-2013	(423) 634-5745
Jackson	1625 Hollywood Drive	38305	(731) 512-1300
Cookeville	1221 South Willow Avenue	38506	(931) 432-4015
Columbia	2484 Park Plus Drive	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	38133-4119	(901) 371-3000
Nashville	711 R.S. Gass Boulevard	37243-1550	(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(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream. The minimum sign size should be two feet by two feet (2' x 2') with one-inch (1") letters. The sign should be made of durable material and have a white background with black letters.

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

Permitted CSO or unpermitted bypass/overflow point:

<p><b>UNTREATED WASTEWATER DISCHARGE POINT</b> <b>City of Memphis - Maynard C. Stiles STP North Plant</b> <b>(901) 636-7109</b> <b>NPDES Permit NO. TN0020711</b> <b>TENNESSEE DIVISION OF WATER RESOURCES</b> <b>1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis</b></p>
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NPDES Permitted Municipal/Sanitary Outfall:

<p><b>TREATED MUNICIPAL/SANITARY WASTEWATER</b> <b>City of Memphis - Maynard C. Stiles STP North Plant</b> <b>(901) 636-7109</b> <b>NPDES Permit NO. TN0020711</b> <b>TENNESSEE DIVISION OF WATER RESOURCES</b> <b>1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Memphis</b></p>
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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. COMPLIANCE SCHEDULE FOR DISINFECTION AND BOD<sub>5</sub> DETERMINATION

See Part 1.6



**3.7. 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

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### 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  $n^{\text{th}}$  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**", shall be determined by the summation of all the measured daily discharges by weight divided by the number of days 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 **“subcoregion”** 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. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval  
30Q20 – 30-day minimum, 20-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<sub>5</sub> – five day biochemical oxygen demand  
BPT – best practicable control technology currently available  
CBOD<sub>5</sub> – 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<sub>25</sub> – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms  
IU – industrial user  
IWS – industrial waste survey  
LC<sub>50</sub> – 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

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**City of Memphis - Maynard C. Stiles STP North Plant**  
**NPDES Permit No. TN0020711**  
**Date: 11/14/2018**  
**Permit Writer: Robert G. O'Dette, M.S., P.E.**

**1. FACILITY INFORMATION**

**City of Memphis - Maynard C. Stiles STP North Plant**  
**Mr. Robert Knecht - Public Works Director**  
**Memphis, Shelby County, Tennessee**  
**(901) 636-7109**  
**Treatment Plant Average Design Flow: 135 MGD**  
**Percentage Industrial Flow: 9.9%\***  
**(\*Based upon Design Flow and Actual Industrial Flows)**  
**Treatment Description: Contact Stabilization Activated Sludge PAA**  
**Disinfection**

**PRETREATMENT ACTUAL FLOWS\***

<b>Industrial User</b>	<b>Flow (MGD)</b>
Chemours	4.94
Penn A Kern	0.39
PMC Biogenix	1.43
Memphis Cellulose	3.73
Cascade Tissue Group	0.46
K.T.G. USA LP(1)	1.19
American Yeast	1.1
Runyon Industries	0.19
<b>TOTAL</b>	<b>13.43</b>

\* Only Industries included in request for variance.



**RECEIVING STREAM INFORMATION**

**Mississippi River at mile 738.8**  
**Watershed Group: Mississippi**  
**Hydrocode: 08010100**  
**([TN08010100001\\_1000](#))**  
**Low Flow: 7Q10 = 63,985 MGD (99,000 CFS)**  
**Low Flow Reference: Tennessee StreamStats, Site #0703200**  
**(35.12877, -90.07609)**  
**Low Flow: 7Q10 = 78,862 MGD**  
 7Q10 from ACE Memo dated 9/22/04 with ACE approval 6/28/16  
**Water Quality Designation: Outfall 001 Discharges to the Mississippi River. The Mississippi River is classified as an Exceptional Tennessee Waters, (Due to the Federal Endangered Pallid Sturgeon and Tennessee Threatened Blue Sucker Fish Species)**  
**Stream Classification Categories:**

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

**Water Quality Assessment: Not supporting for F&AL due to physical substrate habitat alteration. Not supporting for Recreation due to Mercury, PCBs, Dioxin and Chlordane)**

**2. CURRENT PERMIT STATUS**

Permit Type:	Municipal
Classification:	Major
Issuance Date:	30-NOV-11
Expiration Date:	31-DEC-16
Effective Date:	01-JAN-12

**3. NEW PERMIT LIMITATIONS AND COMPLIANCE SCHEDULE SUMMARY**

- a. 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 previous permit established effluent limitations for *E. coli* following the compliance schedule of 126 cfu/100 ml (Monthly Average) and 487 cfu/100 ml (Daily Maximum), respectively. During the compliance schedule period the permittee was required to "Report" *E. coli* values. The maximum reported *E. coli* value was 11 million cfu/100 ml, with an average of slightly more than 1 million cfu/100 ml. These are high values because effluent disinfection is not being used.

The permittee has completed numerous studies of disinfection options and reports summarizing those studies have been provided and discussed with TDEC. Because of the different nature of PAA versus Chlorine, there is no reasonable potential for the formation of potentially harmful or toxic disinfection by-products. However, PAA will contribute to the BOD in the final effluent due to the presence of acetic acid in the stock formulation and the decomposition of PAA to acetic acid in the disinfection process. Theoretically, for a 15% solution of PAA, approximately 2 mg/L of BOD will be generated. However, this oxygen demand may be offset by the formation of approximately 1 mg/L of oxygen as a byproduct of PAA and peroxide decomposition in the disinfection process. In actual pilot studies using a range of initial PAA doses, the amount of BOD generated as a function of PAA dose was lower than theoretically predicted. It is also possible that by oxidizing complex organics in the wastewater effluent, PAA may actually reduce the overall BOD in the effluent, particularly at low PAA doses. However, with Memphis' large WWTP and significant number of industries there may be a significant increase in effluent BOD.

A short-term study conducted in 2016 found that effluent BOD increased with the application of PAA, and that the magnitude of the BOD increase was a function of the PAA formulation and the PAA dose. This initial study suggested that the effluent BOD could be increased by as much as 16 mg/L using a PAA formulation containing 15% PAA. Additional studies have indicated that the increase may be as much as 20 mg/L or more. This trial period must be long enough to develop algorithms and the calculus to optimize PAA dosing by capturing all of the variables that could impact PAA performance. This is crucial and must be done prior to establishing the ultimate impact of PAA on the effluent BOD and thus finalizing the effluent limitations for BOD.

With regard to the metric for determining compliance with BOD effluent limitations with PAA disinfection, the preferred solution is to establish the relationship between the range of PAA doses anticipated for effluent disinfection, and the associated PAA-BOD that results. This relationship, once established, will be used as a BOD "allowance" for compliance reporting purposes. Based upon data the permittee has developed to try to understand this relationship.

The compliance schedule dates are included as narrative criteria in **Part 1** of this permit. Upon the commissioning of the PAA system, the monitoring requirements and limitations for the following parameters will become effective on the first day of the following month:

- Hydrogen Peroxide,
- *E. Coli*
- Peracetic Acid

b. *Adjustment to treated effluent BOD<sub>5</sub> and TSS limits due to industrial contribution.* Under the Clean Water Act, for certain industrial categories, the discharge to navigable waters of BOD<sub>5</sub> and TSS permitted under sections 301(b)(1)(A)(i), (b)(2)(E) or 306 of the Act may be less stringent than the values given in §§133.102(a)(1), 133.102(a)(4)(i), 133.102(b)(1), 133.105(a)(1), 133.105(b)(1) and 133.105(e)(1)(i). In cases when wastes would be introduced from such an industrial category into a publicly owned treatment works, the values for BOD<sub>5</sub> and TSS in §§133.102(a)(1), 133.102(a)(4)(i), 133.102(b)(1), 133.105(a)(1), 133.105(b)(1), and 133.105(e)(1)(i) may be adjusted upwards provided that: (1) The permitted discharge of such pollutants, attributable to the industrial category, would not be greater than that which would be permitted under sections 301(b)(1)(A)(i), 301(b)(2)(E) or 306 of the Act if such industrial category were to discharge directly into the navigable waters, and (2) the flow or loading of such pollutants introduced by the industrial category exceeds 10 percent of the design flow or loading of the publicly owned treatment works. When such an adjustment is made, the values for BOD<sub>5</sub> or TSS in §§133.102(a)(2), 133.102(a)(4)(ii), § 133.102(b)(2), 133.105(a)(2), 133.105(b)(2), and 133.105(e)(1)(ii) should be adjusted proportionately. However, based upon the permittee's permit renewal application information and updated pretreatment records none of the industrial categories qualify for consideration of a variance for BOD<sub>5</sub> and TSS limitations. Thus, the division has determined that the permittee does not qualify for a variance from federal secondary treatment and because of this determination the renewed permit will contain secondary treatment limitations in accordance with State Rule 0400-40-05-.09(1)(a) [excerpt from rule shown below]. Sample type will remain as composite. [For a more detailed explanation and summary relative to calculations concerning a variance from Federal Secondary Treatment Standards for Effluent BOD<sub>5</sub> and TSS see **Appendix 3**].

Municipal and domestic wastewater treatment plants shall be limited by application of monthly average concentrations, weekly average concentrations, daily maximum amounts, and daily maximum concentrations of the 5 day, 20°C biochemical or carbonaceous biochemical oxygen demand (BOD<sub>5</sub> or CBOD<sub>5</sub>) and suspended solids. In some cases, the daily maximum amount may be replaced by a minimum daily percent removal requirement. Limitations on chlorine residual may be required to prevent harmful amounts of chlorine discharge to the receiving waters. In addition, where harmful materials are acquired in a collection system, effluent limitations applicable to the treatment system will be required for such parameters.

1. Conventional Secondary Treatment Plants

Parameter	Monthly Average (mg/l)	Weekly Average (mg/l)	Daily Maximum (mg/l)	Monthly Average % Removal
BOD <sub>5</sub> or CBOD <sub>5</sub>	30/25	40/35	45/40	85
TSS	30	40	45	85

The concentration of settleable solids shall not exceed 1.0 ml/l as measured by the standard one-hour Imhoff cone test.

- c. *Allow higher-than-design monthly flow rates to be used for calculating treated effluent weekly effluent mass loadings.* No change in the new permit is appropriate. For municipal wastewater treatment facilities renewed permits, the division determines treated effluent limitations, including maximum weekly concentrations and uses the permittee's design not an actual flow, to establish corresponding weekly mass loadings discharge requirements.
- d. Because of the July 25, 2008 Total Maximum Daily Loads (TMDLs) for Chlordane, dioxins, and polychlorinated biphenyls (PCBs) in the Mississippi River, and the stream impairment for Recreation for these parameters as well as Mercury, the division considers the permittee's treated effluent to have the reasonable potential to contribute to the receiving stream's impairments. Thus, no reduction in monitoring frequency is included in the new permit for Mercury, PCBs, dioxins and Chlordane. However, the previous permit required annually monitoring for "Organic Pesticide Chemicals" per 40 CFR Part 455 with "Report" and no limits. In consideration of a reasonable potential analysis which is used to determine whether a discharge, alone or in combination with other sources of pollutants to a waterbody and under a set of conditions arrived at by making a series of reasonable assumptions, could lead to an excursion above an applicable water quality standard. The flow ratio (7Q10 of 63,985 MGD versus Average Discharge of 81.25 MGD) is 788:1. Considering this flow ratio along with the monitoring results shown in **Appendix 3** for "Organic Pesticide Chemicals" there is no reasonable potential for pollution, and would be at the most "De Minimis degradation" under Rule 0400-40-03-.04(4). Therefore, this condition will be removed for the new permit. Mercury, PCBs, dioxins and Chlordane will continue to be monitored on an annual frequency.
- e. The draft permit proposes to require a more sensitive test method than used in the past for mercury for treated effluent analyses conducted for pretreatment program reporting and NPDES application renewal. In recent years, approved test methods in 40 CFR Part 136 have been revised to include methods for testing mercury that have detection limits lower than the minimum required detection level specified in the state water quality standards. However, the water quality standards allow for use of other detection limits on a case-by-case basis. Test results reported as less than the promulgated minimum detection level of 0.2 mg/L are not sensitive enough to demonstrate that effluent Mercury is not contributing to, or does not have reasonable potential to contribute to, excursion of the water quality standard. Accordingly, Section 1.2.3 has been revised to read, "All sampling for Total Mercury (application, pretreatment, etc.) shall use Methods 1631, 245.7 or any additional method in 40 CFR 136 with a maximum detection limit of 5 ng/L." The new permit will retain the annual sampling frequency and "Report" for Total Mercury. However, the monitoring requirements for Methyl Mercury will be removed from the new permit, as there is no water quality criteria for Methyl Mercury for any of the six stream use categories that are applicable to the receiving stream.

f. 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

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

**4. PREVIOUS PERMIT DISCHARGE MONITORING REPORT REVIEW**

A review of the DMR summary from January 2012 through September 2018 reveals that the City of Memphis has had some exceedances of permit limits. A complete discharge monitoring report and violations summary is provided in **Appendix 2**.

**PROPOSED EFFLUENT LIMITS AND RATIONALE**

The City of Memphis is authorized to discharge its M.C. Stiles treated municipal wastewater from Outfall 001 to the Mississippi River at mile 738.8. Discharge 001 consists of municipal wastewater from the M.C. Stiles wastewater treatment facility with a design capacity of 135 MGD. Outfall 001 Discharge shall be limited and monitored by the permittee as specified below:

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
300	Oxygen, dissolved (DO)	>=	1.0	mg/L	Grab	Daily	Instantaneous Minimum
310	BOD, 5-day, 20 C (e)	<=	40	mg/L	Composite	Daily	Weekly Average
310	BOD, 5-day, 20 C (e)	<=	30	mg/L	Composite	Daily	Monthly Average
400	pH	>=	6.0	SU	Grab	Daily	Minimum
400	pH	<=	9.0	SU	Grab	Daily	Maximum
530	Total Suspended Solids (TSS)	<=	40	mg/L	Composite	Daily	Weekly Average
530	Total Suspended Solids (TSS)	<=	30	mg/L	Composite	Daily	Monthly Average
545	Settleable Solids	<=	1.0	mL/L	Composite	Daily	Daily Maximum
600	Nitrogen, total (as N)	Report	-	lb/d	Composite	Monthly	Monthly Average
600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Monthly	Daily Maximum
600	Nitrogen, total (as N)	Report	-	mg/L	Composite	Monthly	Monthly Average
610	Nitrogen, Ammonia total (as N)	Report	-	lb/d	Composite	Monthly	Monthly Average
610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Composite	Monthly	Daily Maximum
610	Nitrogen, Ammonia total (as N)	Report	-	mg/L	Composite	Monthly	Monthly Average
665	Phosphorus, total (as P)	Report	-	lb/d	Composite	Monthly	Monthly Average
665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Daily Maximum
665	Phosphorus, total (as P)	Report	-	mg/L	Composite	Monthly	Monthly Average
3610	Dioxin	<=	0.000000001	mg/L	Grab	Annual	Monthly Average
3610	Dioxin	<=	0.000000001	mg/L	Grab	Annual	Daily Maximum
39120	Benzidine	Report	-	mg/L	Grab	Annual	Daily Maximum
39120	Benzidine	Report	-	mg/L	Grab	Annual	Monthly Average

Code	Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
39516	Polychlorinated biphenyls (PCBs)	<=	0.00000064	mg/L	Composite	Annual	Monthly Average
39516	Polychlorinated biphenyls (PCBs)	<=	0.00000064	mg/L	Composite	Annual	Daily Maximum
39700	Hexachlorobenzene	Report	-	mg/L	Grab	Annual	Daily Maximum
39700	Hexachlorobenzene	Report	-	mg/L	Grab	Annual	Monthly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Weekly Average
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Daily Maximum
50050	Flow	Report	-	Mgal/d	Continuous	Daily	Monthly Average
51032	Chlordane, total	<=	0.0000081	mg/L	Composite	Annual	Monthly Average
51032	Chlordane, total	<=	0.0000081	mg/L	Composite	Annual	Daily Maximum
51704	Sewer Backups in Buildings	Report	-	occur/mo	Occurrences	Continuous	Monthly Total
51929	Bypass of Treatment Facility	Report		occur/mo	Visual	Continuous	Monthly Total
51929	Bypass of Treatment Facility	Report		gal/mo	Estimate	Continuous	Monthly Total
51925	SSO, Dry Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51925	SSO, Dry Weather	Report		occur/12 Mo Cumulative Total	Calculated	Continuous	Total
51925	SSO, Dry Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report		occur/mo	Occurrences	Continuous	Monthly Total
51927	Release [Sewer], Dry Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51926	SSO, Wet Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51926	SSO, Wet Weather	Report		occur/12 Mo Cumulative Total	Calculated	Continuous	Total
51926	SSO, Wet Weather	<=	0	occur/mo	Occurrences	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report		gal/mo	Estimate	Continuous	Monthly Total
51928	Release [Sewer], Wet Weather	Report		occur/mo	Occurrences	Continuous	Monthly Total

Note: Weekly limitations on BOD<sub>5</sub> 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<sub>5</sub> 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<sub>5</sub> 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<sub>5</sub>, TSS, DISSOLVED OXYGEN, AND PERCENT REMOVALS REQUIREMENTS**

- a. 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. Additionally, the breakdown of ammonia into other forms of nitrogen also requires oxygen and therefore exerts an oxygen demand on receiving wastewaters. Due to the large dilution provided by the Mississippi River, estimated at 474:1 (for 7Q10 flow of 63,985 MGD: STP design flow of 135 MGD), no adverse dissolved oxygen impacts are anticipated..

Under 40 CFR 133.103(b) Industrial Waste, for certain industrial categories, the discharge to navigable waters of BOD<sub>5</sub> and TSS permitted under sections 301(b)(1)(A)(i), (b)(2)(E) or 306 of the Clean Water Act may be less stringent than the values given in 40 CFR 133.102.

Therefore, due to the permittee's input from industries subject to categorical standards, the permittee previously requested, and received, a federal secondary standards variance pursuant to 40 CFR 133.102. As shown in **Appendix 3** (Calculations – Variances From Federal Secondary Treatment Standards for Effluent BOD<sub>5</sub> and TSS), for the renewed permit the variance calculations have been done using current data from the pretreatment staff and the revised permit application. Under current conditions, in accordance with federal regulations, none of the industrial categories qualify for consideration of a variance for BOD<sub>5</sub> and TSS limitations (see **Appendix 3** for details and calculations). As such the renewed permit will contain secondary treatment limitations in accordance with State Rule 0400-40-05-.09(1)(a) [excerpt from rule shown below]. Sample type will remain as composite.

- (a) Municipal and domestic wastewater treatment plants shall be limited by application of monthly average concentrations, weekly average concentrations, daily maximum amounts, and daily maximum concentrations of the 5 day, 20°C biochemical or carbonaceous biochemical oxygen demand (BOD<sub>5</sub> or CBOD<sub>5</sub>) and suspended solids. In some cases, the daily maximum amount may be replaced by a minimum daily percent removal requirement. Limitations on chlorine residual may be required to prevent harmful amounts of chlorine discharge to the receiving waters. In addition, where harmful materials are acquired in a collection system, effluent limitations applicable to the treatment system will be required for such parameters.

1. Conventional Secondary Treatment Plants

Parameter	Monthly Average (mg/l)	Weekly Average (mg/l)	Daily Maximum (mg/l)	Monthly Average % Removal
BOD <sub>5</sub> or CBOD <sub>5</sub>	30/25	40/35	45/40	85
TSS	30	40	45	85

The concentration of settleable solids shall not exceed 1.0 ml/l as measured by the standard one-hour Imhoff cone test.

- b. The dissolved oxygen (D.O.) effluent limitation of 1.0 mg/l (daily minimum on an instantaneous basis) from the current NPDES permit is retained in the new permit. The new permit requires that grab samples be taken to check for D.O. compliance.

## 6.2. TOTAL NITROGEN AND TOTAL PHOSPHOROUS 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 monthly 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>.

## 6.4. *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.

**6.5. 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.

However, for this facility the previous permit calculated the dilution ratio to be 522:1. Using current flow data the estimated dilution ratio is >750:1. The previous permit’s Rationale noted that the permittee submitted its biomonitoring LC<sub>50</sub> and NOEC results for its treated effluent consistent with its permit. Some acute aquatic toxicity was demonstrated, with 96-hour LC<sub>50</sub> values of 70.7% for water fleas, and 45.1% for fathead minnows. Due to the type of treatment system used and the large amounts of diverse industrial wastewaters treated, more acute toxicity was expected.

For its permit renewal application for the 2011 issued permit, the permittee completed the four treated effluent IC<sub>25</sub> tests. The permittee’s treated effluent IC<sub>25</sub> results demonstrated some chronic toxicity, with IC<sub>25</sub> values reported ranging from 30.3 to 36.4% for water fleas to 11.2 to 47.7% for fathead minnows.

Included in the permit application for permit renewal, the permittee included four treated effluent IC<sub>25</sub> tests with results as follows:

Date Submitted	<i>Ceriodaphnia dubia</i> IC <sub>25</sub>	Fathead Minnow IC <sub>25</sub>
03/30/2015	>100%	>100%
04/29/2016	48.15%	43.31%
05/31/2016	26.9%	54.5%
06/27/2016	20.46%	29.44%

While these tests indicate the presence of some toxics, as would be expected, a dilution ration of 5:1 or greater would be needed to offset any potentially toxic impacts. Since the dilution ratio is approximately 100 times greater than needed, there is no reasonable potential for adverse toxic stream impacts from this discharge.

The renewed permit will continue to have Acute Aquatic Toxicity-48 hour LC<sub>50</sub> requirements on an annual basis; however, a 24-hour flow proportionate composite sample will be required in lieu of four grab samples.

#### 6.6. 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 annual report data does not indicate that the potential exists for the water quality criteria for any parameter to be exceeded. Appendix 4 lists the metal and toxic parameters calculations and the procedure used to derive the results.

#### 6.7. 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:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$

where:

C <sub>m</sub>	=	resulting in-stream concentration after mixing
C <sub>w</sub>	=	concentration of pollutant in wastewater
C <sub>s</sub>	=	stream background concentration
Q <sub>w</sub>	=	wastewater flow, (STP design flow)
Q <sub>s</sub>	=	stream low flow

**to protect water quality:**

$$C_w \leq C_a$$

where:

$$\begin{aligned} C_a &= \text{STP effluent concentration allowable} \\ &= \frac{(S_A) [C_m (Q_s + Q_w) - Q_s C_s]}{Q_w} \end{aligned}$$

and  $(S_A)$  = the percent "Stream Allocation".

The reasonable potential evaluation uses the following assumptions and procedures:

- a. Stream background concentrations,  $C_s$ , 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 50% 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,  $C_w$ , 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.

**6.8. 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.

**7.1. CERTIFIED WASTEWATER TREATMENT OPERATOR**

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

### **7.3. PRETREATMENT PROGRAM**

The City of Memphis - Maynard C. Stiles STP North Plant 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.

### **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 be 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

This permit is being reissued for **3** years, since there has been a two-year delay in reissuance.

## 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](mailto: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>.

## 5. 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#**TN08010100001\_1000**



The Department has made a determination of the receiving waters associated with the subject discharge and has found the Mississippi River at mile 738.8 (Watershed Group: Mississippi, Hydrocode: 08010100) to be an Exceptional Tennessee Water due to the Federal Endangered Pallid Sturgeon and Tennessee Threatened Blue Sucker Fish Species. No permanent degradation of water quality 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).

The Department has made a determination of the receiving waters associated with the subject discharge and has found the receiving stream to be:

- Not Supporting for Fish and Aquatic Life due to physical substrate habitat alteration.
- Not supporting for Recreation due to Mercury, PCBs, Dioxin and Chlordane.

The Department has maintained, and shall continue to assess, the water quality of the Mississippi River to assure that the water quality is adequate to protect the existing uses of the stream fully, and to assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

TMDLs have been developed and approved for this waterbody segment on the following parameters and dates:

<b>PARAMETER</b>	<b>APPROVED DATE (EPA-R4)</b>
<b>Chlordane</b>	<b>July 25, 2008</b>
<b>Dioxins</b>	<b>July 25, 2008</b>
<b>Polychlorinated Biphenyls (PCBs)</b>	<b>July 25, 2008</b>

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

**APPENDIX 1  
 PREVIOUS PERMIT LIMITS**

Maynard C. Stiles STP (TN0020711) - Outfall 001 Discharge Effluent Limitations and Monitoring Requirements

Effluent Characteristic	Effluent Limitations								Monitoring Requirements		
	Monthly			Weekly		Daily			Measurement Frequency	Sample Type	Sample Point
	Average (mg/l)	Average (lb/day)	Removal (%)	Average (mg/l)	Average (lb/day)	Maximum (mg/l)	Minimum	Removal (%)			
BOD <sub>5</sub>	43.1	Report	85	64.7	Report	86.1		40	Daily	composite	effluent
	Report					Report			Daily	composite	influent
Total Suspended Solids (TSS)	52	Report	85	78	Report	104		40	Daily	composite	effluent
	Report					Report			Daily	composite	influent
Ammonia-Nitrogen (as N)	Report	Report				Report			Monthly	composite	effluent
Total Nitrogen (as N)	Report	Report	Report			Report			Monthly	composite	effluent
	Report	Report				Report			Monthly	composite	influent
Total Phosphorus (as P)	Report	Report	Report			Report			Monthly	composite	effluent
	Report	Report				Report			Monthly	composite	influent
<i>E. coli</i> , cfu/100 ml (a) - during compliance schedule	Report					Report			Daily	grab	effluent
<i>E. coli</i> , cfu/100 ml (a) - following compliance schedule	126					487			Daily	grab	effluent
Total Residual Chlorine (TRC) or Total Residual Oxidant (TRO) (b)						2.0			Daily	grab	effluent
Settleable Solids (ml/l)						1.0			Daily	composite	effluent
Dissolved Oxygen (mg/l)							1.0		Daily	grab	effluent
pH (standard units)						9.0	6.0		Daily	grab	effluent

- (a) The permittee must comply with the *E. coli* limits following the compliance schedule presented in section 3.6 of this permit.
- (b) The TRC limit will be applicable if and when the permittee installs/operates a chlorination disinfection system. If a TRO system is installed/operated for disinfection, the division will reopen the permit to include an applicable TRO limit.

Maynard C. Stiles STP (TN0020711) - Outfall 001 Discharge Effluent Limitations and Monitoring Requirements (Continued)

Effluent Characteristic	Effluent Limitations								Monitoring Requirements		
	Monthly			Weekly		Daily			Measurement Frequency	Sample Type	Sample Point
	Average (mg/l)	Average (lb/day)	Removal (%)	Average (mg/l)	Average (lb/day)	Maximum (mg/l)	Minimum	Removal (%)			
Organic Pesticide Chemicals (c)	Report					Report			Annually	composite	effluent
Total Dioxin	0.000000001					0.000000001			Annually	grab	effluent
Total Polychlorinated Biphenyls (PCBs)	0.00000064					0.00000064			Annually	composite	effluent
Total Chlordane	0.0000081					0.0000081			Annually	composite	effluent
Total Mercury	Report					Report			Annually	composite	effluent
Methyl Mercury	Report					Report			Annually	grab	effluent
Benzidine	Report					Report			Annually	grab	effluent
Hexachlorobenzene	Report					Report			Annually	grab	effluent
Acute Aquatic Toxicity - 48 hour LC <sub>50</sub> (d)	Report (Survival for serial effluent dilutions)								Annually	grab	effluent
Outfall Observation, Visual (e)									Daily	visual	effluent
Flow (MGD)	Report			Report		Report			Daily	continuous	influent
	Report			Report		Report			Daily	continuous	effluent
Sanitary Sewer Overflows, Total Occurrences	Report								continuous	visual	NA
Dry Weather Overflows, Total Occurrences	Report								continuous	visual	NA
Sewer Backups in Buildings, Total Occurrences	Report								continuous	visual	NA
Bypass of Treatment, Total Occurrences	Report								continuous	visual	NA

(c) The permittee shall also report the individual organic pesticide chemicals (4,4'-DDD; 4,4'DDE; aldrin; endosulfan I, endosulfan II; endrin; gamma-BHC (Lindane); heptachlor epoxide; heptachlor; PCBs, total; total chlordane; toxaphene; DDT; and dieldrin).

(d) Per Section 3.4.

(e) Permittee shall complete its visual observations pursuant to Section 3.5 of this permit

## APPENDIX 2

### Discharge Monitoring Report and Effluent Violations Summary

Effluent Violations										
Monitoring Period End Date	Limit Set	Parameter	Mon. Loc.	Seas. ID	SNC Group	EA Identifier	Value Type/ Stat. Base	Reported Value/Units	% Exceed.	Limit Value/Units
03/31/2018	001-G	00310 - BOD, 5-day, 20 deg. C	1	0	1		C2 WKLY AVG	67.9 mg/l	5%	<=64.7 mg/l
03/31/2018	001-G	00310 - BOD, 5-day, 20 deg. C	1	0	1		C3 DAILY MX	115 mg/l	34%	<=86.1 mg/l
03/31/2018	001-G	81010 - BOD, 5-day, percent removal	K	0	1		C2 MO AV MN	82 %	20%	>=85 %
03/31/2018	001-G	81011 - Solids, suspended percent removal	K	0	1		C1 DAILY MN	-77 %	195%	>=40 %
03/31/2018	001-G	81011 - Solids, suspended percent removal	K	0	1		C2 MO AV MN	76 %	60%	>=85 %
01/31/2018	001-G	00310 - BOD, 5-day, 20 deg. C	1	0	1		C3 DAILY MX	102 mg/l	18%	<=86.1 mg/l
09/30/2017	001-G	00545 - Solids, settleable	1	0	1		C3 DAILY MX	1.5 ml/l	50%	<=1 ml/l
07/31/2017	001-G	39516 - Polychlorinated biphenyls [PCBs]	1	0	2		C1 MO AVG	.000009 mg/l	1,275%	<= .000001 mg/l
07/31/2017	001-G	39516 - Polychlorinated biphenyls [PCBs]	1	0	2		C3 DAILY MX	.000009 mg/l	1,275%	<= .000001 mg/l
05/31/2017	001-G	81010 - BOD, 5-day, percent removal	K	0	1		C2 MO AV MN	84 %	7%	>=85 %
05/31/2017	001-G	81011 - Solids, suspended percent removal	K	0	1		C2 MO AV MN	83 %	13%	>=85 %
05/31/2016	001-G	39516 - Polychlorinated biphenyls [PCBs]	1	0	2		C1 MO AVG	.000004 mg/l	588%	<= .000001 mg/l
05/31/2016	001-G	39516 - Polychlorinated biphenyls [PCBs]	1	0	2		C3 DAILY MX	.000004 mg/l	588%	<= .000001 mg/l
03/31/2016	001-G	51032 - Chlordane	1	0			C1	<.00004	394%	<= .000008
03/31/2016	001-G	51032 - Chlordane	1	0			C3	<.00004	394%	<= .000008

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Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
D.O.	mg/L	6.4	09/30/2016	=	1.	INST MIN
D.O.	mg/L	7.6	10/31/2016	=	1.	INST MIN
D.O.	mg/L	7.7	11/30/2016	=	1.	INST MIN
D.O.	mg/L	5.9	12/31/2016	=	1.	INST MIN
D.O.	mg/L	8.1	01/31/2017	=	1.	INST MIN
D.O.	mg/L	8.4	02/28/2017	=	1.	INST MIN
D.O.	mg/L	8.1	03/31/2017	=	1.	INST MIN
D.O.	mg/L	7.8	04/30/2017	=	1.	INST MIN
D.O.	mg/L	6.2	05/31/2017	=	1.	INST MIN
D.O.	mg/L	7.5	06/30/2017	=	1.	INST MIN
D.O.	mg/L	7.5	07/31/2017	=	1.	INST MIN
D.O.	mg/L	7.3	08/31/2017	=	1.	INST MIN
D.O.	mg/L	6.5	09/30/2017	=	1.	INST MIN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
D.O.	mg/L	7.	10/31/2017	=	1.	INST MIN
D.O.	mg/L	6.8	11/30/2017	=	1.	INST MIN
D.O.	mg/L	7.5	12/31/2017	=	1.	INST MIN
D.O.	mg/L	7.1	01/31/2018	=	1.	INST MIN
D.O.	mg/L	6.2	02/28/2018	=	1.	INST MIN
D.O.	mg/L	5.4	03/31/2018	=	1.	INST MIN
D.O.	mg/L	7.3	04/30/2018	=	1.	INST MIN
D.O.	mg/L	6.3	05/31/2018	=	1.	INST MIN
D.O.	mg/L	6.6	06/30/2018	=	1.	INST MIN
D.O.	mg/L	6.3	07/31/2018	=	1.	INST MIN
D.O.	mg/L	5.7	08/31/2018	=	1.	INST MIN
D.O.	mg/L	6.8	09/30/2018	=	1.	INST MIN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	lb/d	13735.	10/31/2016	=		MO AVG
BOD5	lb/d	15477.	10/31/2016	=		WKLY AVG
BOD5	mg/L	27.6	11/30/2016	=	43.1	MO AVG
BOD5	mg/L	31.7	11/30/2016	=	64.7	WKLY AVG
BOD5	mg/L	60.	11/30/2016	=	86.1	DAILY MX
BOD5	lb/d	16386.	11/30/2016	=		MO AVG
BOD5	lb/d	19364.	11/30/2016	=		WKLY AVG
BOD5	mg/L	25.	12/31/2016	=	43.1	MO AVG
BOD5	mg/L	38.1	12/31/2016	=	64.7	WKLY AVG
BOD5	mg/L	57.	12/31/2016	=	86.1	DAILY MX
BOD5	lb/d	14688.	12/31/2016	=		MO AVG
BOD5	lb/d	23566.	12/31/2016	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	mg/L	34.3	01/31/2017	=	43.1	MO AVG
BOD5	mg/L	40.7	01/31/2017	=	64.7	WKLY AVG
BOD5	mg/L	53.	01/31/2017	=	86.1	DAILY MX
BOD5	lb/d	20420.	01/31/2017	=		MO AVG
BOD5	lb/d	23774.	01/31/2017	=		WKLY AVG
BOD5	mg/L	38.7	02/28/2017	=	43.1	MO AVG
BOD5	mg/L	46.4	02/28/2017	=	64.7	WKLY AVG
BOD5	mg/L	61.	02/28/2017	=	86.1	DAILY MX
BOD5	lb/d	21047.	02/28/2017	=		MO AVG
BOD5	lb/d	26820.	02/28/2017	=		WKLY AVG
BOD5	mg/L	35.9	03/31/2017	=	43.1	MO AVG
BOD5	mg/L	37.3	03/31/2017	=	64.7	WKLY AVG
BOD5	mg/L	66.	03/31/2017	=	86.1	DAILY MX
BOD5	lb/d	20872.	03/31/2017	=		MO AVG
BOD5	lb/d	22281.	03/31/2017	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	mg/L	35.4	04/30/2017	=	43.1	MO AVG
BOD5	mg/L	45.6	04/30/2017	=	64.7	WKLY AVG
BOD5	mg/L	63.	04/30/2017	=	86.1	DAILY MX
BOD5	lb/d	21458.	04/30/2017	=		MO AVG
BOD5	lb/d	24706.	04/30/2017	=		WKLY AVG
BOD5	mg/L	30.8	05/31/2017	=	43.1	MO AVG
BOD5	mg/L	38.	05/31/2017	=	64.7	WKLY AVG
BOD5	mg/L	56.	05/31/2017	=	86.1	DAILY MX
BOD5	lb/d	36819.	05/31/2017	=		MO AVG
BOD5	lb/d	47548.	05/31/2017	=		WKLY AVG
BOD5	mg/L	28.3	06/30/2017	=	43.1	MO AVG
BOD5	mg/L	34.1	06/30/2017	=	64.7	WKLY AVG
BOD5	mg/L	45.	06/30/2017	=	86.1	DAILY MX
BOD5	lb/d	19331.	06/30/2017	=		MO AVG
BOD5	lb/d	25150.	06/30/2017	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	mg/L	34.4	07/31/2017	=	43.1	MO AVG
BOD5	mg/L	48.	07/31/2017	=	64.7	WKLY AVG
BOD5	mg/L	66.	07/31/2017	=	86.1	DAILY MX
BOD5	lb/d	20310.	07/31/2017	=		MO AVG
BOD5	lb/d	27273.	07/31/2017	=		WKLY AVG
BOD5	mg/L	26.	08/31/2017	=	43.1	MO AVG
BOD5	mg/L	30.6	08/31/2017	=	64.7	WKLY AVG
BOD5	mg/L	42.	08/31/2017	=	86.1	DAILY MX
BOD5	lb/d	15615.	08/31/2017	=		MO AVG
BOD5	lb/d	17276.	08/31/2017	=		WKLY AVG
BOD5	mg/L	29.9	09/30/2017	=	43.1	MO AVG
BOD5	mg/L	35.9	09/30/2017	=	64.7	WKLY AVG
BOD5	mg/L	44.	09/30/2017	=	86.1	DAILY MX
BOD5	lb/d	17267.	09/30/2017	=		MO AVG
BOD5	lb/d	21704.	09/30/2017	=		WKLY AVG

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Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	mg/L	21.	04/30/2018	=	43.1	MO AVG
BOD5	mg/L	24.9	04/30/2018	=	64.7	WKLY AVG
BOD5	mg/L	41.	04/30/2018	=	86.1	DAILY MX
BOD5	lb/d	15750.	04/30/2018	=		MO AVG
BOD5	lb/d	22040.	04/30/2018	=		WKLY AVG
BOD5	mg/L	29.7	05/31/2018	=	43.1	MO AVG
BOD5	mg/L	37.9	05/31/2018	=	64.7	WKLY AVG
BOD5	mg/L	58.	05/31/2018	=	86.1	DAILY MX
BOD5	lb/d	19222.	05/31/2018	=		MO AVG
BOD5	lb/d	24649.	05/31/2018	=		WKLY AVG
BOD5	mg/L	33.6	06/30/2018	=	43.1	MO AVG
BOD5	mg/L	43.6	06/30/2018	=	64.7	WKLY AVG
BOD5	mg/L	61.	06/30/2018	=	86.1	DAILY MX
BOD5	lb/d	20220.	06/30/2018	=		MO AVG
BOD5	lb/d	26773.	06/30/2018	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5	mg/L	26.3	07/31/2018	=	43.1	MO AVG
BOD5	mg/L	35.7	07/31/2018	=	64.7	WKLY AVG
BOD5	mg/L	71.	07/31/2018	=	86.1	DAILY MX
BOD5	lb/d	15537.	07/31/2018	=		MO AVG
BOD5	lb/d	22225.	07/31/2018	=		WKLY AVG
BOD5	mg/L	35.8	08/31/2018	=	43.1	MO AVG
BOD5	mg/L	37.7	08/31/2018	=	64.7	WKLY AVG
BOD5	mg/L	58.	08/31/2018	=	86.1	DAILY MX
BOD5	lb/d	21010.	08/31/2018	=		MO AVG
BOD5	lb/d	21508.	08/31/2018	=		WKLY AVG
BOD5	mg/L	32.2	09/30/2018	=	43.1	MO AVG
BOD5	mg/L	41.	09/30/2018	=	64.7	WKLY AVG
BOD5	mg/L	48.	09/30/2018	=	86.1	DAILY MX
BOD5	lb/d	19662.	09/30/2018	=		MO AVG
BOD5	lb/d	25256.	09/30/2018	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
pH	SU	7.06	09/30/2016	=	6.	MINIMUM
pH	SU	7.78	09/30/2016	=	9.	MAXIMUM
pH	SU	6.98	10/31/2016	=	6.	MINIMUM
pH	SU	7.58	10/31/2016	=	9.	MAXIMUM
pH	SU	7.17	11/30/2016	=	6.	MINIMUM
pH	SU	7.66	11/30/2016	=	9.	MAXIMUM
pH	SU	7.11	12/31/2016	=	6.	MINIMUM
pH	SU	7.5	12/31/2016	=	9.	MAXIMUM
pH	SU	7.11	01/31/2017	=	6.	MINIMUM
pH	SU	7.67	01/31/2017	=	9.	MAXIMUM
pH	SU	7.14	02/28/2017	=	6.	MINIMUM
pH	SU	7.76	02/28/2017	=	9.	MAXIMUM
pH	SU	7.14	03/31/2017	=	6.	MINIMUM
pH	SU	8.21	03/31/2017	=	9.	MAXIMUM
pH	SU	7.02	04/30/2017	=	6.	MINIMUM
pH	SU	7.56	04/30/2017	=	9.	MAXIMUM

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
pH	SU	6.75	05/31/2017	=	6.	MINIMUM
pH	SU	7.49	05/31/2017	=	9.	MAXIMUM
pH	SU	7.08	06/30/2017	=	6.	MINIMUM
pH	SU	7.61	06/30/2017	=	9.	MAXIMUM
pH	SU	7.19	07/31/2017	=	6.	MINIMUM
pH	SU	7.52	07/31/2017	=	9.	MAXIMUM
pH	SU	7.2	08/31/2017	=	6.	MINIMUM
pH	SU	7.9	08/31/2017	=	9.	MAXIMUM
pH	SU	7.14	09/30/2017	=	6.	MINIMUM
pH	SU	7.62	09/30/2017	=	9.	MAXIMUM
pH	SU	7.07	10/31/2017	=	6.	MINIMUM
pH	SU	7.51	10/31/2017	=	9.	MAXIMUM
pH	SU	7.07	11/30/2017	=	6.	MINIMUM
pH	SU	7.52	11/30/2017	=	9.	MAXIMUM
pH	SU	6.84	12/31/2017	=	6.	MINIMUM
pH	SU	7.49	12/31/2017	=	9.	MAXIMUM

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
pH	SU	6.92	01/31/2018	=	6.	MINIMUM
pH	SU	7.51	01/31/2018	=	9.	MAXIMUM
pH	SU	6.81	02/28/2018	=	6.	MINIMUM
pH	SU	7.89	02/28/2018	=	9.	MAXIMUM
pH	SU	6.32	03/31/2018	=	6.	MINIMUM
pH	SU	7.43	03/31/2018	=	9.	MAXIMUM
pH	SU	6.81	04/30/2018	=	6.	MINIMUM
pH	SU	7.49	04/30/2018	=	9.	MAXIMUM
pH	SU	7.04	05/31/2018	=	6.	MINIMUM
pH	SU	8.41	05/31/2018	=	9.	MAXIMUM

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
pH	SU	7.1	06/30/2018	=	6.	MINIMUM
pH	SU	8.18	06/30/2018	=	9.	MAXIMUM
pH	SU	7.15	07/31/2018	=	6.	MINIMUM
pH	SU	7.65	07/31/2018	=	9.	MAXIMUM
pH	SU	7.16	08/31/2018	=	6.	MINIMUM
pH	SU	7.49	08/31/2018	=	9.	MAXIMUM
pH	SU	6.85	09/30/2018	=	6.	MINIMUM
pH	SU	7.43	09/30/2018	=	9.	MAXIMUM

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Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	22.	09/30/2016	=	52.	MO AVG
TSS	mg/L	24.	09/30/2016	=	78.	WKLY AVG
TSS	mg/L	41.	09/30/2016	=	104.	DAILY MX
TSS	lb/d	12425.	09/30/2016	=		MO AVG
TSS	lb/d	13690.	09/30/2016	=		WKLY AVG
TSS	mg/L	25.	10/31/2016	=	52.	MO AVG
TSS	mg/L	29.	10/31/2016	=	78.	WKLY AVG
TSS	mg/L	40.	10/31/2016	=	104.	DAILY MX
TSS	lb/d	13269.	10/31/2016	=		MO AVG
TSS	lb/d	15637.	10/31/2016	=		WKLY AVG
TSS	mg/L	31.	11/30/2016	=	52.	MO AVG
TSS	mg/L	37.	11/30/2016	=	78.	WKLY AVG
TSS	mg/L	57.	11/30/2016	=	104.	DAILY MX
TSS	lb/d	18029.	11/30/2016	=		MO AVG
TSS	lb/d	21858.	11/30/2016	=		WKLY AVG
TSS	mg/L	28.	12/31/2016	=	52.	MO AVG
TSS	mg/L	33.	12/31/2016	=	78.	WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	50.	12/31/2016	=	104.	DAILY MX
TSS	lb/d	16529.	12/31/2016	=		MO AVG
TSS	lb/d	19949.	12/31/2016	=		WKLY AVG
TSS	mg/L	36.	01/31/2017	=	52.	MO AVG
TSS	mg/L	42.	01/31/2017	=	78.	WKLY AVG
TSS	mg/L	50.	01/31/2017	=	104.	DAILY MX
TSS	lb/d	21060.	01/31/2017	=		MO AVG
TSS	lb/d	24563.	01/31/2017	=		WKLY AVG
TSS	mg/L	43.	02/28/2017	=	52.	MO AVG
TSS	mg/L	50.	02/28/2017	=	78.	WKLY AVG
TSS	mg/L	72.	02/28/2017	=	104.	DAILY MX
TSS	lb/d	23247.	02/28/2017	=		MO AVG
TSS	lb/d	28829.	02/28/2017	=		WKLY AVG
TSS	mg/L	38.	03/31/2017	=	52.	MO AVG
TSS	mg/L	40.	03/31/2017	=	78.	WKLY AVG
TSS	mg/L	72.	03/31/2017	=	104.	DAILY MX
TSS	lb/d	21719.	03/31/2017	=		MO AVG
TSS	lb/d	22732.	03/31/2017	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	41.	04/30/2017	=	52.	MO AVG
TSS	mg/L	56.	04/30/2017	=	78.	WKLY AVG
TSS	mg/L	75.	04/30/2017	=	104.	DAILY MX
TSS	lb/d	24838.	04/30/2017	=		MO AVG
TSS	lb/d	33724.	04/30/2017	=		WKLY AVG
TSS	mg/L	38.	05/31/2017	=	52.	MO AVG
TSS	mg/L	48.	05/31/2017	=	78.	WKLY AVG
TSS	mg/L	68.	05/31/2017	=	104.	DAILY MX
TSS	lb/d	44924.	05/31/2017	=		MO AVG
TSS	lb/d	60136.	05/31/2017	=		WKLY AVG
TSS	mg/L	30.	06/30/2017	=	52.	MO AVG
TSS	mg/L	44.	06/30/2017	=	78.	WKLY AVG
TSS	mg/L	62.	06/30/2017	=	104.	DAILY MX
TSS	lb/d	21048.	06/30/2017	=		MO AVG
TSS	lb/d	34335.	06/30/2017	=		WKLY AVG
TSS	mg/L	35.	07/31/2017	=	52.	MO AVG
TSS	mg/L	53.	07/31/2017	=	78.	WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	65.	07/31/2017	=	104.	DAILY MX
TSS	lb/d	20464.	07/31/2017	=		MO AVG
TSS	lb/d	30030.	07/31/2017	=		WKLY AVG
TSS	mg/L	25.	08/31/2017	=	52.	MO AVG
TSS	mg/L	29.	08/31/2017	=	78.	WKLY AVG
TSS	mg/L	50.	08/31/2017	=	104.	DAILY MX
TSS	lb/d	14790.	08/31/2017	=		MO AVG
TSS	lb/d	16496.	08/31/2017	=		WKLY AVG
TSS	mg/L	33.	09/30/2017	=	52.	MO AVG
TSS	mg/L	44.	09/30/2017	=	78.	WKLY AVG
TSS	mg/L	82.	09/30/2017	=	104.	DAILY MX
TSS	lb/d	19014.	09/30/2017	=		MO AVG
TSS	lb/d	23793.	09/30/2017	=		WKLY AVG
TSS	mg/L	27.	10/31/2017	=	52.	MO AVG
TSS	mg/L	35.	10/31/2017	=	78.	WKLY AVG
TSS	mg/L	46.	10/31/2017	=	104.	DAILY MX
TSS	lb/d	14002.	10/31/2017	=		MO AVG
TSS	lb/d	16896.	10/31/2017	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	27.	11/30/2017	=	52.	MO AVG
TSS	mg/L	29.	11/30/2017	=	78.	WKLY AVG
TSS	mg/L	48.	11/30/2017	=	104.	DAILY MX
TSS	lb/d	14347.	11/30/2017	=		MO AVG
TSS	lb/d	15665.	11/30/2017	=		WKLY AVG
TSS	mg/L	25.	12/31/2017	=	52.	MO AVG
TSS	mg/L	34.	12/31/2017	=	78.	WKLY AVG
TSS	mg/L	89.	12/31/2017	=	104.	DAILY MX
TSS	lb/d	14479.	12/31/2017	=		MO AVG
TSS	lb/d	18679.	12/31/2017	=		WKLY AVG
TSS	mg/L	33.	01/31/2018	=	52.	MO AVG
TSS	mg/L	52.	01/31/2018	=	78.	WKLY AVG
TSS	mg/L	97.	01/31/2018	=	104.	DAILY MX
TSS	lb/d	19319.	01/31/2018	=		MO AVG
TSS	lb/d	32253.	01/31/2018	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	35.	02/28/2018	=	52.	MO AVG
TSS	mg/L	39.	02/28/2018	=	78.	WKLY AVG
TSS	mg/L	60.	02/28/2018	=	104.	DAILY MX
TSS	lb/d	26801.	02/28/2018	=		MO AVG
TSS	lb/d	24100.	02/28/2018	=		WKLY AVG
TSS	mg/L	34.	03/31/2018	=	52.	MO AVG
TSS	mg/L	43.	03/31/2018	=	78.	WKLY AVG
TSS	mg/L	68.	03/31/2018	=	104.	DAILY MX
TSS	lb/d	28345.	03/31/2018	=		MO AVG
TSS	lb/d	47551.	03/31/2018	=		WKLY AVG
TSS	mg/L	20.	04/30/2018	=	52.	MO AVG
TSS	mg/L	26.	04/30/2018	=	78.	WKLY AVG
TSS	mg/L	38.	04/30/2018	=	104.	DAILY MX
TSS	lb/d	15229.	04/30/2018	=		MO AVG
TSS	lb/d	21862.	04/30/2018	=		WKLY AVG

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Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	28.	05/31/2018	=	52.	MO AVG
TSS	mg/L	34.	05/31/2018	=	78.	WKLY AVG
TSS	mg/L	64.	05/31/2018	=	104.	DAILY MX
TSS	lb/d	17735.	05/31/2018	=		MO AVG
TSS	lb/d	22374.	05/31/2018	=		WKLY AVG
TSS	mg/L	39.	06/30/2018	=	52.	MO AVG
TSS	mg/L	63.	06/30/2018	=	78.	WKLY AVG
TSS	mg/L	93.	06/30/2018	=	104.	DAILY MX
TSS	lb/d	23219.	06/30/2018	=		MO AVG
TSS	lb/d	38614.	06/30/2018	=		WKLY AVG
TSS	mg/L	24.	07/31/2018	=	52.	MO AVG
TSS	mg/L	40.	07/31/2018	=	78.	WKLY AVG
TSS	mg/L	62.	07/31/2018	=	104.	DAILY MX
TSS	lb/d	13997.	07/31/2018	=		MO AVG
TSS	lb/d	24823.	07/31/2018	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS	mg/L	33.	08/31/2018	=	52.	MO AVG
TSS	mg/L	40.	08/31/2018	=	78.	WKLY AVG
TSS	mg/L	55.	08/31/2018	=	104.	DAILY MX
TSS	lb/d	19073.	08/31/2018	=		MO AVG
TSS	lb/d	22864.	08/31/2018	=		WKLY AVG
TSS	mg/L	33.	09/30/2018	=	52.	MO AVG
TSS	mg/L	43.	09/30/2018	=	78.	WKLY AVG
TSS	mg/L	54.	09/30/2018	=	104.	DAILY MX
TSS	lb/d	20071.	09/30/2018	=		MO AVG
TSS	lb/d	26590.	09/30/2018	=		WKLY AVG

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
Sett. Solids	mL/L	.1	09/30/2016	<	1.	DAILY MX
Sett. Solids	mL/L	.1	10/31/2016	<	1.	DAILY MX
Sett. Solids	mL/L	.1	11/30/2016	<	1.	DAILY MX
Sett. Solids	mL/L	.5	12/31/2016	<	1.	DAILY MX
Sett. Solids	mL/L	.1	01/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	02/28/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	03/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	04/30/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	05/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.2	06/30/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	07/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	08/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	1.5	09/30/2017	=	1.	DAILY MX

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
Sett. Solids	mL/L	.2	10/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	11/30/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	12/31/2017	<	1.	DAILY MX
Sett. Solids	mL/L	.1	01/31/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	02/28/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	03/31/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	04/30/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	05/31/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	06/30/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	07/31/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	08/31/2018	<	1.	DAILY MX
Sett. Solids	mL/L	.1	09/30/2018	<	1.	DAILY MX

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
LC50 Static 48Hr Acute Ceriodaphnia	%	100.	06/30/2017	=		VALUE
LC50 Static 48Hr Acute Ceriodaphnia	%	63.05	06/30/2018	=		VALUE
LC50 Static 48Hr Acute Pimephales	%	52.67	06/30/2017	=		VALUE
LC50 Static 48Hr Acute Pimephales	%	23.17	06/30/2018	=		VALUE

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5 % Removal	%	88.	09/30/2016	=	40.	DAILY MN
BOD5 % Removal	%	94.	09/30/2016	=	85.	MO AV MN
BOD5 % Removal	%	88.	10/31/2016	=	40.	DAILY MN
BOD5 % Removal	%	94.	10/31/2016	=	85.	MO AV MN
BOD5 % Removal	%	88.	11/30/2016	=	40.	DAILY MN
BOD5 % Removal	%	94.	11/30/2016	=	85.	MO AV MN
BOD5 % Removal	%	88.	12/31/2016	=	40.	DAILY MN
BOD5 % Removal	%	93.	12/31/2016	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5 % Removal	%	86.	01/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	90.	01/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	88.	02/28/2017	=	40.	DAILY MN
BOD5 % Removal	%	91.	02/28/2017	=	85.	MO AV MN
BOD5 % Removal	%	88.	03/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	92.	03/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	72.	04/30/2017	=	40.	DAILY MN
BOD5 % Removal	%	90.	04/30/2017	=	85.	MO AV MN
BOD5 % Removal	%	73.	05/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	84.	05/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	85.	06/30/2017	=	40.	DAILY MN
BOD5 % Removal	%	92.	06/30/2017	=	85.	MO AV MN
BOD5 % Removal	%	88.	07/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	93.	07/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	92.	08/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	94.	08/31/2017	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5 % Removal	%	83.	09/30/2017	=	40.	DAILY MN
BOD5 % Removal	%	92.	09/30/2017	=	85.	MO AV MN
BOD5 % Removal	%	85.	10/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	93.	10/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	89.	11/30/2017	=	40.	DAILY MN
BOD5 % Removal	%	92.	11/30/2017	=	85.	MO AV MN
BOD5 % Removal	%	87.	12/31/2017	=	40.	DAILY MN
BOD5 % Removal	%	93.	12/31/2017	=	85.	MO AV MN
BOD5 % Removal	%	77.	01/31/2018	=	40.	DAILY MN
BOD5 % Removal	%	91.	01/31/2018	=	85.	MO AV MN
BOD5 % Removal	%	74.	02/28/2018	=	40.	DAILY MN
BOD5 % Removal	%	89.	02/28/2018	=	85.	MO AV MN
BOD5 % Removal	%	50.	03/31/2018	=	40.	DAILY MN
BOD5 % Removal	%	82.	03/31/2018	=	85.	MO AV MN
BOD5 % Removal	%	85.	04/30/2018	=	40.	DAILY MN
BOD5 % Removal	%	94.	04/30/2018	=	85.	MO AV MN



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Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
BOD5 % Removal	%	88.	05/31/2018	=	40.	DAILY MN
BOD5 % Removal	%	94.	05/31/2018	=	85.	MO AV MN
BOD5 % Removal	%	84.	06/30/2018	=	40.	DAILY MN
BOD5 % Removal	%	93.	06/30/2018	=	85.	MO AV MN
BOD5 % Removal	%	87.	07/31/2018	=	40.	DAILY MN
BOD5 % Removal	%	94.	07/31/2018	=	85.	MO AV MN
BOD5 % Removal	%	87.	08/31/2018	=	40.	DAILY MN
BOD5 % Removal	%	93.	08/31/2018	=	85.	MO AV MN
BOD5 % Removal	%	87.	09/30/2018	=	40.	DAILY MN
BOD5 % Removal	%	93.	09/30/2018	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS % Removal	%	89.	09/30/2016	=	40.	DAILY MN
TSS % Removal	%	95.	09/30/2016	=	85.	MO AV MN
TSS % Removal	%	93.	10/31/2016	=	40.	DAILY MN
TSS % Removal	%	95.	10/31/2016	=	85.	MO AV MN
TSS % Removal	%	90.	11/30/2016	=	40.	DAILY MN
TSS % Removal	%	96.	11/30/2016	=	85.	MO AV MN
TSS % Removal	%	88.	12/31/2016	=	40.	DAILY MN
TSS % Removal	%	94.	12/31/2016	=	85.	MO AV MN
TSS % Removal	%	85.	01/31/2017	=	40.	DAILY MN
TSS % Removal	%	90.	01/31/2017	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS % Removal	%	85.	02/28/2017	=	40.	DAILY MN
TSS % Removal	%	92.	02/28/2017	=	85.	MO AV MN
TSS % Removal	%	88.	03/31/2017	=	40.	DAILY MN
TSS % Removal	%	93.	03/31/2017	=	85.	MO AV MN
TSS % Removal	%	79.	04/30/2017	=	40.	DAILY MN
TSS % Removal	%	90.	04/30/2017	=	85.	MO AV MN
TSS % Removal	%	62.	05/31/2017	=	40.	DAILY MN
TSS % Removal	%	83.	05/31/2017	=	85.	MO AV MN
TSS % Removal	%	86.	06/30/2017	=	40.	DAILY MN
TSS % Removal	%	94.	06/30/2017	=	85.	MO AV MN
TSS % Removal	%	85.	07/31/2017	=	40.	DAILY MN
TSS % Removal	%	94.	07/31/2017	=	85.	MO AV MN
TSS % Removal	%	87.	08/31/2017	=	40.	DAILY MN
TSS % Removal	%	95.	08/31/2017	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS % Removal	%	80.	09/30/2017	=	40.	DAILY MN
TSS % Removal	%	92.	09/30/2017	=	85.	MO AV MN
TSS % Removal	%	89.	10/31/2017	=	40.	DAILY MN
TSS % Removal	%	94.	10/31/2017	=	85.	MO AV MN
TSS % Removal	%	88.	11/30/2017	=	40.	DAILY MN
TSS % Removal	%	95.	11/30/2017	=	85.	MO AV MN
TSS % Removal	%	87.	12/31/2017	=	40.	DAILY MN
TSS % Removal	%	94.	12/31/2017	=	85.	MO AV MN
TSS % Removal	%	76.	01/31/2018	=	40.	DAILY MN
TSS % Removal	%	91.	01/31/2018	=	85.	MO AV MN
TSS % Removal	%	72.	02/28/2018	=	40.	DAILY MN
TSS % Removal	%	90.	02/28/2018	=	85.	MO AV MN
TSS % Removal	%	-77.	03/31/2018	=	40.	DAILY MN
TSS % Removal	%	76.	03/31/2018	=	85.	MO AV MN

Parameter	Limit Unit	DMR Value	Monitoring Period End Date	Qualifier	Limit Value	Statistical Base
TSS % Removal	%	89.	04/30/2018	=	40.	DAILY MN
TSS % Removal	%	94.	04/30/2018	=	85.	MO AV MN
TSS % Removal	%	84.	05/31/2018	=	40.	DAILY MN
TSS % Removal	%	95.	05/31/2018	=	85.	MO AV MN
TSS % Removal	%	79.	06/30/2018	=	40.	DAILY MN
TSS % Removal	%	92.	06/30/2018	=	85.	MO AV MN
TSS % Removal	%	88.	07/31/2018	=	40.	DAILY MN
TSS % Removal	%	95.	07/31/2018	=	85.	MO AV MN
TSS % Removal	%	86.	08/31/2018	=	40.	DAILY MN
TSS % Removal	%	93.	08/31/2018	=	85.	MO AV MN
TSS % Removal	%	86.	09/30/2018	=	40.	DAILY MN
TSS % Removal	%	92.	09/30/2018	=	85.	MO AV MN

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
2/29/2016	BOD <sub>5</sub>	43.4 mg/l	1%	<=43.1 mg/l
2/29/2016	BOD <sub>5</sub>	75.4 mg/l	17%	<=64.7 mg/l
2/29/2016	BOD <sub>5</sub>	98 mg/l	14%	<=86.1 mg/l
1/31/2016	BOD <sub>5</sub>	81.5 mg/l	89%	<=43.1 mg/l
1/31/2016	BOD <sub>5</sub>	117 mg/l	81%	<=64.7 mg/l
1/31/2016	BOD <sub>5</sub>	238 mg/l	176%	<=86.1 mg/l
4/30/2015	BOD <sub>5</sub>	62.9 mg/l	46%	<=43.1 mg/l
4/30/2015	BOD <sub>5</sub>	113 mg/l	75%	<=64.7 mg/l
4/30/2015	BOD <sub>5</sub>	156 mg/l	81%	<=86.1 mg/l
3/31/2015	BOD <sub>5</sub>	61.8 mg/l	43%	<=43.1 mg/l
3/31/2015	BOD <sub>5</sub>	82.8 mg/l	28%	<=64.7 mg/l
3/31/2015	BOD <sub>5</sub>	108 mg/l	25%	<=86.1 mg/l
2/28/2015	BOD <sub>5</sub>	50.5 mg/l	17%	<=43.1 mg/l
2/28/2015	BOD <sub>5</sub>	96 mg/l	11%	<=86.1 mg/l

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
11/30/2014	BOD <sub>5</sub>	44 mg/l	2%	<=43.1 mg/l
11/30/2014	BOD <sub>5</sub>	65 mg/l	0%	<=64.7 mg/l
11/30/2014	BOD <sub>5</sub>	113 mg/l	31%	<=86.1 mg/l
5/31/2014	BOD <sub>5</sub>	47 mg/l	9%	<=43.1 mg/l
5/31/2014	BOD <sub>5</sub>	83.4 mg/l	29%	<=64.7 mg/l
5/31/2014	BOD <sub>5</sub>	94 mg/l	9%	<=86.1 mg/l
3/31/2014	BOD <sub>5</sub>	54.9 mg/l	27%	<=43.1 mg/l
3/31/2014	BOD <sub>5</sub>	87 mg/l	34%	<=64.7 mg/l
3/31/2014	BOD <sub>5</sub>	93 mg/l	8%	<=86.1 mg/l
2/28/2014	BOD <sub>5</sub>	54.8 mg/l	27%	<=43.1 mg/l
2/28/2014	BOD <sub>5</sub>	65.1 mg/l	1%	<=64.7 mg/l
2/28/2014	BOD <sub>5</sub>	98 mg/l	14%	<=86.1 mg/l
3/31/2013	BOD <sub>5</sub>	53 mg/l	23%	<=43.1 mg/l
3/31/2013	BOD <sub>5</sub>	74.7 mg/l	15%	<=64.7 mg/l
3/31/2013	BOD <sub>5</sub>	148 mg/l	72%	<=86.1 mg/l
2/28/2013	BOD <sub>5</sub>	52 mg/l	21%	<=43.1 mg/l
2/28/2013	BOD <sub>5</sub>	118 mg/l	37%	<=86.1 mg/l
12/31/2012	BOD <sub>5</sub>	88 mg/l	2%	<=86.1 mg/l
5/31/2012	BOD <sub>5</sub>	43.6 mg/l	1%	<=43.1 mg/l
1/31/2012	BOD <sub>5</sub>	45 mg/l	4%	<=43.1 mg/l
11/30/2011	BOD <sub>5</sub>	48 mg/l	7%	<=45 mg/l

**Exceedances:**

- 35 – BOD<sub>5</sub>
- 7 – BOD, percent removal

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
1/31/2016	BOD, percent removal	10 %	50%	>=40 %
1/31/2016	BOD, percent removal	57 %	187%	>=85 %
4/30/2015	BOD, percent removal	82 %	20%	>=85 %
3/31/2015	BOD, percent removal	39 %	2%	>=40 %
3/31/2015	BOD, percent removal	77 %	53%	>=85 %
5/31/2013	BOD, percent removal	78 %	47%	>=85 %
2/28/2013	BOD, percent removal	84 %	7%	>=85 %

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
1/31/2016	TSS	73 mg/l	40%	<=52 mg/l
1/31/2016	TSS	112 mg/l	44%	<=78 mg/l
1/31/2016	TSS	186 mg/l	79%	<=104 mg/l
4/30/2015	TSS	91 mg/l	75%	<=52 mg/l
4/30/2015	TSS	163 mg/l	109%	<=78 mg/l
4/30/2015	TSS	229 mg/l	120%	<=104 mg/l
3/31/2015	TSS	83 mg/l	60%	<=52 mg/l
3/31/2015	TSS	124 mg/l	59%	<=78 mg/l
3/31/2015	TSS	138 mg/l	33%	<=104 mg/l
11/30/2014	TSS	106 mg/l	2%	<=104 mg/l
2/28/2013	TSS	124 mg/l	19%	<=104 mg/l
3/31/2013	TSS	145 mg/l	39%	<=104 mg/l
12/31/2012	TSS	201 mg/l	93%	<=104 mg/l

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
1/31/2016	TSS, percent removal	5 %	58%	>=40 %
1/31/2016	TSS, percent removal	53 %	213%	>=85 %
4/30/2015	TSS, percent removal	7 %	55%	>=40 %
4/30/2015	TSS, percent removal	73 %	80%	>=85 %
3/31/2015	TSS, percent removal	2 %	63%	>=40 %
3/31/2015	TSS, percent removal	64 %	140%	>=85 %
5/31/2013	TSS, percent removal	80 %	33%	>=85 %
3/31/2013	TSS, percent removal	81 %	27%	>=85 %

Monitoring Period End Date	Parameter	Reported Value/Units	% Exceed.	Limit Value/Units
6/30/2016	Dioxin	5.1 pg/l	2147483650%	<=1 pg/l
5/31/2015	Dioxin	9.5 pg/l	2147483650%	<=1 pg/l
5/31/2016	PCBs	.000004 mg/l	588%	<=.000001 mg/l
5/31/2014	PCBs	.000008 mg/l	1155%	<=.000001 mg/l
3/31/2016	Chlordane	<.00004 mg/l	394%	<=.000008 mg/l
7/31/2015	Chlordane	<.00004 mg/l	394%	<=.000008 mg/l
5/31/2014	Chlordane	<.00004 mg/l	394%	<=.000008 mg/l
9/30/2012	Chlordane	<.000014 mg/l	73%	<=.000008 mg/l
12/31/2015	DDT	<.00004 mg/l	3900%	<=.000001 mg/l
12/31/2015	Dieldrin	<.00004 mg/l	2757%	<=.000001 mg/l
12/31/2012	Settleable Solids	10 ml/l	900%	<=1 ml/l

Exceedances:

- 13 – TSS
- 8 – TSS, percent removal
- 2 – Dioxin
- 2 – PCBs
- 4 – Chlordane
- 1 – DDT
- 1 – Dieldrin
- 1 – Settleable Solids

## APPENDIX 3

### Calculations – Variances From Federal Secondary Treatment Standards for Effluent BOD<sub>5</sub> and TSS.

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40 CFR 133.102 describe the minimum levels of effluent quality attainable by secondary treatment in terms of for BOD<sub>5</sub>, TSS, and pH. All requirements for each parameter shall be achieved except as provided for in §§133.103 and 133.105. The limits for BOD<sub>5</sub> and TSS are:

- 30-day average discharge limit of 30 mg/L
- 7-day average discharge limit of 45 mg/L
- 30-day average percent removal of not less than 85 percent.

Under 40 CFR 133.103(b) *Industrial Waste*, for certain industrial categories, the discharge to navigable waters of BOD and SS permitted under sections 301(b)(1)(A)(i), (b)(2)(E) or 306 of the Clean Water Act may be less stringent than the values given in §§133.102(a)(1), 133.102(a)(4)(i), 133.102(b)(1), 133.105(a)(1), 133.105(b)(1), and 133.105(e)(1)(i). In cases when waste would be introduced from such an industrial category into a publically owned treatment works (POTW), the values for BOD<sub>5</sub> and TSS in §§133.102(a)(1), 133.102(a)(4)(i), 133.102(b)(1), 133.105(a)(1), 133.105(b)(1), and 133.105(e)(1)(i) may be adjusted upward provided that: (1) The permitted discharge of such pollutants, attributable to the industrial category, **would not be greater than that which would be permitted via sections 301(b)(1)(A)(i), 301(b)(2)(E) or 306 of the Clean Water Act if such industrial category were to discharge directly into navigable waters**, and (2) the flow or loading of such pollutants introduced by the industrial category exceeds 10 percent of the design flow or loading of the POTW. When such an adjustment is made, the values for BOD<sub>5</sub> or TSS in §§133.102(a)(2), 133.102(a)(4)(ii), 133.102(b)(2), 133.105(a)(2), 133.105(b)(2), and 133.105(e)(1)(ii) should be adjusted proportionately.

The basis and method of calculation of the renewed permit limits for BOD<sub>5</sub> and TSS will be based on calculations using current data from the design average flow, BOD<sub>5</sub> and TSS for the M.C. Stiles Wastewater Treatment Facility (MCS), Categorical Industrial User (CIU), CIU sewer discharge permits and permit applications, pretreatment information, and applicable 40 CFR subparts. The City of Memphis requested new NPDES permit limits for the seven-day average maximum and monthly average maximum discharge limits for BOD<sub>5</sub> and TSS for the MCS. Since the State regulations per Rule 0400-40-05-.09(1)(a) provide for the daily maximum to be replaced by a minimum daily percent removal, the City requested that the daily maximum permit limits for BOD<sub>5</sub> and TSS be deleted and the minimum daily percent removal be retained. Without waiving such request, in the event the Department seeks to impose a daily maximum effluent limitation for BOD<sub>5</sub> and/or TSS, at a minimum, the daily maximum limit should also be adjusted.

It is important to note that Rule 0400-40-05-.09(1)(a) states that municipal and domestic wastewater treatment plants shall be limited by application of **monthly average** concentrations, **weekly average** concentrations, **daily maximum** amounts, and **daily maximum** concentrations of the 5 day, 20°C biochemical or carbonaceous biochemical oxygen demand (BOD<sub>5</sub> or CBOD<sub>5</sub>) and suspended solids. **In some cases, the daily maximum amount may be replaced by a minimum daily percent removal requirement.** Therefore, the renewed permit will not have a

daily maximum limit for BOD<sub>5</sub> and TSS but retain a minimum daily percent removal requirement of 40%.

### **Consideration of Permit Adjustments for BOD<sub>5</sub> and TSS per 40 CFR Part 133**

The following are the average design treatment capacities for MCS:

- Flow of 135 million gallons per day (MGD)
- BOD loading of 275,000 pounds per day (lbs/day)
- TSS loading of 374,000 lbs/day

Ten percent of the average design treatment capacities for MCS are the following:

- Ten percent of Flow, 13.5 MGD
- Ten percent of BOD loading, 27,500 lbs/day
- Ten percent of TSS loading, 37,400 lbs/day

There are two categories, (1) **40 CFR Part 414-Organic Chemicals, Plastics and Synthetic Fibers (OCPSF)**; and (2) **40 CFR 430-Pulp, Paper and Paperboard** that have an applicable categorical standard and are permitted to discharge to MCS. These, and only these two categories, are thus eligible for consideration under the variance provision.

It is important to understand how the calculations must be done in order to comply with the regulations relative to the variance provision for BOD and TSS. As noted above, the permitted discharge of such pollutants, attributable to the industrial category, would not be greater than that which would be permitted via sections 301(b)(1)(A)(i), 301(b)(2)(E) or 306 of the Clean Water Act if such industrial category were to discharge directly into navigable waters, and (2) the flow or loading of such pollutants introduced by the industrial category exceeds 10 percent of the design flow or loading of the POTW. Therefore, each category and each industry in that category must have limits calculated as if that industry was a direct discharge.

For the 40 CFR Part 414-OCPSF industrial category, the following CIUs and corresponding Subparts were used to determine if the 10% threshold was met:

1. Chemours Company, Subpart H
2. Lucite International\*, Subpart G
3. Pennakem LLC, Subpart H
4. PMC Biogenix Inc., Subpart H

**\*According to Don Hudgins, the calculations presented in the application are based upon the fact that the Lucite International facility discharges into a "Trade Waste Pond" that is managed by Chemours. Flows that come out of this Trade Waste Pond and go to the POTW then fall under Chemour's discharge permit.**

For the 40 CFR 430-Pulp, Paper and Paperboard industrial category, the following CIUs and corresponding Subparts were used to determine if the 10% threshold was met:

1. Memphis Cellulose, Subpart D
2. Cascade Tissue Group-Tennessee, Inc., Subpart I
3. K.T.G. USA, LP, Subpart L

It was noted in the application that in addition to the two (2) industrial categories mentioned above, the American Yeast Corporation Tennessee also triggers the 10% standard for adjustment of municipal permit limits. American Yeast is permitted to discharge 89,000 lbs/day BOD as a monthly average (as well as 133,000 lbs/day BOD as a daily maximum). The monthly average comprises approximately 32% of the Stiles BOD design. As such, the permittee opines that it would be patently unfair to impose secondary treatment technology-based standards upon such substantial industrial loads entering MCS. As provided by 133.103(b), a determination of the applicable BOD and TSS standard that would apply to American Yeast if it were directly discharged is provided. In light of the fact that there is no applicable effluent limitation guideline, the determination is based upon BPJ. The problem with this rationale is that there is not a specific (certain) industrial category for American Yeast as there is for the OCPSF and Pulp, Paper, and Paperboard facilities, and therefore, American Yeast does not qualify for inclusion in the determination for possible effluent limits adjustments per 40 CFR Part 133.

The aforementioned approach has a regulatory history relative to the City of Memphis dating back to 1980. On March 14, 1980, Frank E. Hall (EPA's Acting Director, Permits Division) and Harold Cahill (EPA's Director, Municipal Construction Division) wrote a memorandum to Sanford Harvey (EPA-Region IV's Director, Enforcement Division), the subject of which was the "*City of Memphis Request for Special Consideration for Less Stringent BOD and TSS Effluent Limits than Required for Secondary Treatment*". This March 14, 1980, memorandum specifically addressed questions relating to special consideration provisions of the secondary treatment regulations per 40 CFR 133.103(b), which enable the establishment of effluent limits less stringent than secondary treatment, as defined by 40 CFR 133.102. (See **Appendix 3-A**). This memorandum is consistent with 40 CFR Part 133 and Chapter 5 (Section 5.2.1) of EPA's NPDES Permit Writers' Manual [EPA-833-K-10-001]. The following questions (1, 2 and 4) with EPA's response comments are key and important excerpts from this March 14, 1980, EPA-HQ's memorandum:

- Section 133.103(b) allows less stringent BOD and TSS concentration limitations than the 30 mg/L minimum required by §133.102(a)(1) for BOD and §133.102(b)(1) for TSS provided: (1) the flow (or loadings) from an industrial category into the POTW is greater than 10 percent of the POTW's design flow (or loadings); and (2) the permitted discharge of BOD and TSS, attributable to the industrial category, is not greater than that which would be permitted under sections 301(b)(1)(A)(i) or 306 of the Act for a direct discharge into navigable waters. In this memorandum, these two requirements of §133.103(b) are referred to as the "10 percent" and the "equivalent direct discharge limitation" provisions, respectively.
- The term "industrial category", in this memorandum refers to industrial categories for which effluent guidelines and standards have been published in the Code of Federal Regulations (40 CFR 400 to 460). The term does not refer to categories in the Standard Industrial Classification (SIC).

- **Question No. 1:** Does §133.103(b) apply for like industrial categories or is the variance only applicable for like subcategories? **Response Comment 1:** When assessing the 10 percent provision of §133.103(b), like industrial categories may not be combined to achieve the 10 percent flow (or loading) requirements. The 10 percent provision must be satisfied by assessing total flows (or loadings) from one industrial category. However, flows (or loadings) from like or similar industrial subcategories may be combined to meet the 10 percent requirements provided: (1) the subcategories are in the same industrial category; and (2) there is an effluent limitation guideline for each subcategory.

[Note: EPA (EPA.gov) states that “Effluent Guidelines” are national regulatory standards for wastewater discharged to surface waters and municipal sewage treatment plants. EPA issues these regulations for industrial categories, based on the performance of treatment and control technologies.]

- **Question No. 2:** For an individual category to qualify, does there have to be a promulgated effluent limitation guideline covering the specific industrial subcategory? For those not covered by effluent guidelines, could we apply BPJ (402)(a)(1)? **Response Comment 2:** Promulgated effluent limitations guidelines or standards are a necessary precondition for an industrial category or subcategory to qualify for a §133.103(b) variance. Therefore, section 402(a)(1), best engineering judgements (BEJs), may not be employed. The requirement for promulgated guidelines or standards (which applies to both new and existing point sources) assures that the industrial effluent limitations used for calculating the POTW effluent limitation variance will not be immunized from public review. If BEJ limitations were permissible in making a §133.103(b) determination, they would be used only as theoretical ceilings in calculating the equivalent direct discharge limitations. Because BEJs would not actually be incorporated in any NPDES permit, no direct review by the public of the BEJ limitations would be available.
- **Question No. 4:** What figures are used in the calculation for the revised limits?
  - a. Design or actual flow of STP;
  - b. Design or actual loading of STP;
  - c. Production of industrial discharges now, at time STP was designed, or when STP reaches design flows?

**Response Comment 4:** When determining §133.103(b) variances, two calculations are necessary: (1) application of the 10 percent provision; and (2) the determination of the revised POTW effluent limitations based on the equivalent direct discharge limitations.

#### **(1) APPLICATION OF 10 PERCENT PROVISION**

Use **actual** flows (or loadings) to determine industrial contributions into the POTW. Compare these flows (or loadings) to the POTW influent average **design** flow (or loadings).

#### **(2) DETERMINATION OF REVISED POTW LIMITATIONS**

Use present **actual** average production rates and appropriate effluent limitations guideline values to determine the equivalent direct discharge loading limitations. Add these limitations to the POTW effluent average **design** loadings, attributable to domestic wastewaters.

**OCPSF Facilities**

In order to properly apply the requirements per 40 C.F.R. § 133.103(b), it is necessary to calculate the BOD<sub>5</sub> and TSS limits that would apply to the industrial facilities if they were to directly discharge into receiving waters. In the case of the OCPSF facilities, direct discharge effluent limits for BOD<sub>5</sub> and TSS are expressed as **concentration**. Mass limits for these parameters were based on the maximum monthly average flow reported by each facility for the period from January 2014 through April 2016 and/or data recorded in the pretreatment records. See calculation and chart below for 40 CFR Part 414, Subpart H – Specialty Organic Chemicals.

OCPSF 40 CFR Part 414 Industrial User	Flow (MGD)	Monthly Average		Monthly Average	
		BOD <sub>5</sub> Limit (mg/L)	BOD <sub>5</sub> (lbs/day)	TSS Limit (mg/L)	TSS (lbs/day)
Chemours Company (H)	4.94	45	1,854	57	2,348
Penn A Kern LLC (H)	0.39	45	146	57	185
PMC Biogenix, Inc. (H)	1.43	45	537	57	680
<b>TOTAL</b>	<b>6.76</b>		<b>2,537</b>		<b>3,214</b>

**Subpart H—Specialty Organic Chemicals**

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**§414.80 Applicability; description of the specialty organic chemicals subcategory.**

The provisions of this subpart are applicable to the process wastewater discharges resulting from the manufacture of all SIC 2865 and 2869 organic chemicals and organic chemical groups which are not defined as commodity or bulk organic chemicals in §§414.60 and 414.70, respectively.

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**§414.81 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).**

Except as provided in 40 CFR 125.30 through 125.32, and in 40 CFR 414.11(i) for point sources with production in two or more subcategories, any existing point source subject to this subpart must achieve discharges not exceeding the quantity (mass) determined by multiplying the process wastewater flow subject to this subpart times the concentration listed in the following table.

Effluent characteristics	BPT effluent limitations <sup>1</sup>	
	Maximum for any one day	Maximum for monthly average
BOD5	120	45
TSS	183	57
pH	( )	( )

<sup>1</sup>All units except pH are milligrams per liter.

<sup>2</sup>Within the range of 6.0 to 9.0 at all times.

[52 FR 42568, Nov. 5, 1987, as amended at 57 FR 41844, Sept. 11, 1992]

Table 1 below summarizes the total maximum flows and loads observed from January 2012 to April 2016 and/or data recorded in the pretreatment records for the three industries (Chemours Company, Penn A Kern, LLC, and PMC Biogenix) in the OCPSF (40 CFR 414) Point Source Category to the M.C. Stiles (North) WWTP. As noted by Table 1, the neither the total flow, nor



loadings of BOD<sub>5</sub> or TSS exceeds ten percent of the total design for the M.C. Stiles (North) WWTP and thus does not qualify for inclusion in a variance calculation.

**Table 1**  
**Comparison of Actual Flows and Loads from OCPSF Industries to Design Flows and Loads of the M.C. Stiles (North) WWTP**

OCPSF Facility	Flow (MGD)	BOD <sub>5</sub> (lbs/day)	TSS (lbs/day)
<b>Chemours Company*</b>	4.94	1,854	2,348
<b>Penn A Kern LLC</b>	0.39	146	185
<b>PMC Biogenix Inc.</b>	1.43	537	680
<b>TOTAL</b>	<b>6.76</b>	<b>2,537</b>	<b>3,214</b>
<b>MC Stiles Design</b>	<b>135</b>	<b>275,000</b>	<b>374,000</b>
<b>MC Stiles 10% Design</b>	<b>13.5</b>	<b>27,500</b>	<b>37,400</b>

\* The discharge from Lucite International is included in the Chemours Company effluent limits.

**Pulp, Paper, and Paperboard Facilities**

For Pulp, Paper, and Paperboard manufacturing facilities (40 CFR Part 430), mass limits for BOD<sub>5</sub> and TSS are **based on production**. Production data for the period from January 2012 through April 2016 and/or data recorded in the pretreatment records were evaluated and the maximum monthly production for each facility was used as the basis for calculating the allowable effluent limits. See calculation and chart below for 40 CFR Part 430, Subparts D, I, and L.

Pulp, Paper & Paperboard 40 CFR Part 430 Industrial User	Flow (MGD)	Max. Month Production (1,000 lbs/day)	Monthly Average		Monthly Average	
			BOD <sub>5</sub> (BCT/BPT) (lbs/1,000 lbs)	BOD <sub>5</sub> (lbs/day)	TSS (BCT/BPT) (lbs/1,000 lbs)	TSS (lbs/day)
Memphis Cellulose (D)	3.73	375.257	21.50	8,068	38.05	14,279
Cascade Tissue Group (I)	0.46	260.065	9.40	2,445	12.95	3,368
KTG USA, LP (L)	1.19	966.467	6.25	6,040	5.00	4,832
<b>TOTAL</b>	<b>5.38</b>			<b>16,553</b>		<b>22,479</b>

**40 CFR Part 430.42, Subpart D (BCT equals BPT)**

**§ 430.42 Effluent limitations** representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

(a) Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), except that non-continuous dischargers shall not be subject to the maximum day and average of 30 consecutive days limitations but shall be subject to annual average effluent limitations:

SUBPART D [BPT EFFLUENT LIMITATIONS FOR DISSOLVING SULFITE PULP FACILITIES WHERE NITRATION GRADE PULP IS PRODUCED]			
Pollutant or pollutant property	Kg/kkg (or pounds per 1,000 lb) of product		
	Continuous dischargers		Non-continuous dischargers (annual average)
	Maximum for any 1 day	Average of daily values for 30 consecutive days	
BOD5	41.4	21.5	12.1
TSS	70.65	38.05	20.9
pH	( 1)	( 1)	( 1)

<sup>1</sup> Within the range of 5.0 to 9.0 at all times.

**40 CFR Part 430.42, Subpart I (BCT equals BPT)**

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), except that non-continuous dischargers shall not be subject to the maximum day and average of 30 consecutive days limitations but shall be subject to annual average effluent limitations:

SUBPART I [BPT EFFLUENT LIMITATIONS]			
Pollutant or pollutant property	Kg/kkg (or pounds per 1,000 lb) of product		
	Continuous dischargers		Non-continuous dischargers (annual average)
	Maximum for any 1 day	Average of daily values for 30 consecutive days	
BOD5	18.1	9.4	5.3
TSS	24.05	12.95	7.12
pH	( 1)	( 1)	( 1)

<sup>1</sup> Within the range of 5.0 to 9.0 at all times.

**40 CFR Part 430.42, Subpart L (BCT equals BPT)**

**§ 430.122 Effluent limitations** representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), except that non-continuous dischargers shall not be subject to the maximum day and average of 30 consecutive days limitations but shall be subject to annual average effluent limitations:

SUBPART L [BPT EFFLUENT LIMITATIONS FOR NON-INTEGRATED MILLS WHERE TISSUE PAPERS ARE PRODUCED FROM PURCHASED PULP]			
Pollutant or pollutant property	Kg/kkg (or pounds per 1,000 lb) of product		
	Continuous dischargers		Non-continuous dischargers (annual average)
	Maximum for any 1 day	Average of daily values for 30 consecutive days	
BOD5	11.4	6.25	3.49
TSS	10.25	5.0	2.84
pH	( 1)	( 1)	( 1)

<sup>1</sup> Within the range of 5.0 to 9.0 at all times.

Table 2 below summarizes the total maximum flows and loads observed from January 2012 to April 2016 and/or data recorded in the pretreatment records for the three industries (Memphis Cellulose, Cascade Tissue Group-TN, Inc., and KTG USA, LP) in the Pulp, Paper and

Paperboard (40 CFR 430) Point Source Category to the M.C. Stiles (North) WWTP. As noted by Table 2, neither the total flow, nor loadings of BOD<sub>5</sub> or TSS exceeds ten percent of the total design for the M.C. Stiles (North) WWTP and thus does not qualify for inclusion in a variance calculation.

**Table 2**  
**Comparison of Actual Flows and Loads from OCPSF Industries to Design Flows and Loads of the M.C. Stiles (North) WWTP**

Pulp, Paper, and Paperboard Facility	Flow (MGD)	BOD5 (lbs/day)	TSS (lbs/day)
<b>Memphis Cellulose</b>	3.73	8,068	14,279
<b>Cascade Tissue Group – Tennessee, Inc.</b>	0.46	2,445	3,368
<b>K.T.G. USA, LP</b>	1.19	6,040	4,832
<b>TOTAL</b>	<b>5.38</b>	<b>16,553</b>	<b>22,479</b>
<b>MC Stiles Design</b>	<b>135</b>	<b>275,000</b>	<b>374,000</b>
<b>MC Stiles 10% Design</b>	<b>13.5</b>	<b>27,500</b>	<b>37,400</b>

APPENDIX 3-A

EPA Memo Specific to Memphis Relative to Variances From Federal  
Secondary Treatment Standards for Effluent BOD<sub>5</sub> and TSS.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

ATTACHMENT "F"  
MAR 14 1980

EPA/REGION IV  
MAR 20 12 44 PM '80  
ENFORCEMENT  
DIVISION  
OFFICE OF ENFORCEMENT

MEMORANDUM

TO: Sanford Harvey, Director, Enforcement Division,  
Region IV

FROM: Acting Director, Permits Division (EN-335)  
Director, Municipal Construction Division (WH -547)

SUBJECT: City of Memphis Request for Special Consideration for  
Less Stringent BOD and TSS Effluent Limits than Required  
for Secondary Treatment

Mr. George Harlow, in a May 23, 1979 memorandum concerning the subject request, raised six questions relating to the secondary treatment regulation, 40 CFR 133. His questions dealt with the special consideration provisions of the secondary treatment regulations, [40 CFR 133.103(b)] which enable the establishment of effluent limits less stringent than secondary treatment, as defined by 40 CFR 133.102. Three offices have been involved in preparing the following comments to Mr. Harlow's questions: the Offices of Water Enforcement (OWE), Water Program Operations (OWPO) and General Counsel (OGC).

Background

Section 133.103(b) allows less stringent BOD and TSS concentration limitations than the 30 mg/l minimum required by §133.102(a)(1) and (b)(1) provided: (1) the flow (or loadings) from an industrial category into the POTW is greater than 10 percent of the POTW's design flow (or loadings); and (2) the permitted discharge of BOD and TSS, attributable to the industrial category, is not greater than that which would be permitted under sections 301(b)(1)(A)(i) or 306 of the Act for a direct discharge into navigable waters. In this memorandum, these two requirements of §133.103(b) are referred to as the "10 percent" and the "equivalent direct discharge limitation" provisions, respectively.

It should be noted that §133.103(b) makes no reference to the 85 percent BOD and TSS removal requirements specified in §133.102(a)(3) and (b)(3). This means that POTWs must comply with the 85 percent removal requirements even if a §133.103(b) variance is granted.

*orig of the variance, POTW's must not be  
to meet weekly avg for BOD & TSS of 45 mg/l  
specified in 133.102(a)(3) & (b)(3)  
133.102(a)(3) & (b)(3) to 133.102(a)(1) & (b)(1)*

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1/1/80

COMMENT "F"

In Mr. Harlow's memorandum and in our comments that follow, there is frequent use of the term "industrial category". In this memorandum, this term refers to industrial categories for which effluent guidelines and standards have been published in the Code of Federal Regulations (40 CFR 400 to 460). The term does not refer to categories in the Standard Industrial Classification (SIC).

Similarly, the term "variance" is used throughout this memorandum. Although Mr. Harlow's memorandum refers to both "variance" and "waivers", we are using the term "variance" strictly for consistency.

Questions and Comments:

The following are comments developed by OWE, OWPO and OGC in response to Mr. Harlow's questions.

Question No. 1

"Does §133.103(b) apply for like industrial categories or is the variance only applicable for like subcategories?"

Comment

When assessing the 10 percent provision of §133.103(b), like industrial categories may not be combined to achieve the 10 percent flow (or loading) requirements. The 10 percent provision must be satisfied by assessing total flows (or loadings) from one industrial category. However, flows (or loadings) from like or similar industrial subcategories may be combined to meet the 10 percent requirements provided: (1) the subcategories are in the same industrial category; and (2) there is an effluent limitation guideline for each subcategory.

Question No.2

"For an individual category to qualify, does there have to be a promulgated effluent limitation guideline covering the specific industrial subcategory? For those not covered by effluent guidelines, could we apply BPJ (402)(a)(1)?"

Comments

Promulgated effluent limitations guidelines or standards are a necessary precondition for an industrial category or subcategory to qualify for a §133.103(b) variance. Therefore, section 402(a)(1), best engineering judgements (BEJs), may not be employed. The requirement for promulgated guidelines or standards (which applies to both new and existing point sources) assures that the industrial effluent limitations used for calculating the POTW effluent limitation variance will not be immunized from public review. If BEJ limitations were permissible in making a §133.103(b) determination, they would be used only as theoretical ceilings in calculating the equivalent direct discharge limitations. Because BEJs would not actually be incorporated in any NPDES permit, no direct review by the public of the BEJ limitations would be available.

Question No. 3

"Can a city apply the waiver [sic] at any time or is it only available during permit renewal?"

Comment

A city can apply for a §133.103(b) variance request at any time during the term of its NPDES permit. However, you should not act on the request during the permit term unless the causes for modifying or revoking and reissuing the permit established in §122.31(d) and (e) are satisfied. If cause does exist for modifying or revoking and reissuing a permit, then such variances can be incorporated into the permit. It should be noted, however, that reopening a permit can subject the permittee to other new requirements, not just those of §133.103(b).

Question No. 4

"What figures are used in the calculation for the revised limits?"

- a. Design or actual flow of STP;
- b. Design or actual loading of STP;
- c. Production of industrial discharges now, at time STP was designed, or when STP reaches design flows?"

Comment

When determining §133.103(b) variances, two calculations are necessary: (1) application of the 10 percent provision; and (2) the determination of the revised POTW effluent limitations based on the equivalent direct discharge limitations.

(1) APPLICATION OF 10 PERCENT PROVISION (SEE ATTACHMENT - 1ST TEST)  
Use actual flows (or loadings) to determine industrial contributions into the POTW. Compare these flows (or loadings) to the POTW influent average design flow (or loadings).

(2) DETERMINATION OF REVISED POTW LIMITATIONS (SEE ATTACHMENT - 2ND TEST)  
Use present actual average production rates and appropriate effluent limitations guideline values to determine the equivalent direct discharge loading limitations. Add these limitations to the POTW effluent average design loadings, attributable to domestic wastewaters.

Question No. 5

"Does the fact that we have taken enforcement action for violation of secondary treatment limitations affect our decision to grant the request for relaxation of limits?"

ATTACHMENT "F"

Comment

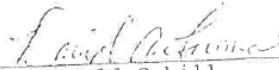
Enforcement action does not preclude granting a request for less stringent secondary treatment requirements. However, in the case of Memphis, the granting of such a request will conflict with the consent decree which requires the City to comply with the secondary treatment requirements specified under 40 CFR §133.102. Therefore, if the request is granted, the consent decree should be modified to reflect the revised POTW permit effluent limitations.

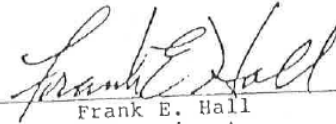
Question No. 6

"Shouldn't §133.103(b) also have referred to BOD and TSS limitations permitted under sections 301(b)(2)(A) (BAT) and 301(b)(2)(e) (BCT)?"

Comment

Section 133.103(b) was not intended to include BAT or BCT. Although no revisions in the secondary treatment regulations are underway now, this matter is being addressed as a part of the overall reconsideration of best practicable waste treatment technology presently underway. [See preamble discussion of §122.3(k), (44 FR 32857, June 7, 1979)].

  
\_\_\_\_\_  
Harold Cahill  
Director, Municipal  
Construction Division

  
\_\_\_\_\_  
Frank E. Hall  
Acting Director  
Permits Division

## APPENDIX 4 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:
  - \* 7Q10 of receiving stream (63,985 MGD, USGS)
  - \* Calcium hardness (135 mg/L)
  - \* Total suspended solids (130 mg/L)
  - \* Background metals concentrations ( $\frac{1}{2}$  water quality criteria)
  - \* Other dischargers impacting this segment (none)
  - \* Downstream water supplies, if applicable
- b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.
- c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.
- d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.
- e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

The following formulas are used to evaluate water quality protection:

$$C_m = \frac{Q_s C_s + Q_w C_w}{Q_s + Q_w}$$



where:

C<sub>m</sub> = resulting in-stream concentration after mixing  
C<sub>w</sub> = concentration of pollutant in wastewater  
C<sub>s</sub> = stream background concentration  
Q<sub>w</sub> = wastewater flow  
Q<sub>s</sub> = stream low flow

**to protect water quality:**

$$C_w \leq \frac{(S_A) [C_m (Q_s + Q_w) - Q_s C_s]}{Q_w}$$

where (S<sub>A</sub>) 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

30Q2 - 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 is 10 mg/L.
4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic "In-stream Allowable" water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic "In-stream Allowable" water quality criteria, then the measured background concentration is used in lieu of the chronic "In-stream Allowable" water quality criteria for the purpose of calculating the appropriate effluent limitation (C<sub>w</sub>). 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:

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

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

2013 WQC

<b>PASS-THROUGH LIMITATIONS FOR METALS AND OTHER TOXIC SUBSTANCES</b>			
<b>WATER QUALITY BASED EFFLUENT CALCULATIONS</b>			
<b>OUTFALL 001</b>			
<b>FACILITY:</b>	<b>PERMIT #:</b>	<b>DATE:</b>	<b>CALC BY:</b>
Memphis - M.C. Stiles WWTP	TN0020711	3/20/2017	RGD

non-regulated stream worksheet (7Q10)

Stream	Stream	Waste	Ttl. Susp.	Hardness	Margin of
(7Q10)	(30Q5)	Flow	Solids	(as CaCO3)	Safety
(MGD)	(MGD)	(MGD)	(mg/l)	(mg/l)	(%)
63985	81592	135,000	130	135	50

PARAMETER	Stream Bckgrnd. Conc. (ug/l)	Fish/Aqua. Life (F & AL) WQC lab conditions		Fraction Dissolved (Fraction)	F & AL- instream allowable ambient conditions (Tot)		Calc. Effluent Concentration based on F & AL		Human Health Water Quality Criteria *						effluent case ug/l	PARAMETER		
		Chronic (ug/l)	Acute (ug/l)		Chronic (ug/l)	Acute (ug/l)	In-Stream Criteria			Calc. Effluent Concentration **								
							Organisms (ug/l)	Water/Organisms (ug/l)	D/W/S (ug/l)	Organisms (ug/l)	Water/Organisms (ug/l)	D/W/S (ug/l)						
<b>Copper (a,b)</b>	5.600	11,574	17,831	0.216	53,503	82,429	11378.95	18248.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80.0	<b>Copper (a,b)</b>	
<b>Chromium III</b>	6.800	94,765	728,514	0.175	541,568	4163,363	127000.91	987110.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>Chromium III</b>
<b>Chromium VI</b>	6.800	11,000	16,000	1.000	11,000	16,000	1000.82	2188.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>Chromium VI</b>
<b>Chromium, Total</b>	6.800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100.0	N/A	N/A	28214.35	60.0	N/A	<b>Chromium, Total</b>	
<b>Nickel (a,b)</b>	7.750	67,039	603,569	0.203	330,972	2979,874	76763.12	*****	4600.0	610.0	100.0	1390043.93	182300.49	27927.27	180.0	N/A	<b>Nickel (a,b)</b>	
<b>Cadmium (a,b)</b>	0.200	0.303	2,696	0.321	0.945	8,403	176.91	1948.24	N/A	N/A	5.0	N/A	N/A	1453.02	5.0	N/A	<b>Cadmium (a,b)</b>	
<b>Lead (a,b)</b>	4.400	3,484	89,397	0.119	29,305	752,027	5916.77	177549.68	N/A	N/A	5.0	N/A	N/A	163.82	45.0	N/A	<b>Lead (a,b)</b>	
<b>Mercury (T) (c,e)</b>	0.006	0.770	1,400	1.000	0.770	1,400	181.44	331.05	0.051	0.05	2.0	13.62	13.32	603.57	0.4	N/A	<b>Mercury (T) (c,e)</b>	
<b>Silver (a,b,f)</b>	2.695	N/A	5,390	1.000	N/A	5,390	N/A	641.37	N/A	N/A	N/A	N/A	N/A	N/A	5.0	N/A	<b>Silver (a,b,f)</b>	
<b>Zinc (a,b)</b>	22.000	152,344	151,108	0.159	957,509	949,740	222177.12	220332.16	26000.0	7400.0	N/A	7863359.17	2233276.95	N/A	200.0	N/A	<b>Zinc (a,b)</b>	
<b>Cyanide (d)</b>	2.600	5,200	22,000	1.000	5,200	22,000	618.75	4608.44	140.0	140.0	200.0	41591.26	41591.26	59752.82	230.0	N/A	<b>Cyanide (d)</b>	
<b>Toluene</b>	0.000								15000.0	1300.0	1000.0	4540388.89	393500.37	302692.59	15.0	N/A	<b>Toluene</b>	
<b>Benzene</b>	0.000								510.0	22.0	5.0	154373.22	6659.24	1513.46	3.0	N/A	<b>Benzene</b>	
<b>1,1,1 Trichloroethane</b>	0.000								N/A	N/A	200.0	N/A	N/A	60538.52	30.0	N/A	<b>1,1,1 Trichloroethane</b>	
<b>Ethylbenzene</b>	0.000								2100.0	530.0	700.0	635654.44	160427.07	21884.81	4.0	N/A	<b>Ethylbenzene</b>	
<b>Carbon Tetrachloride</b>	0.000								16.0	2.3	5.0	4843.08	696.19	1513.46	15.0	N/A	<b>Carbon Tetrachloride</b>	
<b>Chloroform</b>	0.000								4700.0	57.0	N/A	1422655.19	17253.48	N/A	85.0	N/A	<b>Chloroform</b>	
<b>Tetrachloroethylene</b>	0.000								33.0	8.9	5.0	9988.86	2088.58	1513.46	25.0	N/A	<b>Tetrachloroethylene</b>	
<b>Trichloroethylene</b>	0.000								300.0	25.0	5.0	90807.78	7567.31	1513.46	10.0	N/A	<b>Trichloroethylene</b>	
<b>1,2 trans Dichloroethyl</b>	0.000								10000.0	140.0	100.0	N/A	42376.96	30269.26	1.5	N/A	<b>1,2 trans Dichloroethylene</b>	
<b>Methylene Chloride</b>	0.000								5900.0	46.0	N/A	1785886.30	13923.86	N/A	50.0	N/A	<b>Methylene Chloride</b>	
<b>Total Phenols</b>	0.000								860000.0	10000.0	N/A	*****	3026925.93	N/A	50.0	N/A	<b>Total Phenols</b>	
<b>Naphthalene</b>	0.000								N/A	N/A	N/A	N/A	N/A	N/A	1.0	N/A	<b>Naphthalene</b>	
<b>Total Phthalates</b>	0.000								N/A	N/A	N/A	N/A	N/A	N/A	64.5	N/A	<b>Total Phthalates</b>	
<b>Chlorine (T. Res.)</b>	5.500	11,000	19,000	1.000	11,000	19,000	2617.80	6417.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>Chlorine (T. Res.)</b>	

- 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 Previously, the Division established that 0.006 ug/L would be maximum background default if no sample data available or if all samples were <RDL (<0.2 ug/L), based on reference stream monitoring by DOE.
- f Silver limit is daily max if column 8 is most stringent.
- g When columns 7 or 8 result in a negative number, use results from columns 5 or 6, respectively.
- h 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

Maynard Stiles North WWTP	PTL 5/12/2011	85% PTLs	Proposed 3/17/2017	Jan-Dec 15	Jan-Dec 14	Jan-Dec 13	Jan-Dec 12	Jan-Dec 11	Jan-Dec 10	PTL 2/6/1998	Jan-Dec 09	Jan-Dec 08	Jan-Dec 07	Jan-Dec 06
COPPER	0.08	0.068	0.08	0.00658	0.00932		0.01119	0.0152		0.08	0.01077	0.023		0.01138
CHROMIUM, III	report	n/a	report	0.01481	0.02108		DNS			n/a				
CHROMIUM, VI	report	n/a	report	0.01714	0.03		DNS			n/a				
CHROMIUM, TOTAL	n/a	n/a	n/a	0.0015	0.00358		0.00216	0.0032		0.06	0.0017	0.00422		0.01899
NICKEL	0.18	0.153	0.18	0.0114	0.0218		0.0145	0.0196		0.18	0.02079	0.0295		0.01985
CADMIUM	0.005	0.0043	0.005	0.00013	0.00106		0.00015	0.0003		0.005	0.00071	0.001		0.00101
LEAD	0.045	0.0383	0.045	0.00073	0.00325		0.00072	0.0011		0.045	0.00086	0.00358		0.00239
MERCURY	0.000051	0.000043	0.000051	0.00001	0.0002		0.00018	0.0002		0.0004				
SILVER	0.005	0.0043	0.005	0.00081	0.00255		0.00016	0.0003		0.005				
ZINC	0.2	0.17	0.2	0.12371	0.0217		0.0332	0.033	0.0396	0.2	0.03089	0.0479		0.03996
CYANIDE	0.23	0.1955	0.23	0.023	0.019		0.01	0.016	0.009	0.23	0.019	0.021		0.00038
TOLUENE	0.15	0.1275	0.15				0.005	0.005		0.15		0.001		
BENZENE	0.003	0.0026	0.003				0.001	0.001		0.003		0.001		
1,1,1 TRICHLOROETHANE	0.03	0.0255	0.03				0.001	0.001		0.03		0.001		
ETHYLBENZENE	0.004	0.0034	0.004				0.001	0.001		0.004		0.001		
CARBON TETRACHLORIDE	0.015	0.0128	0.015				0.001	0.001		0.015		0.001		
CHLOROFORM	0.085	0.0723	0.085				0.0015	0.002		0.085		0.00206		
TETRACHLOROETHYLENE	0.025	0.0213	0.025				0.001	0.001		0.025		0.001		
TRICHLOROETHYLENE	0.01	0.0085	0.01				0.001	0.001		0.01		0.001		
1,2 TRANS-DICHLOROETHYLENE	0.0015	0.0013	0.0015				0.001	0.001		0.0015		0.001		
METHYLENE CHLORIDE	0.05	0.0425	0.05				0.01	0.01		0.05		0.001		
TOTAL PHENOLS	0.1	0.085	0.1	0.02856	0.04295		0.005	0.005	0.05	0.1	0.05	0.05		0.00003
NAPHTHALENE	0.05	0.0425	0.05				0.0082	0.01		0.05		0.001		
TOTAL PHTHALATES	0.0645	0.0548	0.0645				0.041	0.05		0.0645		0.001		

## APPENDIX 5 WQ Based Effluent Calculations- Other Compounds

WATER QUALITY BASED EFFLUENT CALCULATIONS OUTFALL 001																
FACILITY: M.C. Stiles ( Memphis North) WWTP PERMIT: TN0020711 DATE: March 20, 2017																
Stream (1010)	Stream (3005)	W/waste Flow (MGD)	Ttl. Susp. Solids (mg/l)	Hardness (as CaCO3) (mg/l)	Margin of Safety (%)											
63985	81592	135.0	130	135	50											
PARAMETER	Stream Bkgnd. Conc. (ug/l)	Detection Levels		Fish/Aq. Life Water Quality Criteria		Calculated Effluent Concentration		Human Health Water Quality Criteria (3005)						Avg. daily effluent ug/l	PARAMETER	
		Scan MDL (ug/l)	W/QC RDL EPA MDL (ug/l)	Chronic (ug/l)	Acute (ug/l)	Chronic (ug/l)	Acute (ug/l)	In-Stream Criteria			Calculated Effluent Concentration					
								Organisms (ug/l)	Water/Org (ug/l)	DV/S (ug/l)	Organisms (ug/l)	Water/Org (ug/l)	DV/S (ug/l)			
ANTIMONY	0.0	3.8	3.0					6.40.0	5.6	6.0	193723.3	1635.1	1816.2	3.8	ANTIMONY	
ARSENIC	0.0	1.0	1.0	150.0	340.0	*****	*****	10.0	10.0	10.0	3026.9	3026.9	3026.9	1.0	ARSENIC	
BERYLLIUM	0.0	2.0	1.0											2.0	BERYLLIUM	
SELENIUM	0.0	5.0	2.0	5.0	20.0	1187.4	4743.6							5.0	SELENIUM	
THALLIUM	0.0	5.0	*					0.47	0.24	2.0	142.3	72.6	605.4	5.0	THALLIUM	
ACROLEIN	0.0	50.0	1.0					290.0	190.0		87780.9	57511.6		50.0	ACROLEIN	
ACRYLONITRILE	0.0	50.0	1.0					2.5	0.51		756.7	154.4		50.0	ACRYLONITRILE	
BENZENE	0.0	1.0	1.0					510.0	22.0	5.0	154373.2	6659.2	1513.5	1.0	BENZENE	
BROMOFORM	0.0	1.0	1.0					1400.0	43.0		423769.6	13015.8		1.0	BROMOFORM	
CARBON TETRACHLORIDE	0.0	1.0	1.0					16.0	2.3	5.0	4843.1	696.2	1513.5	1.0	CARBON TETRACHLORIDE	
CHLORO BENZENE	0.0	1.0	*					1600.0	130.0		484308.1	39350.0		1.0	CHLORO BENZENE	
CHLORODIBROMO-METHANE	0.0	1.0	*					130.0	4.0		39350.0	1210.8		1.0	CHLORODIBROMO-METHANE	
CHLOROETHANE	0.0	1.0	*											1.0	CHLOROETHANE	
2-CHLORO-ETHYL VINYL ETHER	0.0	1.0	*											1.0	2-CHLORO-ETHYL VINYL ETHER	
CHLOROFORM	0.0	5.0	0.5					4700.0	57.0		1422655.2	17253.5		5.0	CHLOROFORM	
DICHLOROBROMO-METHANE	0.0	1.0	1.0					170.0	5.5		51457.7	1664.8		1.0	DICHLOROBROMO-METHANE	
1,1-DICHLOROETHANE	0.0	1.0	1.0					NA	NA	NA	NA	NA	NA	1.0	1,1-DICHLOROETHANE	
1,2-DICHLOROETHANE	0.0	1.0	1.0					370.0	9.8	5.0	111936.9	1150.2	1513.5	1.0	1,2-DICHLOROETHANE	
TRANS 1,2-DICHLORO-ETHYLENE	0.0	1.0	*					10000	140.0	100.0	3026925.9	42377.0	30269.3	1.0	TRANS 1,2-DICHLORO-ETHYLENE	
1,1-DICHLOROETHYLENE	0.0	1.0	1.0											1.0	1,1-DICHLOROETHYLENE	
1,2-DICHLOROPROPANE	0.0	1.0	*					150.0	5.0	5.0	45403.9	1513.5	1513.5	1.0	1,2-DICHLOROPROPANE	
1,3-DICHLORO-PROPYLENE	0.0	1.0	1.0					210.0	3.4		63565.4	1029.2		1.0	1,3-DICHLORO-PROPYLENE	
ETHYLEN BENZENE	0.0	1.0	1.0					2100	530.0	700.0	635654.4	160427.1	211884.8	1.0	ETHYLEN BENZENE	
METHYL BROMIDE	0.0	1.0	*					1500.0	47.0		454038.9	14226.6		1.0	METHYL BROMIDE	
METHYL CHLORIDE	0.0	1.0	1.0											1.0	METHYL CHLORIDE	
METHYLENE CHLORIDE	0.0	5.0	1.0					5900.0	46.0		1785886.3	13923.9		5.0	METHYLENE CHLORIDE	
1,1,2-TETRACHLORO-ETHANE	0.0	1.0	0.5					40.0	1.7		12107.7	514.6		1.0	1,1,2-TETRACHLORO-ETHANE	
TETRACHLORO-ETHYLENE	0.0	1.0	0.5					33.0	6.9	5.0	9388.3	2088.6	1513.5	1.0	TETRACHLORO-ETHYLENE	
TOLUENE	0.0	1.0	1.0					15000	1300.0	1000.0	4540388.9	393500.4	*****	1.0	TOLUENE	
1,1,1-TRICHLOROETHANE	0.0	1.0	1.0							200.0				60538.5	1.0	1,1,1-TRICHLOROETHANE
1,1,2-TRICHLOROETHANE	0.0	1.0	0.2					160.0	5.9	5.0	48430.8	1785.9	1513.5	1.0	1,1,2-TRICHLOROETHANE	
TRICHLOROETHYLENE	0.0	1.0	1.0					300.0	25.0	5.0	90807.8	7567.3	1513.5	1.0	TRICHLOROETHYLENE	
VINYL CHLORIDE	0.0	1.0	2.0					24.0	0.25	2.0	7264.6	75.7	605.4	1.0	VINYL CHLORIDE	
P-CHLORO-M-CRESOL	0.0	10.0	*											10.0	P-CHLORO-M-CRESOL	
2-CHLOROPHENOL	0.0	10.0	*					150.0	81.0		45403.9	24518.1		10.0	2-CHLOROPHENOL	
2,4-DICHLOROPHENOL	0.0	10.0	*					290.0	77.0		87780.9	23307.3		10.0	2,4-DICHLOROPHENOL	
2,4-DIMETHYLPHENOL	0.0	10.0	*					850.0	380.0		257288.7	115023.2		10.0	2,4-DIMETHYLPHENOL	
4,6-DINITRO-O-CRESOL	0.0	10.0	24.0					280.0	13.0		84753.9	3935.0		10.0	4,6-DINITRO-O-CRESOL	
2,4-DINITROPHENOL	0.0	10.0	42.0					5300.0	69.0		1604270.7	20885.8		10.0	2,4-DINITROPHENOL	
2-NITROPHENOL	0.0	10.0	*											10.0	2-NITROPHENOL	
4-NITROPHENOL	0.0	10.0	*											10.0	4-NITROPHENOL	
PENTACHLOROPHENOL	0.0	10.0	5.0	15	19	3562.2	4512.1	30.0	2.7	1.0	9080.8	817.3	302.7	10.0	PENTACHLOROPHENOL	
PHENOL	0.0	10.0	*					1700000	21000.0		514577407.4	6356544.4		10.0	PHENOL	
2,4,6-TRICHLOROPHENOL	0.0	10.0	2.7					24.0	14.0		7264.6	4237.7		10.0	2,4,6-TRICHLOROPHENOL	
ACENAPHTHENE	0.0	10.0	*					990.0	670.0		299665.7	202804.0		10.0	ACENAPHTHENE	
ACENAPHTHYLENE	0.0	10.0	2.3											10.0	ACENAPHTHYLENE	
ANTHRACENE	0.0	10.0	0.7					40000	8300.0		12107703.7	2512348.5		10.0	ANTHRACENE	

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PARAMETER	1	2	3	5	6	7	8	9	10	11	12	13	14	15	PARAMETER
	Stream Bkgmd. Conc. (ug/l)	Detection Levels		Fish/Aqua. Life Water Quality Criteria		Calculated Effluent Concentration		Human Health Water Quality Criteria (300S)						Avg. daily effluent ug/l	
		Scan	WQC RDL	Chronic	Acute	Chronic	Acute	In-Stream Criteria			Calculated Effluent Concentration				
		MDL	*EPA MDL					Organisms	Water/Crg	D/W/S	Organisms	Water/Crg	D/W/S		
(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	
BENZIDINE	0.0	50.0	*					0.0020	0.0009		0.605	0.3		50.0	BENZIDINE
BENZO(A)ANTHRACENE	0.0	10.0	0.3					0.18	0.038		54.5	11.5		10.0	BENZO(A)ANTHRACENE
BENZO(A)PYRENE	0.0	10.0	0.3					0.18	0.038	0.2	54.5	11.5	60.5	10.0	BENZO(A)PYRENE
3,4-BENZO-FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		54.5	11.5		10.0	3,4-BENZO-FLUORANTHENE
BENZO(GH)PERYLENE	0.0	10.0	*											10.0	BENZO(GH)PERYLENE
BENZO(K)FLUORANTHENE	0.0	10.0	0.3					0.18	0.038		54.5	11.5		10.0	BENZO(K)FLUORANTHENE
BIS(2-CHLOROETHOXY)METHANE	0.0	10.0	*											10.0	BIS(2-CHLOROETHOXY)METHANE
BIS(2-CHLOROETHYL)ETHER	0.0	10.0	1.0					5.3	0.30		1604.3	30.8		10.0	BIS(2-CHLOROETHYL)ETHER
BIS(2-CHLOROISO-PROPYL)ETHER	0.0	10.0	*					65000	1400.0		19675018.5	423769.6		10.0	BIS(2-CHLOROISO-PROPYL)ETHER
BIS(2-ETHYLHEXYL)PHTHALATE	0.0	10.0	2.5					22.0	12.0	6.0	6659.2	3632.3	1816.2	10.0	BIS(2-ETHYLHEXYL)PHTHALATE
4-BROMOPHENYL PHENYLETHER	0.0	10.0	*											10.0	4-BROMOPHENYL PHENYLETHER
BUTYL BENZYL PHTHALATE	0.0	10.0	*					1900.0	1500.0		57515.9	454038.9		10.0	BUTYL BENZYL PHTHALATE
2-CHLORONAPHTHALENE	0.0	10.0	*					1600.0	1000.0		484308.1	302692.6		10.0	2-CHLORONAPHTHALENE
4-CHLOROPHENYL PHENYLETHER	0.0	10.0	*											10.0	4-CHLOROPHENYL PHENYLETHER
CHRYSENE	0.0	10.0	2.5					0.18	0.038		54.5	11.5		10.0	CHRYSENE
DI-N-BUTYL PHTHALATE	0.0	10.0	2.5					4500.0	2000.0		1362116.7	605385.2		10.0	DI-N-BUTYL PHTHALATE
DI-N-OCTYL PHTHALATE	0.0	10.0	*											10.0	DI-N-OCTYL PHTHALATE
DIBENZO(A,H)ANTHRACENE	0.0	10.0	*					0.18	0.038		54.5	11.5		10.0	DIBENZO(A,H)ANTHRACENE
1,2-DICHLOROBENZENE	0.0	1.0	2.0					1900.0	428.0		393500.4	127130.9		1.0	1,2-DICHLOROBENZENE
1,3-DICHLOROBENZENE	0.0	5.0	2.0					960.0	329.0		290584.3	36861.6		5.0	1,3-DICHLOROBENZENE
1,4-DICHLOROBENZENE	0.0	5.0	2.0					190.0	63.0		57511.6	19069.6		5.0	1,4-DICHLOROBENZENE
3,3-DICHLOROBENZIDINE	0.0	10.0	*					0.28	0.2		84.8	63.6		10.0	3,3-DICHLOROBENZIDINE
DIETHYL PHTHALATE	0.0	10.0	1.9					44000	17000.0		13318474.1	5145774.1		10.0	DIETHYL PHTHALATE
DIMETHYL PHTHALATE	0.0	10.0	1.5					1100000	270000.0		332361851.9	88888888.8		10.0	DIMETHYL PHTHALATE
2,4-DINITROTOLUENE	0.0	10.0	1.0					34.0	1.1		10291.5	333.0		10.0	2,4-DINITROTOLUENE
2,6-DINITROTOLUENE	0.0	10.0	*											10.0	2,6-DINITROTOLUENE
1,2-DIPHENYLHYDRAZINE	0.0	10.0	*								605.4	109.0		10.0	1,2-DIPHENYLHYDRAZINE
FLUORANTHENE	0.0	10.0	2.2					140.0	130.0		42377.0	39350.0		10.0	FLUORANTHENE
FLUORENE	0.0	10.0	0.3					5300.0	1100.0		1604270.7	332961.9		10.0	FLUORENE
HEXACHLOROBENZENE	0.0	10.0	1.9					0.0029	0.0028	1.0	0.878	0.8	302.7	10.0	HEXACHLOROBENZENE
HEXACHLOROBUTADIENE	0.0	10.0	5.0					180.0	4.4		54484.7	1331.8		10.0	HEXACHLOROBUTADIENE
HEXACHLOROCCYCLO-PENTADIENE	0.0	10.0	*					1100.0	40.0	50.0	332961.9	12107.7	15134.6	10.0	HEXACHLOROCCYCLO-PENTADIENE
HEXACHLOROETHANE	0.0	10.0	0.5					33.0	14.0		3988.9	4237.7		10.0	HEXACHLOROETHANE
INDENO(1,2,3-CD)PYRENE	0.0	10.0	*					0.18	0.038		54.5	11.5		10.0	INDENO(1,2,3-CD)PYRENE
ISOPHORONE	0.0	10.0	*					3600	350.0		2905848.9	105942.4		10.0	ISOPHORONE
NAPHTHALENE	0.0	10.0	*											10.0	NAPHTHALENE
NITROBENZENE	0.0	10.0	10.0					630.0	17.0		208857.9	5145.8		10.0	NITROBENZENE
N-NITROSODI-N-PROPYLAMINE	0.0	10.0	*					5.1	0.050		1543.7	15.1		10.0	N-NITROSODI-N-PROPYLAMINE
N-NITROSODI-METHYLAMINE	0.0	10.0	*					30.0	0.0069		9080.8	2.1		10.0	N-NITROSODI-METHYLAMINE
N-NITROSODI-PHENYLAMINE	0.0	10.0	*					60.0	33.0		18161.6	3988.9		10.0	N-NITROSODI-PHENYLAMINE
PHENANTHRENE	0.0	10.0	0.7											10.0	PHENANTHRENE
PYRENE	0.0	10.0	0.3					4000.0	830.0		1210770.4	251234.9		10.0	PYRENE
1,2,4-TRICHLOROBENZENE	0.0		*					70.0	35.0	70.0	21188.5	10594.2	21188.5	10.0	1,2,4-TRICHLOROBENZENE

a. Columns 7-8 and 12-14 are the effluent concentrations allowable to prevent exceedence of water quality criteria.  
 b. Potential to exceed criteria exists if the measured quantity in column 15 exceeds, or could exceed, the calculated allowable concentrations in columns 7-8, and 12-14.  
 c. Additional testing is required if the detection level used in the scan is higher than the state RDL and/or the MDL of the approved EPA scan method and industry is known to have that pollutant.  
 d. All background concentrations for these volatile organic, acid-intractable, 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. Reasonable potential not demonstrated. In some cases, the MDLs are not sufficient to identify potential water quality problems.