

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-0093513

Owner: City of Hannibal
Address: 320 Broadway, Hannibal, MO 63401

Continuing Authority: Hannibal Board of Public Works
Address: #3 Industrial Loop Drive, Hannibal, MO 63401

Facility Name: Hannibal Wastewater Treatment Plant
Facility Address: 700 S. Arch Street, Hannibal, MO 63401

Legal Description: See Page 2
UTM Coordinates: See Page 2

Receiving Stream: See Page 2
First Classified Stream and ID: See Page 2
USGS Basin & Sub-watershed No.: See Page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See Page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

February 1, 2013
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

December 31, 2013
Expiration Date

John Madras, Director, Water Protection Program

Outfall #001 – POTW – SIC #4952

The use or operation of this facility shall be by or under the supervision of a Certified “A” Operator.

Pure oxygen activated sludge / aerobic sludge digester / three parallel final clarifiers / chlorination / sludge land applied as fertilizer, beneficially reused in an artificial soil program, or disposed of in a landfill.

Design population equivalent is 60,000.

Design flow is 6 MGD.

Actual flow is 3.76 MGD.

Design sludge production is 1,680 dry tons/year.

Legal Description:	Landgrant 2739, Marion County
UTM Coordinates:	X=641362, Y=4396747
Receiving Stream:	Mississippi River (P)
First Classified Stream and ID:	Mississippi River (P) (3699)
USGS Basin & Sub-watershed No.:	(07110004 – 0504)

Outfall #002 – POTW - SIC #4952

The use or operation of this facility shall be by or under the supervision of a Certified “A” Operator.

Alternative Maintenance Outfall

Pure oxygen activated sludge / aerobic sludge digester / three parallel final clarifiers / chlorination / sludge land applied as fertilizer, beneficially reused in an artificial soil program, or disposed of in a landfill.

Design population equivalent is 60,000.

Design flow is 6 MGD.

Actual flow is dependent upon usage.

Design sludge production is 1,680 dry tons/year.

Legal Description:	SW ¼, NW ¼, NE ¼, Sec. 32, T57N, R4W, Marion County
UTM Coordinates:	X=639899, Y=4395450
Receiving Stream:	Bear Creek (P)
First Classified Stream and ID:	Bear Creek (P) (0008)
USGS Basin & Sub-watershed No.:	(07110004 – 0501)

OUTFALL #001	TABLE A-1. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 3 of 11	
					PERMIT NUMBER MO-0093513	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until December 30, 2013. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Fecal Coliform (Note 1, Page 4)	#/100 ml	1000		400	once/week	grab
<i>E. coli</i> (Note 2, Page 4)	SU		*	*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on December 31, 2013 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<i>E. coli</i> (Note 2, Page 4)	SU		630	126	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2014</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #001	TABLE A-3. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect through <u>January 31, 2016</u> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Residual Chlorine (Note 3, Page X)	µg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #001	TABLE A-4. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on <u>February 1, 2016</u> and remain in effect till expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Residual Chlorine (Note 3, Page X)	µg/L	209		140	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2016</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only.

OUTFALL #001	TABLE A-5. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS			PAGE NUMBER 4 of 11		
				PERMIT NUMBER MO-0093513		
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect through January 31, 2016 . Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units	SU	***		***	three/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

OUTFALL #001	TABLE A-6. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					
	The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect through January 31, 2016 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:					
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units	SU	****		****	three/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2016</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

**** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

Note 1 - Interim limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for Fecal Coliform is expressed as a geometric mean.

Note 2 - Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 3 - This permit contains a Total Residual Chlorine (TRC) limit for Outfall #001.

- (a) Disinfection is required during the recreational season from April 1 through October 31.” Do not chlorinate during the non-recreational months.
- (b) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**
- (c) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 µg/L” TRC.

OUTFALL #001	TABLE A-7. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 5 of 11	
					PERMIT NUMBER MO-0093513	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		45	30	three/week	composite**
Total Suspended Solids	mg/L		45	30	three/week	composite**
Ammonia as N	mg/L	*		*	once/month	grab
Oil & Grease	mg/L	20		10	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Copper, Total Recoverable	µg/L	*		*	once/year	composite**
Lead, Total Recoverable	µg/L	*		*	once/year	composite**
Zinc, Total Recoverable	µg/L	*		*	once/year	composite**
Total Hardness	mg/L	*		*	once/year	composite**
Phenols	µg/L	*		*	once/year	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2014</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Condition #14			once/year	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2013</u> .						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 24 aliquots (subsamples) collected at 60 minute intervals by an automatic sampling device.

OUTFALL #002	TABLE A-8. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 6 of 11	
					PERMIT NUMBER MO-0093513	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow (Note 5)	MGD	*		*	once/weekday	24 hr. total
Biochemical Oxygen Demand ₅ (Note 5)	mg/L		45	30	once/weekday	composite**
Total Suspended Solids (Note 5)	mg/L		45	30	once/weekday	composite**
pH – Units (Note 5)	SU	****		****	once/weekday	grab
Ammonia as N (Note 5) (April 1 – Sept 30) (Oct 1 – March 31)	mg/L	2.3 7.6		1.5 2.8	once/weekday	grab
Oil & Grease (Note 5)	mg/L	20		10	once/weekday	grab
<i>E. coli</i> (Notes 2 & 5)	µg/L		1030	206	once/weekday	grab
Total Residual Chlorine (Notes 4 & 5)	µg/L	17 (130ML)		8 (130ML)	once/weekday	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

* Monitoring requirement only.

** A 24-hour composite sample is composed of 24 aliquots (subsamples) collected at 60 minute intervals by an automatic sampling device.

**** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

Note 2 - Final limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 4 - This permit contains a Total Residual Chlorine (TRC) limit for Outfall #002.

- (a) This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
- (b) Disinfection is required during the recreational season from April 1 through October 31.” Do not chlorinate during the non-recreational months.
 - (a) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**
 - (b) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 µg/L” TRC.

Note 5 - Monitoring is required at Outfall #002 once per day on any weekday that a discharge occurs.

TABLE B. INFLUENT MONITORING REQUIREMENTS		PAGE NUMBER 7 of 11	
		PERMIT NUMBER MO-0093513	
The facility is required to meet a removal efficiency of 85% or more as a monthly average. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:			
SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand ₅	mg/L	once/month	composite**
Total Suspended Solids	mg/L	once/month	composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> .			

** A 24-hour composite sample is composed of 24 aliquots (subsamples) collected at 60 minute intervals by an automatic sampling device.

C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II & III standard conditions dated October 1, 1980 and August 15, 1994, and hereby incorporated as though fully set forth herein.

D. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

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

2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established by the Director in accordance with 40 CFR 122.44(f).
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

5. Report as no-discharge when a discharge does not occur during the report period.
6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

D. SPECIAL CONDITIONS (continued)

7. Water Quality Standards

- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

8. Biosolids fertilizer product-Class A and Metals Quality Requirements

Land application sites for the biosolids fertilizer product are exempted from permitting requirements in accordance with state rules under 10 CSR 20-6.015(3)(B)8. This exemption is based on information provided in the "Biosolids Management Plan" dated April 1999, and revised in the "Biosolids Management Plan" dated November 2003 and is subject to the following conditions:

- (a) Testing and reporting of the biosolids fertilizer shall be as outlined in the approved Biosolids Management Plan as referenced above, permit Standard Conditions Part III and 40 CFR 503 as amended. Testing shall include the additional parameters listed in Table 1 of WQ423. Daily records shall include a list of all sales or giveaway of the bulk fertilizer showing date, quantity, name of receiving person and whether city is responsible for land application. Records shall be kept on dates, amounts and locations of biosolids applied to city owned land or sites with public access.
- (b) The fertilizer product shall only use biosolids that meet the criteria for "Class A" and "low metals concentrations" listed in permit Standard Conditions Part III, WQ424 and WQ425 and in federal regulations in 40 CFR 503.32 and 503.13 Table 3.
- (c) The biosolids fertilizer may be applied to agricultural land, land reclamation projects, and other suitable sites.
- (e) The permittee shall provide an information sheet to all who receive the biosolids fertilizer from the permittee. The information sheet shall provide information on nutrient content, application rates, management practices and use restrictions.
- (f) Lime or other materials may be added to the biosolids to reduce odors during storage and handling.
- (g) All storage of the fertilizer product shall be in accordance with the Agrichemical regulations for bulk fertilizers under 10 CSR 20-8.500. Fertilizer storage sites that are not contiguous with the wastewater treatment plant and that are used for more than 30 consecutive days per year shall obtain a separate Agrichemical permit.

9. The permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.

The permittee shall submit to the Department on or before March 31st of each year a report briefly describing its pretreatment activities during the previous calendar year. At a minimum, the report shall include the following:

- (a) An updated list of the Permittee's Industrial Users, including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Permittee shall provide a brief explanation of each deletion. This list shall identify which Industrial Users are subject to categorical pretreatment Standards and specify which Standards are applicable to each Industrial User. The list shall indicate which Industrial Users are subject to local standards that are more stringent than the categorical Pretreatment Standards. The Permittee shall also list the Industrial Users that are subject only to local Requirements;
- (b) A summary of the status of Industrial User compliance over the reporting period;
- (c) A summary of compliance and enforcement activities (including inspections) conducted by the Permittee during the reporting period; and
- (d) Any other relevant information requested by the Department.

D. SPECIAL CONDITIONS (continued)

10. As required in 40 CFR 122.21 (j)(4) the permittee shall, as part of its renewal application for this permit, submit to the department a written technical evaluation of the need to revise local limits under 40 CFR 403.5 (c)(1).
11. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.
12. The permittee shall submit a report annually by February 28th to the Northeast Regional Office which addresses measures taken to locate and eliminate sources of infiltration and inflow into the collection system serving the facility during the previous calendar year.
13. Bypasses are not authorized at this facility and are subject to 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Northeast Regional Office.
14. Whole Effluent Toxicity (WET) Test shall be conducted as follows:

SUMMARY OF ACUTE WET TESTING FOR THIS PERMIT				
OUTFALL	AEC	FREQUENCY	SAMPLE TYPE	MONTH
001	10%	once/year	24 hr. composite**	Sample any month, Report in August

** A 24-hour composite sample is composed of 24 aliquots (subsamples) collected at 60 minute intervals by an automatic sampling device.

Dilution Series						
40% effluent	20% effluent	10% effluent	5% effluent	2.5% effluent	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a MULTIPLE-dilution acute WET test in the months and at the frequency specified above. For tests which are successfully passed, submit test results using the Department's WET test report form #MO-780-1899 along with complete copies of the test reports as received from the laboratory, including copies of chain-of-custody forms within 30 calendar days of availability to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102. If the effluent passes the test, do not repeat the test until the next test period.
 - (a) Chemical and physical analysis of the upstream control and effluent sample shall occur immediately upon being received by the laboratory, prior to any manipulation of the effluent sample beyond preservation methods consistent with federal guidelines for WET testing that are required to stabilize the sample during shipping.
 - (b) Any and all chemical or physical analysis of the effluent sample performed in conjunction with the WET test shall be performed at the 100% Effluent concentration in addition to analysis performed upon any other effluent concentration.
 - (c) All chemical analyses included in the Missouri Department of Natural Resources WET test report form #MO-780-1899 shall be performed and results shall be recorded in the appropriate field of the report form.
- (2) The WET test will be considered a failure if mortality observed in effluent concentrations for either specie, equal to or less than the AEC, is significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. Where upstream receiving water is not available, synthetic laboratory control water may be used.
- (3) All failing test results along with complete copies of the test reports as received from the laboratory, INCLUDING THOSE TESTS CONDUCTED UNDER CONDITION (3) BELOW, shall be reported to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (4) If the effluent fails the test for BOTH test species, a multiple dilution test shall be performed for BOTH test species within 30 calendar days and biweekly thereafter (for storm water, tests shall be performed on the next and subsequent storm water discharges as they occur, but not less than 7 days apart) until one of the following conditions are met: Note: Written request regarding single species multiple dilution accelerated testing will be address by THE WATER PROTECTION PROGRAM on a case by case basis.

D. SPECIAL CONDITIONS (continued)

- (i) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (ii) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.
 - (5) Follow-up tests do not negate an initial failed test.
 - (6) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
 - (7) Additionally, the following shall apply upon failure of the third follow up MULTIPLE DILUTION test The permittee should contact THE WATER PROTECTION PROGRAM within 14 calendar days from availability of the test results to ascertain as to whether a TIE or TRE is appropriate. If the permittee does not contact THE WATER PROTECTION PROGRAM upon the third follow up test failure, a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall submit a plan for conducting a TIE or TRE to the WATER PROTECTION PROGRAM within 60 calendar days of the date of the automatic trigger or DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
 - (8) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
 - (9) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
 - (10) When WET test sampling is required to run over one DMR period, each DMR report shall contain a copy of the Department's WET test report form that was generated during the reporting period.
 - (11) Submit a concise summary in tabular format of all WET test results with the annual report.
- (b) Test Conditions
- (1) Test Type: Acute Static non-renewal
 - (2) All tests, including repeat tests for previous failures, shall include both test species listed below unless approved by the department on a case by case basis.
 - (3) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
 - (4) Test period: 48 hours at the "Allowable Effluent Concentration" (AEC) specified above.
 - (5) Upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
 - (6) Tests will be run with 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent, and reconstituted water.
 - (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.
 - (8) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.
 - (9) Whole-effluent-toxicity test shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms

E. SCHEDULE OF COMPLIANCE – *E coli*.

1. The permittee must attain compliance with the final effluent limits as soon as possible, but no later than December 31, 2013.
2. Upon completion of construction, the permittee shall submit a Statement of Work Complete signed by the owner and a Professional Engineer that is registered in the state of Missouri. (Only required if construction is required)

F. SCHEDULE OF COMPLIANCE – Total Residual Chlorine and pH

1. The permittee must attain compliance with the final effluent limits as soon as possible, but no later than February 1, 2016.
2. Within one year of issuance of this permit, the permittee shall report progress made in attaining compliance with the final effluent limits.
3. Within two years of issuance of this permit, the permittee shall submit a report detailing progress made in attaining compliance with the final effluent limits.
4. If the permittee fails to meet any of the interim dates above, the permittee shall notify the Department in writing of the reason for non-compliance no later than 14 days following each interim date.
5. Upon completion of construction, the permittee shall submit a Statement of Work Complete signed by the owner and a Professional Engineer that is registered in the state of Missouri. (Only required if construction is required)

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0093513
HANNIBAL WASTEWATER TREATMENT PLANT

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Major

Part I – Facility Information

Facility Type: POTW
Facility SIC Code(s): 4952

Facility Description:

Hannibal Wastewater Treatment Plant is a 6.0 MGD facility located in Hannibal, Marion County, MO. Untreated wastewater enters the facility through the Grit and Dewatering Building where it is subject to bar screening, aerated grit removal and commutation. From there wastewater flows to one (1) of two (2) oxygen-activated sludge reactors with mechanical mixers. During the secondary process of the sludge reactors, oxygen and return activated sludge are added. Flow is then directed to one (1) of three (3) parallel clarifiers where settling and overflow occur. During the recreation season, overflow is directed to an Effluent Structure for chlorination. Treated effluent is then discharged to the Mississippi River through Outfall #001. The waste activated sludge is sent through two (2) aerobic digesters with mechanical mixers, a thickener, and a belt press. Reactors and the digester are supplied with oxygen produced at the facility or purchased from a supplier. Sludge is beneficially reused by Continental Cement Company to create artificial soil for quarry reclamation. Sludge is also reused as a fertilizer for area farmers. When field conditions prevent these uses, sludge is disposed of in a local landfill.

Outfall #002 is no longer utilized as an emergency outfall point. It is now a controlled discharge point that is opened once per year in July for maintenance. At that time, secondary treated effluent is discharged to Bear Creek. The average duration of such discharge is approximately five (5) minutes per maintenance activity. Therefore, this outfall is not an emergency outfall as indicated in the previous operating permit, but an alternate outfall for the discharge of secondary treated effluent. No bypassing of the facility's secondary treatment occurs via this outfall.

Please note that legal descriptions and UTM coordinates listed in the operating permit refer only to the permitted features (i.e., Outfalls #001 and 002), not the physical facility location.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
, - No.

Application Date: 04/07/10
Expiration Date: 10/13/10

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	9.3	Secondary	Domestic	1.0
002	9.3	Secondary	Domestic	0

Outfall #001 – Main Facility Outfall

Legal Description: Landgrant 2739, Marion County

UTM Coordinates: X=641362, Y=4396747

Receiving Stream: Mississippi River (P)

First Classified Stream and ID: Mississippi River (P) (3699)

USGS Basin & Sub-watershed No.: (07110004 - 030003)

Outfall #002 – Alternate Maintenance Outfall

Legal Description: NW ¼, NE ¼, Sec. 32, T57N, R4W, Marion County

UTM Coordinates: X=639899, Y=4395450

Receiving Stream: Bear Creek (P)

First Classified Stream and ID: Bear Creek (P) (0008)

USGS Basin & Sub-watershed No.: (07110004 - 030003)

Receiving Water Body's Water Quality & Facility Performance History:

The Mississippi River (WBID: 3699) is a class P stream with designated uses of aquatic life, drinking water, industrial, livestock and wildlife watering, secondary contact recreation and swimming. Bear Creek (WBID: 0008) is a class P stream with designated uses of aquatic life, livestock and wildlife watering and boating. Neither receiving stream is currently included on the Missouri 303(d) List of impaired waterways.

The permittee reports no violations during the preceding permit period.

Comments:

According to the permittee, the facility does have an operating system sanitary sewer overflow (SSO). This SSO is the result of 1993 levee construction, designed to protect downtown Hannibal from severe property damage during the 25 and 100 year flood events on the Mississippi River. The construction of this levee included installation of valves on major interceptor sewer lines. At certain flood stages (i.e. above the 25 year flood level), the interceptor sewer line must be closed to prevent backflow of the river, forcing surcharging and overflow of the sewer system inside the levee. The raw wastewater is pumped to a receiving pond where it is subsequently pumped, along with surface and subsurface water, into the Mississippi River.

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
 - Municipalities
 - Public Sewer District:
 - County
 - Public Water Supply Districts:
 - Private sewer company regulated by the Public Service Commission:
 - State or Federal agencies:

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) and/or fifty (50) or more service connections.

This facility currently requires an operator with an A Certification Level. Please see **Appendix A - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator’s Name: Jeffrey D. Williams
 Certification Number: 4665
 Certification Level: A

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:

As per Missouri’s Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall’s Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

- Missouri or Mississippi River [10 CSR 20-7.015(2)]:
- Lake or Reservoir [10 CSR 20-7.015(3)]:
- Losing [10 CSR 20-7.015(4)]:
- Metropolitan No-Discharge [10 CSR 20-7.015(5)]:
- Special Stream [10 CSR 20-7.015(6)]:
- Subsurface Water [10 CSR 20-7.015(7)]:
- All Other Waters [10 CSR 20-7.015(8)]:

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream’s beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
Mississippi River	P	3699	AQL, DWS, IND, LWW, SCR, WBC(A)	07110004	Central Plains/Cuivre/Salt
Bear Creek	P	0008	AQL, LWW, WBC(B)		

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).
 ** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)*		
	1Q10	7Q10	30Q10
Mississippi River (P)	15,611.61	18,503.53	22,525.61
Bear Creek (P)	0.0	0.0	0.0

* Low Flow values for the Mississippi River obtained using USGS 05587450, Mississippi River at Grafton, IL, 11/14/1962-11/14/2010. This is the nearest monitoring location with significant flow data for the Mississippi River. Average effluent flow of 15.4 cfs, derived from the facility DMR data, was subtracted from calculated low flows to obtain the values listed above. The USGS 05501600, Mississippi River at Hannibal, MO monitoring location has data for only 19 years (1991-2010), and was providing what appeared to be artificially small low flow values. It was therefore, was not used. Low Flow values for Bear Creek obtained using USGS 05502000, Bear Creek at Hannibal, MO, 11/15/1970-11/15/2010.

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(III)(a)] [10 CSR 20-7.031(4)(A)4.B.(I)(a)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A)4.B.(III)(b)] [10 CSR 20-7.031(4)(A)4.B.(I)(b)]	
7Q10	30Q10	1Q10	7Q10
4,629.48	5,635.27	93	93
0.0	0.0	0.0	0.0

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable ; The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- Limitations in this operating permit for the reissuance of this permit conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.

- The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b). The effluent limitations for Biochemical Oxygen Demand at Outfall #002 were previously issued with a monthly average of 16 mg/L. This renewal will change the monthly average back to 30 mg/L.

ANTIDegradation:

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body’s available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- Renewal no degradation proposed and no further review necessary.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(3)(B)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIO-SOLIDS, SLUDGE, & SEWAGE SLUDGE:

Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; 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 screening generated during preliminary treatment of domestic sewage in a treatment works.

Applicable (renewal and modifications to existing operating permits) ; This facility has been approved to land apply as per Permit Standard Conditions III and has a Department approved bio-solids management plan. Biosolids are beneficially reused from the facility, going primarily to a soil project, with the remainder used in land application as fertilizer.

COMPLIANCE AND ENFORCEMENT:

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Not Applicable ; The permittee/facility is not currently under Water Protection Program enforcement action.

PRETREATMENT PROGRAM:

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

Applicable ; This permittee has an approved pretreatment program in accordance with the requirements of [40 CSR Part 403] and [10 CSR 20-6.100] and is expected to implement and enforce its approved program. It is noted that Enduro Industries does not routinely discharge to this facility. They have an emergency discharge arrangement with the facility. However, as of the date of this fact sheet, Enduro Industries has never discharged to the facility.

REASONABLE POTENTIAL ANALYSIS (RPA):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Applicable ; A RPA was conducted on appropriate parameters. Please see **APPENDIX B – RPA RESULTS**.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm.

Applicable ; Secondary Treatment is 85% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):

Sanitary Sewer Overflows (SSOs), defined as an untreated or partially treated sewage release, are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSO's have a variety of causes including blockages, line breaks, and sewer defects that allow excess storm water and ground water to (1) enter and overload the collection system, and (2) overload the treatment facility. Additionally, SSO's can be also be caused by lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations.

Additionally, Missouri RSMo §644.026.1 mandates that the Department require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities.

- In accordance with Missouri RSMo §644.026.1.(15) and 40 CFR Part 122.41(e), the permittee is required to develop and/or implement a program for maintenance and repair of the collection system and shall be required in this operating permit by either means of a Special Condition or Schedule of Compliance. In addition, the Department considers the development of this program as an implementation of this condition. Additionally, 40 CFR Part 403.3(o) defines a POTW to include any device and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW Treatment Plant.

At this time, the Department recommends the US EPA's Guide for Evaluating Capacity, Management, Operation and Maintenance (CMOM) Programs At Sanitary Sewer Collection Systems (Document # EPA 305-B-05-002). The CMOM identifies some of the criteria used by the EPA to evaluate a collection system's management, operation, and maintenance and was intended for use by the EPA, state, regulated community, and/or third party entities. The CMOM is applicable to small, medium, and large systems; both public and privately owned; and both regional and satellite collection systems. The CMOM does not substitute for the Clean Water Act, the Missouri Clean Water Law, and both federal and state regulations, as it is not a regulation.

SCHEDULE OF COMPLIANCE (SOC):

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

Applicable ; This permit contains a schedule of compliance for *E. coli* and chlorine. Final *E. coli* limitations must be met no later than December 31, 2013. A schedule of three (3) years will be provided to comply with final chlorine effluent limitations and pH. Should the permittee be unable to comply with final effluent limitations by this date, an engineering study will be conducted and plans for facility upgrades submitted to the Department. The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(10)].

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

Not Applicable ; At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ; This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

Applicable ; Wasteload allocations were calculated where applicable using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{C_s \times Q_s + C_e \times Q_e}{Q_e + Q_s} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration

Cs = upstream concentration

Qs = upstream flow

Ce = effluent concentration

Qe = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

WLA MODELING:

There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

Not Applicable ; A WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARDS:

Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Applicable ; Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(3)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc...); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

Facility is a designated Major.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass, which includes blending, is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar.

Not Applicable ; This facility does not anticipate bypassing.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):

Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Applicable ; Mississippi River is listed on the 2002 Missouri 303(d) List for Chlordane and PCBs.

– This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Mississippi River.

Part V – Effluent Limits Determination

Outfall #001 – Main Facility Outfall

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	1	*		*	No	*/*
BOD ₅	mg/L	1		45	30	No	45/30
TSS	mg/L	1		45	30	No	45/30
pH	SU	1	6.5-9.0		6.5-9.0	Yes	6.0-9.0
Ammonia as N	mg/L	2	*		*	No	*/*
Fecal Coliform	**	9	1000		400	No	1000/400
Escherichia coliform	**	1,9	Please see Escherichia coli (E. coli) in the Derivation and Discussion Section below.				
Chlorine, Total Residual	µg/L	2,3,9	209		140	Yes	*
Oil & Grease (mg/L)	mg/L	1	20		10	No	20/10
Copper, Total Recoverable	µg/L	2,9	*		*	Yes	***
Zinc, Total Recoverable	µg/L	2,9	*		*	Yes	***
Total Hardness	mg/L	2,9	*		*	Yes	***
Phenols	µg/L	2,9	*		*	Yes	***
Whole Effluent Toxicity (WET) Test	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

- * - Monitoring requirement only.
- ** - # of colonies/100mL; the Monthly Average for E.coli is a geometric mean.
- *** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅).** Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream’s Water Quality. Therefore, effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Total Suspended Solids (TSS).** Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream’s Water Quality. Therefore, effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **pH.** pH shall be maintained within the range from 6.5 to 9.0 Standard Units (SU) in accordance with 10 CSR 20-7.020(4)(E). The facility cannot currently meet these more stringent limits. Therefore, the permit will contain Interim and Final limits for pH.

- **Total Ammonia Nitrogen.** Reasonable Potential Analysis conducted with data from DMR reports and Appendix N of the application for renewal indicates no potential for the facility to violate Missouri WQS for Ammonia in the Mississippi River. Therefore, a monitoring only requirement from the previous operating permit has been retained. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU Background total ammonia nitrogen = 0.03 mg/L in the Mississippi River.
- **Fecal Coliform.** The permittee has indicated that they cannot meet *E. coli* limits upon issuance without consistently violating their effluent limitations for Total Residual Chlorine. Therefore, the permit will contain interim Fecal Coliform limits and final *E. coli* limits. Effluent limitations of 1000 per 100 mL as a Daily Maximum and 400 per 100 mL as a Monthly Average were retained from the previous operating permit.
- **Escherichia coliform (E. coli).** Monthly average of 126 per 100 ml as a geometric mean and Weekly Average of 630 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Weekly Average effluent variability will be evaluated in development of a future effluent limit. An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). If more than one (1) sample is collected in a calendar week, then the result is to be reported as a geometric mean. The permittee has indicated they will not be able to meet these limits upon issuance without consistently violating effluent limitations for Total Residual Chlorine. Therefore, the permit will contain interim monitoring only for *E. coli* and final effluent limitations as per the description above.
- **Total Residual Chlorine (TRC).** RPA indicates the facility has potential to violate Missouri WQS in the Mississippi River for Total Residual Chlorine. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L.

Chronic WLA: $C_e = ((9.3 + 4625.88)10 - (4625.88 * 0.0))/9.3$
 $C_e = 4984.07 \mu\text{g/L}$

Acute WLA: $C_e = ((9.3 + 93)19 - (93 * 0.0))/9.3$
 $C_e = 209 \mu\text{g/L}$

$LTA_c = 4984.07 (0.9145) = 4557.9 \mu\text{g/L}$ [CV = 0.212, 99th Percentile]
 $LTA_a = 209 (0.6273) = 131.1 \mu\text{g/L}$ [CV = 0.212, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 131.1 (1.594) = 209 µg/L [CV = 0.212, 99th Percentile]
AML = 131.1 (1.065) = 140 µg/L [CV = 0.212, 95th Percentile, n = 40]

The facility cannot currently meet the proposed limitations for Total Residual Chlorine. Therefore, the permit will contain a Schedule of Compliance to allow time for the facility to come into compliance in accordance with the Missouri Clean Water Law and its implementing regulations. The facility may consider establishing a sampling point for chlorine closer to the end of the pipe during this time. Alternately, submitting a detailed engineering plan for updates to the disinfection units prior to the end of the three (3) year schedule may lead to an alternate schedule of compliance.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 20 mg/L daily maximum. The 20 mg/L daily maximum was established in the previous operating permit due to the addition of General Mills food processing facility discharge to the facility. As no changes have occurred to this discharge since the last permit cycle, effluent limitations from the previous operating permit have been retained.

Metals

- **Copper, Total Recoverable.** Copper was not included in the previous operating permit. However, CIUs with pretreatment standards for Copper discharge to this facility. Additionally, expanded effluent testing indicates Copper levels below Missouri water quality toxicity criteria. Therefore, a monitoring only requirement will be established in the permit.
- **Lead, Total Recoverable.** Lead was not included in the previous operating permit. However, CIUs with pretreatment standards for Lead discharge to this facility. Additionally, expanded effluent testing indicates the potential for lead concentrations above chronic toxicity criteria. Therefore, a monitoring only requirement will be established in the permit.

- **Zinc, Total Recoverable.** Zinc was not included in the previous operating permit. However, CIUs with pretreatment standards for Zinc discharge to this facility. Additionally, expanded effluent testing indicates Zinc concentrations below Missouri water quality toxicity criteria. Therefore, a monitoring only requirement will be established in the permit.
- **Total Hardness.** The toxicity of some metals is affected by hardness. A monitoring only requirement will be included in the permit.
- **Phenols.** Phenols were not included in the previous operating permit. However, CIUs with pretreatment standards for Phenols discharge to this facility. Additionally, expanded effluent testing indicates concentrations of Phenols below Missouri water quality toxicity criteria. Therefore, a monitoring only requirement will be established in the permit.
- **Total Toxic Organics (TTO).** A CIU with pretreatment standards for TTO discharges to this facility. However, as per 40 CFR 464.03(a), the CIU is monitoring for oil and grease in lieu of TTO testing. Therefore, monitoring for TTO is not required by the facility and will be removed from the permit.
- **WET Test.** WET Testing schedules and intervals are established in accordance with the Department’s Permit Manual; Section 5.2 *Effluent Limits / WET Testing for Compliance Bio-monitoring*. It is recommended that WET testing be conducted during the period of lowest stream flow.
 - Acute
 - No less than ONCE/YEAR:**
 - Facility is designated as a Major facility or has a design flow ≥ 1.0 MGD.

Acute AEC% = $((\text{design flow}_{\text{cfs}} + \text{ZID}_{7\text{Q}10}) / \text{design flow}_{\text{cfs}})^{-1} \times 100 = \#\%$
 Acute AEC% = $((9.3 + 93) / 9.3)^{-1} \times 100 = 9.1\%$ rounded up to 10% (minimum allowable AEC)

Dilution series is as follows: 40%, 20%, 10%, 5%, 2.5%
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit for all parameters except Total Residual Chlorine and Ammonia. TRC and Ammonia will be sampled once per month. Additionally, metals sampling and reporting have been added on an annual basis.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
CHLORINE, TOTAL RESIDUAL	ONCE/MONTH	ONCE/MONTH

The previous operating permit contained a monitoring only requirement for Total Residual Chlorine. However, due to RPA indicating potential for excursions above WQS for chlorine, effluent limits have been established and monitoring requirement set based on flow ($6.0 \text{ MGD} \div 50,000 \text{ gpd} = 120$; $120 \div 12 = 10$). However, as previous operating permit required 12 samples per month, TRC frequency was adjusted up accordingly.

Outfall #002 – Alternate Maintenance Outfall

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	1	*		*	No	*/*
BOD ₅	mg/L	1		45	30	No	45/30
TSS	mg/L	1		45	30	No	45/30
pH	SU	1	6.5-9.0			Yes	6.0-9.0
Ammonia as N (April 1 – Sept 30)	mg/L	2,3	2.3		1.5	Yes	1.6/0.8
Ammonia as N (Oct 1 – March 31)	mg/L	2,3	7.6		2.8	Yes	2.8/1.4
Escherichia coliform	**	1,9	Please see Escherichia coli (E. coli) in the Derivation and Discussion Section below.				
Chlorine, Total Residual	µg/L	2,9	17		8	Yes	20/10
Oil & Grease (mg/L)	mg/L	1	15		10	No	15/10
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

- * - Monitoring requirement only.
- ** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.
- *** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

- | | |
|--|------------------------------------|
| 1. State or Federal Regulation/Law | 7. Antidegradation Policy |
| 2. Water Quality Standard (includes RPA) | 8. Water Quality Model |
| 3. Water Quality Based Effluent Limits | 9. Best Professional Judgment |
| 4. Lagoon Policy | 10. TMDL or Permit in lieu of TMDL |
| 5. Ammonia Policy | 11. WET Test Policy |
| 6. Dissolved Oxygen Policy | 12. Antidegradation Review |

OUTFALL #002 – DERIVATION AND DISCUSSION OF LIMITS:

- **Flow.** In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.
- **Biochemical Oxygen Demand (BOD₅).** ☒ –45 mg/L as a Weekly Average and 30 mg/L as a Monthly Average. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **Total Suspended Solids (TSS).** Effluent limitations from the previous state operating permit have been reassessed and verified that they are still protective of the receiving stream’s Water Quality. Therefore, effluent limitations have been retained from previous state operating permit, please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Receiving Stream Information.**
- **pH.** pH shall be maintained within the range from 6.5 to 9.0 Standard Units (SU) in accordance with 10 CSR 20-7.020(4)(E).

- **Total Ammonia Nitrogen.** Reasonable Potential Analysis indicates that this facility has potential to violate Water Quality Standards for Ammonia in Bear Creek. Effluent limitation derivation is below. Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3] default pH 7.8 SU Background total ammonia nitrogen = 0.01 mg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion. Because this is an intermittent discharge that will not exceed the applicable 30 day period for chronic ammonia criteria, effluent limits are calculated for acute criteria only. For other water quality standards, chronic criteria are applicable to a 4 day averaging period.

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	N.A.	12.1
Winter	6	7.8	N.A.	12.1

Summer: April 1 – September 30

Acute WLA: $C_e = 12.1$ mg/L

$LTA_a = 12.1$ mg/L (0.613) = 7.4 mg/L [CV = 0.224, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 7.4 mg/L (1.63) = 12.1 mg/L [CV = 0.224, 99th Percentile]
 AML = 7.4 mg/L (1.07) = 7.9 mg/L [CV = 0.224, 95th Percentile, n = 30]

Winter: October 1 – March 31

Acute WLA: $C_e = 12.1$ mg/L

$LTA_a = 12.1$ mg/L (0.316) = 3.8 mg/L [CV = 0.611, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 3.8 mg/L (3.16) = 12.0 mg/L [CV = 0.611, 99th Percentile]
 AML = 3.8 mg/L (1.19) = 4.5 mg/L [CV = 0.611, 95th Percentile, n = 30]

- ***Escherichia coliform (E. coli).*** Monthly average of 206 per 100 ml as a geometric mean and Weekly Average of 1030 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Weekly Average effluent variability will be evaluated in development of a future effluent limit. An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d). If more than one (1) sample is collected in a calendar week, then the result is to be reported as a geometric mean.

- **Total Residual Chlorine (TRC).** Data was not available to conduct a Reasonable Potential Analysis for this TRC from this outfall. Default effluent limitation derivations were used. Warm-water Protection of Aquatic Life CCC = 10 µg/L, CMC = 19 µg/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 µg/L. No mixing considerations allowed; therefore, WLA = appropriate criterion. Chronic criteria do apply, because this discharge may exceed the 4 day period applicable for chronic chlorine water quality standards [and most other water quality standards].

Chronic WLA: $C_e = 10$ µg/L
 Acute WLA: $C_e = 19$ µg/L

$LTA_c = 10$ (0.527) = 5.3 µg/L [CV = 0.6, 99th Percentile]
 $LTA_a = 19$ (0.321) = 6.1 µg/L [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 5.3 (3.11) = 16.5 µg/L [CV = 0.6, 99th Percentile]
 AML = 5.3 (1.55) = 8.2 µg/L [CV = 0.6, 95th Percentile, n = 4]

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. Effluent limitations from the previous operating permit have been retained.
- **Minimum Sampling and Reporting Frequency Requirements.** Sampling and reporting frequency requirements have been retained from previous state operating permit. Additionally, sampling and reporting for metals and phenols has been added on an annual basis.

Part VI – Finding of Affordability

Pursuant to Section 644.145, RSMo., the Department is required to determine whether a permit or decision is affordable and makes a finding of affordability for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

Applicable; The Department is required to determine findings of affordability because the permit applies to a **combined or separate sanitary sewer system for a publically-owned treatment works**.

Finding of affordability - The department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **Appendix – Affordability Analysis**

Part VII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the department to explore a watershed based permitting effort at some point in the future.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- The Public Notice period for this operating permit was from November 9, 2012 to December 10, 2012. No responses received.

DATE OF FACT SHEET: (01/13/2011); UPDATED 03/04/2011; UPDATED 10/18/2012

COMPLETED BY:

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Appendices

APPENDIX A - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	6
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	6
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	0
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	-
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	-
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	3
PRELIMINARY TREATMENT – Headworks		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	-
Combined sedimentation/digestion	5	-
Chemical addition (except chlorine, enzymes)	4	-
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
Lab work conducted outside of plant	0	-
Push – button or visual methods for simple test such as pH, Settleable solids	3	-
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	-
More advanced determinations such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	7
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	-
ALTERNATIVE FATE OF EFFLUENT		
Direct reuse or recycle of effluent	6	-
Land Disposal – low rate	3	-
High rate	5	-
Overland flow	4	-
Total from page ONE (1)	----	31

APPENDIX A - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
VARIATION IN RAW WASTE (highest level only) (DMR exceedances and Design Flow exceedances)		
Variation do not exceed those normally or typically expected	0	-
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	2
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	-
Raw wastes subject to toxic waste discharge	6	-
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	-
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	-
Aerated lagoon	8	-
Advanced Waste Treatment Polishing Pond	2	-
Chemical/physical – without secondary	15	-
Chemical/physical – following secondary	10	-
Biological or chemical/biological	12	-
Carbon regeneration	4	-
DISINFECTION		
Chlorination or comparable	5	5
Dechlorination	2	-
On-site generation of disinfectant (except UV light)	5	-
UV light	4	-
SOLIDS HANDLING – SLUDGE		
Solids Handling Thickening	5	5
Anaerobic digestion	10	-
Aerobic digestion	6	6
Evaporative sludge drying	2	-
Mechanical dewatering	8	8
Solids reduction (incineration, wet oxidation)	12	-
Land application	6	6
Total from page TWO (2)	----	47
Total from page ONE (1)	---	31
Grand Total	---	78

- A: 71 points and greater
- B: 51 points – 70 points
- C: 26 points – 50 points
- D: 0 points – 25 points

APPENDIX B – RPA RESULTS:

Parameter	CMC*	RWC Acute*	CCC*	RWC Chronic*	n**	Range max/min	CV***	MF	RP Yes/No
Total Ammonia as Nitrogen (Summer) mg/L	12.1	4.76	1.5	0.10	124.00	39.9/0.0075	0.54	1.31	NO
Total Ammonia as Nitrogen (Winter) mg/L	12.1	6.26	3.1	0.12	93.00	47.1/0	0.64	1.46	NO
Chlorine, Total Residual mg/L	0.019	0.15	0.010	0.01	40.00	1.2/0.09	0.21	1.26	YES

N/A – Not Applicable

* - Units are (µg/L) unless otherwise noted.

** - If the number of samples is greater than 10, then the CV value must be used in the WQBEL for the applicable constituent.

*** - Coefficient of Variation (CV) is calculated by dividing the Standard Deviation of the sample set by the Mean of the same sample set.

RWC – Receiving Water Concentration. It is the concentration of a toxicant or the parameter toxicity in the receiving water after mixing (if applicable).

n – Is the number of samples.

MF – Multiplying Factor. 99% Confidence Level and 99% Probability Basis.

RP – Reasonable Potential. It is where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors including, as a minimum, the four factors listed in 40 CFR 122.44(d)(1)(ii).

Reasonable Potential Analysis is conducted as per (TSD, EPA/505/2-90-001, Section 3.3.2). A more detailed version including calculations of this RPA is available upon request.

(2) Affordability of pollution control options for the individuals or households of the community;

Current annual operating costs (exclude depreciation): ¹	\$2,686,288
Current user rate (Annual for 5,000 gallons/day usage): ¹	\$396
Estimated capital cost of pollution control options: ¹	\$1,985,000
Annual cost of additional (operating costs and debt service): ¹	\$160,640
Estimated resulting user rate: ¹	\$481.20
Median Household Income: ³	\$37,254
Usage Rates as a percent of Median Household Income: (Rate/MHI)	1.29 %

Check Appropriate Box	Financial Impact	Residential Indiciary (Usage Rate as a percent of Median Household Income)
<input type="checkbox"/>	Low	Less than 1% MHI
<input checked="" type="checkbox"/>	Medium	Between 1% and 2% MHI
<input type="checkbox"/>	High	Greater than 2% MHI

The Department calculated that a 5,000 gallon per month residential user currently pays approximately \$33 per month, based on the sewer rate information contained in the Affordability Information document completed by the facility and received by the Department. With the additional costs of upgrading the facility to meet effluent limitations a rate increase would be necessary. The estimated monthly user rate would increase to \$40.10 which is 1.29% of the MHI. This would result in a medium financial impact to the users.

(3) An evaluation of the overall costs and environmental benefits of the control technologies;

This evaluation is limited to those costs necessary to comply with (and therefore achieve the benefits derived from) the permit conditions identified as relevant to the affordability review.

The upgrades will allow the Hannibal Wastewater Treatment Plant to meet final effluent limitations for E. coli, Total Residual Chlorine, and pH limits for the Mississippi River. The limits are protective of human health and aquatic life.

(4) An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:

(a) Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations; and

(b) Allowing for reasonable accommodations for regulated entities when inflexible standards and fines would impose a disproportionate financial hardship in light of the environmental benefits to be gained;

Potentially Distressed Populations – Hannibal, Missouri	
Unemployment ²	7.8%
Median Household Income ³	\$37,254
Percent Population Growth/Decline (1990-2010) ⁴	-0.5%
Percent of Households in Poverty ⁵	20%

Opportunity for cost savings or cost avoidance:

None Noted

Opportunity for changes to implementation/compliance schedule:

The Department has included a Schedule of Compliance for the facility to meet the final effluent limitations for E. coli in the draft permit by December 31, 2013 and a three (3) year Schedule of Compliance for the facility to meet the final effluent limitations for Total Residual Chlorine and pH in the draft permit.

(5) An assessment of other community investments relating to environmental improvements;

The facility has a five-year capital improvement plan for the wastewater treatment plant, which has a projected cost of \$5 million.

Future improvements for upgrading the wastewater treatment plant to meet discharge limits for ammonium and phosphorus to maintain compliance with Federal and State regulations. The proposed price to make the necessary improvement is unknown at this time, but would expect the cost to be over ten of millions of dollars to address this issue.

The facility has planned to conduct electrical improvements to the wastewater treatment plant, which has a projected cost of \$4.7 million.

Future improvements for the water system include continued replacement of existing deteriorated and undersized water mains, replacement and upgrading of water storage tanks, and various water treatment plant upgrades to maintain compliance with Federal and State regulations. The proposed price to make the necessary improvement is unknown at this time, but would expect the cost to be over ten of millions of dollars to address this issue.

The Board has entered into a lease purchase agreement with the Missouri Association of Municipal Utilities through their leasing financing program. Debt was incurred to construct a new water tank, two substations and Sawyer Creek sewer line. The rehabilitation of all sewers and manholes in the Wilson Street Pump Station Watershed has a probable project cost of \$47.6 million.

The Disinfection Byproducts Compliance Study dated June, 2012 for the City of Hannibal and Ralls County Public Water Supply District #1 has an estimated improvement cost of \$112,000 and additional annual cost of \$15,500 for O & M.

The Long-Term 2 Enhanced Surface Water Treatment Rule Compliance Study dated May, 2012 for the City of Hannibal has an estimated improvement cost of \$585,000 and additional O & M cost of \$5,500 per year.

The City of Hannibal anticipates that stormwater regulations (MS4) will greatly impact the City. The proposed price to make the necessary improvement is unknown at this time, but would expect the cost to be in the tens of millions of dollars to address this issue.

(6) An assessment of factors set forth in the United States Environmental Protection Agency's guidance, including but not limited to the "Combined Sewer Overflow Guidance for Financial Capability Assessment and Schedule Development" that may ease the cost burdens of implementing wet weather control plans, including but not limited to small system considerations, the attainability of water quality standards, and the development of wet weather standards;

See Section (2) of this analysis for the residential indicator as outlined in the above-referenced EPA guidance.

Secondary indicators for consideration

Socioeconomic, Debt and Financial Indicators

Indicators	Strong (3 points)	Mid-Range (2 points)	Weak (1 point)	Score
Bond rating indicator	Above BBB or Baa	BBB or Baa	Below BBB or Baa	3
Overall net debt as a % of full market property value	Below 2%	2% - 5%	Above 5%	2
Unemployment Rate	>1% below Missouri average	± 1% of Missouri average	>1% above Missouri average	2
Median household income	More than 25% above Missouri MHI	± 25% of Missouri MHI	More than 25% below Missouri average	2
Property tax revenues as a % of full market property value	Below 2%	2% - 4%	Above 4%	3
Property tax collection rate	Above 98%	94% - 98%	Below 94%	3

Average Score for Financial Capability Matrix: 2.5
Residential Indicator (from Criteria #2 above): Medium

Financial Capability Matrix

Financial Capability Indicators Score from above ↓	Residential Indicator (User rate as a % of MHI)		
	Low (Below 1%)	Mid-Range (Between 1.0% and 2.0%)	High (Above 2.0%)
Weak (below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (1.5 – 2.5)	Low Burden	Medium Burden	High Burden
Strong (above 2.5)	Low Burden	Low Burden	Medium Burden

Estimated Financial Burden: Medium

(7) An assessment of any other relevant local community economic condition.

Hannibal's population declined 0.5% from 1990-2010. In terms of economic strength, Marion County is below average when compared to other counties in the State. The per capita income is 9.5% below the State's average.⁶

In terms of retail Sales, Marion County gains retail customers from surrounding counties and the County residents spend less than the state average on retail goods and services. Marion County had the highest market share in the Northeast Region for retail sales. The buying power index of Marion County residents is average compared to the rest of the regional economy.⁷

Conclusion and Finding

This affordability analysis finds that the actions subject to this analysis are affordable. The Department identified the actions for which an affordability analysis is required under Section 644.145 RSMo. The City of Hannibal/Hannibal Board of Public Works applied for a renewal of Missouri State Operating Permit #MO-0093513. Changes to the permit include:

- 1) Establishing effluent limitations for E. coli, Total Residual Chlorine, and pH.

The Department considered all seven (7) of the criteria presented in subsection 644.145.3 when evaluating the affordability of the relevant actions. Taking into consideration these criteria, this analysis examined whether the above referenced permit modifications affects the ability of an individual customer or household to pay a utility bill without undue hardship or unreasonable sacrifice in the essential lifestyle or spending patterns of the individual or household. As a result of reviewing the above criteria, the Department hereby finds that the action described above will result in a medium burden with regard to the community's overall financial capability and a medium financial impact for most individual customers/household.

Reference Page

- 1 Hannibal Affordability Information Form
- 2 Unemployment data from Missouri Department of Economic Development (February 2012) - <http://www.missourieconomy.org/pdfs/ure11202.pdf>
- 3 Median Household Income data from American Community Survey – Median income in the past 12 months – <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>
- 4 2010 Census Population Data - <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>
2000 Census Population Data - <http://www.census.gov/popest/data/cities/totals/2009/tables/SUB-EST2009-04-29.xls> 1990 Census Population Data – <http://www.census.gov/prod/cen1990/cp1/cp-1-27.pdf>
- 5 Poverty data – American Community Survey - <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>
- 6 <http://www.missourieconomy.org/indicators/wages/pci10county.stm>
- 7 http://www.missourieconomy.org/pdfs/ne_wia_retail_trade_analysis.pdf