

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-0127949

Owner: St. Louis Metropolitan Sewer District (MSD)
Address: 2350 Market Street, St. Louis, MO 63129

Continuing Authority: St. Louis Metropolitan Sewer District (MSD)
Address: 1000 Grand Glaize Parkway, St. Louis, MO 63103

Facility Name: MSD, Lower Meramec Wastewater Treatment Facility
Facility Address: 7849 Fine Road, St. Louis, MO 63129

Legal Description: SE¼, SW¼, Sec. 34, T43N, R6W, St. Louis County
UTM Coordinates: X= 732290, Y= 4255337

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

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 TWO

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.

December 1, 2012
Effective Date

Sara Parker Pauley, Director, Department of Natural Resources

March 30, 2017
Expiration Date

John Madras, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Outfall #001 – POTW – SIC #4952

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

Coarse screens, fine screens, primary sedimentation (with chemical addition, if necessary)/Trickling filter/secondary clarifiers (with chemical addition, if necessary)/ gravity thickeners, belt filter press with polymer system, odor control (with chemical addition, if necessary)/Disinfection with sodium hypochlorite and de-chlorination with sodium bisulfite used during the recreational season/sludge is land applied, land filled, incinerated, or composted.

Design population equivalent is 150,000
Design flow is 15 MGD
Design peak daily flow is 42 MGD
Actual flow is 12.74 MGD
Design sludge production is 4,380 dry tons/year.

Legal Description: Land Grant – 3051, St. Louis County
UTM Coordinates: X = 732202.932, Y = 4252721.686
Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (1707)
USGS Basin & Sub-watershed No.: (07140101-0603)

Outfall #002 – Outfall terminated – no longer in use

Outfall #003 – Stormwater runoff/no treatment

Discharge is located approximately 450 feet southwest of the effluent box at a headwall.

Legal Description: Land Grant – 50, St. Louis County
UTM Coordinates: X = 732163, Y = 4254888
Receiving Stream: Unnamed tributary to Meramec River (U)
First Classified Stream and ID: Meramec River (P) (2183)
USGS Basin & Sub-watershed No.: (07140102-1004)

Outfall #004 – Stormwater runoff/no treatment

Legal Description: Land Grant – 50, St. Louis County
UTM Coordinates: X = 732348, Y = 4255337
Receiving Stream: Unnamed tributary to Meramec River (U)
First Classified Stream and ID: Meramec River (P) (2183)
USGS Basin & Sub-watershed No.: (07140102-1004)

A. 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 until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/day	24 hr. total
Temperature	°F	*		*	once/day	grab
Carbonaceous Biochemical Oxygen Demand ₅	mg/L		60	40	once/week	24 hr. comp.**
Total Suspended Solids	mg/L		65	45	once/week	24 hr. comp.**
<i>E. coli</i> (Note 1)	#/100 ml		1030	206	once/week	grab
pH – Units	SU	***		***	once/weekday	grab
Ammonia as N (April 1 – Sept 30)	mg/L	*		*	once/week	grab
(Oct 1 – March 31)		*		*		
Total Residual Chlorine	µg /L	325		163	twice/week	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JANUARY 28, 2013. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Chromium III, Total Recoverable	µg/L	*		*	once/quarter****	grab
Chromium VI, Dissolved	µg/L	*		*	once/quarter****	grab
Oil & Grease	mg/L	15		10	once/quarter****	grab
Hardness	mg/L	*		*	once/quarter****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE APRIL 28, 2013.

Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions #21	once/year	24 hr. composite**
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WET TEST MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE OCTOBER 28, 2013.

* Monitoring requirement only.

** A 24-hour composite sample is composed of at least 48 aliquots (subsamples) collected at 30 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.

**** See table below for quarterly sampling.

Note 1 - 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).

B. INFLUENT MONITORING REQUIREMENTS		Page 4 of 8	
		Permit No. MO-0127949	
The facility is required to meet a removal efficiency of 65% 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
<u>Influent</u>			
Carbonaceous Biochemical Oxygen Demand ₅	mg/L	once/quarter****	24 hr. composite**
Total Suspended Solids	mg/L	once/quarter****	24 hr. composite**
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>APRIL 28, 2013</u> .			

**** See table below for quarterly sampling.

Sample discharge at least once for the months of:	Report is due:
January, February, March (1st Quarter)	April 28
April, May, June (2nd Quarter)	July 28
July, August, September (3rd Quarter)	October 28
October, November, December (4th Quarter)	January 28

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.
 - (d) 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. The permittee is the facility with an area-wide management plan per 10 CSR 20-6.010(3)(B).
4. 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;

D. SPECIAL CONDITIONS (continued)

- (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.

5. 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 in Part A of the permit by the Director.
- (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.

6. Report as no-discharge when a discharge does not occur during the report period.

7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

8. The permittee shall comply with any applicable requirements listed in 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.

9. The permittee shall report any substantial changes in the volume or character of pollutants being introduced to the POTW. The approval to bypass may be modified or terminated when there is a substantial change in the volume or character of pollutants being introduced to the POTW.

10. The SWPPP shall continue to do the following:

- (a) Assess all storm water discharges associated with the facility. This must include a list of potential contaminants and an annual estimate of amounts that will be used in the described activities.
- (b) Listing of all specific Best Management Practices (BMPs) and a narrative explaining how BMPs will be implemented to control and minimize the amount of potential contaminants that may enter storm water.
- (c) Have an individual to be responsible for environmental matters.
- (d) Provide training to all personnel involved in material handling and storage, and housekeeping of maintenance and cleaning areas. Proof of training shall be submitted on request of DNR.
- (e) Provide spill cleanup in the event that any stored pollutants are released in to the environment.
- (f) Avoid track-out from any building where materials are contained.
- (g) Maintain vegetation on all unpaved area to prevent erosion.

11. Permittee shall adhere to the following minimum Best Management Practices:

- (a) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of storm water from these substances.
- (b) Provide collection facilities and arrange for proper disposal of waste products including but not limited to petroleum waste products, and solvents.
- (c) Provide good housekeeping practices on the site to keep solid waste from entry into waters of the state.

D. SPECIAL CONDITIONS (continued)

12. All paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) shall be stored so that these materials are not exposed to storm water. Spill prevention, control, and/or management shall be provided sufficient to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.
13. The permittee shall use the combined primary and secondary treatment capacities in a way that maximizes treatment. This approval does not relieve the permittee from meeting 65% removal for CBOD and TSS. In addition, the permittee shall continue to implement and refine a program that maximizes the capacity, management, operation, and maintenance (CMOM) of the collection system to assure the system is operated in a way that minimizes peak flows during wet weather events. The permittee shall adhere to the federal Consent Decree No. 4:07-CV-1120(CEJ) which was entered on April 27, 2012 as it pertains to conditions of the Missouri State Operating Permit for this facility.
14. Substances, regulated by federal law under the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), that are transported, stored, or used for maintenance, cleaning or repair, shall be managed according to RCRA and CERCLA.
15. 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.
16. The permittee shall submit to the Department on or before September 30th 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.
17. Sewer Extension Authority
 - (a) The Department has approved the Sewer Extension Program for MSD to regulate and approve construction of sanitary sewers that are tributary to this wastewater treatment plant.
 - (b) The approval of the Sewer Extension Program may be modified or revoked by the Department if the sewage collection, transportation, and receiving treatment facility reach their respective design capacity, or if the Department determines that this program is causing or contributing to chronic non-compliance of the receiving treatment facility, or if the permittee fails to follow the terms and conditions of the submitted and approved program.
 - (c) The Sewer Extension Program Special Condition may be reopened and modified and reissued, or alternatively revoked to incorporate new or modified conditions to the sewer construction permit authority, if information or regulation or statute indicates changes are necessary to assure compliance with Missouri's Clean Water Law and associated regulations.
 - (d) If item b or item c of the Sewer Extension Program occurs, the permittee will be notified to any modification to this operating permit.
 - (e) The Permittee, as part of their Sewer Extension Program, shall submit an annual report January 28th of each year, to the Missouri Department of Natural Resources' St. Louis Regional Office. The report must provide the following: 1) list of the name of the projects approved, and 2) the length of sewers and force mains and the capacity of lift stations constructed under the sewer extension program. A summary of total flow at the treatment facility shall be included. Detailed project information and data including design flows and inspection records shall be available for review upon request.
 - (f) The Sewer Extension Authority is valid the length of this operating permit. Upon renewal of the permit, the Sewer Extension Authority for MSD- St. Louis will be reevaluated.
18. At least one sign shall appear on the fence on each side of each facility. Minimum wording shall be "SEWAGE TREATMENT FACILITY – KEEP OUT", in letters at least 2 inches high.

D. SPECIAL CONDITIONS (continued)

19. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.
20. An all-weather access road shall be provided from a public right-of-way to the treatment facility.
21. 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	5.8 %	Once/year	24 hr. composite**	September

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampler.

Dilution Series							
AEC% = 5.8%	40.8%	20.4%	10.2%	5.1%	2.6%	(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.
 - (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.

D. SPECIAL CONDITIONS (continued)

- (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

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF RENEWAL
MO-0127949
MSD, LOWER MERAMEC WWTF

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:

The Lower Meramec WWTF is a 15 MGD (42 MGD peak flow) secondary treatment plant. Average daily flow is 12.74 MGD. Flow enters through coarse screens to a pump station and then to the fine screens, two with 15 MGD and one with 75 MGD capacity) in the treatment plant. After going through the fine screens, flow enters two 90-foot diameter primary clarifiers, where chemical feed can be used to enhance settlement. Primary sludge and grit are separated through two slurry cup grit units. The primary effluent is treated in two 150-foot diameter trickling filters with approximately 271,000 cubic feet of volume. The trickling filter effluent enters two 150-foot final clarifiers with approximately 2.13 million gallons. Final effluent is seasonally disinfected using sodium hypochlorite and de-chlorinated using sodium bisulfite. The effluent is discharged into the Mississippi River. Sludge is thickened in two 50-foot diameter gravity thickeners, dewatered with two belt filter presses, and can be held in two sludge storage bins until disposed of.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- No.

Application Date: 08/31/2011
Expiration Date: 02/27/2012
Last Inspection: 03/16/2008 Non-Compliance

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
#001	23.25	Secondary	Domestic	~ 0.0
#003	Varies	None	Stormwater runoff	~ 0.8
#004	Varies	None	Stormwater runoff	~ 1.0

Outfall #001 – POTW – SIC #4952

Legal Description: Land Grant – 3051, St. Louis County
UTM Coordinates: X = 732203, Y = 4252722
Receiving Stream: Tributary to Mississippi River (P)
First Classified Stream and ID: Mississippi River (P)
USGS Basin & Sub-watershed No.: (07140101-0603) (1707)

Outfall #002 – Stormwater

It was determined that this location is an intake for Outfall #003 and is no longer permitted as an outfall.

Outfall #003 – Stormwater

Stormwater runoff/no treatment
Discharge is located approximately 450 feet southwest of the effluent box at a headwall.

Legal Description: Land Grant – 50, St. Louis County
UTM Coordinates: X = 732025, Y = 4255441
Receiving Stream: Tributary to Meramec River (U)
First Classified Stream and ID: Meramec River (P)
USGS Basin & Sub-watershed No.: (07140102-1004) (2183)

Outfall #004 – Stormwater runoff/no treatment

Legal Description: Land Grant – 50, St. Louis County
UTM Coordinates: X = 732348, Y = 4255337
Receiving Stream: Unnamed tributary to Meramec River (U)
First Classified Stream and ID: Meramec River (P) (2183)
USGS Basin & Sub-watershed No.: (07140102-1004)

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

The New Lower Meramec WWTF went online in 2007. The Mississippi River has a TMDL for Chlordane and Polychlorinated biphenyls, or PCBs. The Meramec River is listed on the 2008 303 (d) impaired streams list for Mill tailings, and the 2010 Water Quality report for impaired streams for Lead and Bacteria. The facility reported exceedances of BOD and TSS limits in March 2007 and TSS in September 2007. As of the last compliance inspection on March 16, 2008, the facility was still bypassing. However, the facility states that by August 26, 2008, the modifications to the influent structure have reduced bypassing at this facility.

Comments:

The facility states that during some wet weather events, primary treated flows in excess of secondary treatment capacity are diverted around secondary treatment, and recombined with secondary treated flows prior to discharge. All blended flow will be seasonally disinfected beginning on April 1, 2012.

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 20-9.020(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

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.

- Department required:
The Department requires this facility to retain the services of a certified operator due to: size and treatment type of the facility

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

Operator's Name: Todd V. Heller
 Certification Number: 3882
 Certification Level: A

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

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)]:
 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:

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	EDU**
Mississippi River	P	1707	IRR, LWW, AQL, SCR, DWS, IND, WBC "B"	07140101-0603	Ozark/Apple/Joachim
Unnamed trib. to Meramec River	U	----	General Criteria	07140102-1004	Ozark/Meramec
Meramec River	P	2183	LWW, AQL, SCR, DWS, IND, WBC "A"	07140102-1004	Ozark/Meramec

* - 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

MIXING CONSIDERATIONS: Mississippi River (Mixing values derived using March 1, 2012 CORMIX model)

Regulatory Mixing Zone

According to 10 CSR 20-7.031, effluent discharged to the Mississippi River must meet chronic water quality criteria within ¼ mile downstream of an outfall structure. The CORMIX model was used to determine farfield effluent plume predictions based on a design flow of 15 MGD and an outfall structure 6.5' wide and 1' tall.

Zone of Initial Dilution (Z.I.D.).

Regulations contained within 10 CSR 20-7.031 state that the Z.I.D. is 10% of the mixing zone flow and cannot exceed 10 times design flow of the facility.

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Mississippi River (P)	52,900	56,700	63,800

MIXING CONSIDERATIONS TABLE: Meramec River (using stream gauge #07019000)

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(B)(III)(A)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(B)(III)(B)...]	
7Q10	30Q10	1Q10	7Q10
3,815	3,846	376	381

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.

- All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

ANTI-DEGRADATION:

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Anti-degradation 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 & SEWAGE SLUDGE:

Bio-solids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). 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. Additional information regarding bio-solids and sludge is located at the following web address: <http://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

- Permittee land applies bio-solids in accordance with Standard Conditions III and a Department approved bio-solids management plan.

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.

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 A – 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.

Applicable ;

Secondary Treatment is 65% removal [40 CFR Part 133.102(a)(3) & (b)(3)].

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

Sanitary Sewer Overflows (SSOs) are 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.

The permittee continues to implement a program for maintenance and repair of the collection system, in accordance with the Consent Decree.

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.

Applicable ; A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

All chemicals stored at the MSD – Lower Meramec facility are properly contained and all waste streams of the treatment process are separated and properly disposed of. Best Management Practices have been implemented at the facility to prevent any pollutants or waste streams from entering the stormwater sewer system. The facility also employs good housekeeping measure to ensure that the facility is kept clean.

The facility conducts monthly, quarterly and yearly monitoring to observe the two stormwater outfalls during times of discharge. The facility also conducts annual inspections. The process includes an inspection and review of all potential pollutants and all stormwater BMPs. If BMPs are found to be ineffective they are updated or replaced.

WASTE-LOAD 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 ;

Waste-load 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).

Number of Samples "n":

Additionally, in accordance with the TSD for water quality-based permitting, effluent quality is determined by the underlying distribution of daily values, which is determined by the Long Term Average (LTA) associated with a particular Wasteload Allocation (WLA) and by the Coefficient of Variation (CV) of the effluent concentrations. Increasing or decreasing the monitoring frequency does not affect this underlying distribution or treatment performance, which should be, at a minimum, be targeted to comply with the values dictated by the WLA. Therefore, it is recommended that the actual planned frequency of monitoring normally be used to determine the value of "n" for calculating the AML. However, in situations where monitoring frequency is once per month or less, a higher value for "n" must be assumed for AML derivation purposes. Thus, the statistical procedure being employed using an assumed number of samples is "n = 4" at a minimum. For Total Ammonia as Nitrogen, "n = 30" is used.

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 head-works. 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 devices designed for peak wet weather flows.

- This facility does bypass. 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 wet weather flows.

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 from St. Louis County to Mississippi County is listed on the 2012 Missouri 303(d) List for Lead and Zinc from the Herculaneum lead smelter, and E. coli from point and non-point sources.

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 supersede 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	GPD	1	*		*	NO	*/*
CBOD ₅	MG/L	3		60	40	NO	60/40
TSS	MG/L	1		65	45	NO	65/45
pH	SU	1	6.5-9.0		6.5-9.0	YES	6.0-9.0
AMMONIA AS N (APRIL 1 – SEPT 30)	MG/L	2	*		*	NO	*/*
AMMONIA AS N (OCT 1 – MARCH 31)	MG/L	2	*		*	NO	*/*
ESCHERICHIA COLI	**	2		1030	206	YES	FECAL COLIFORM 1000/400
CHLORINE, TOTAL RESIDUAL	µg/L	2	335		163	YES	0.19/0.09 MG/L
OIL & GREASE (MG/L)	MG/L	2,3	15		10	NO	15/10
CHROMIUM III, TOTAL RECOVERABLE	µg/L	2,3	*		*	NO	*/*
CHROMIUM VI, DISSOLVED	µg/L	2,3	*		*	No	*/*
HARDNESS	MG/L	2,3	*		*	NO	*/*
WHOLE EFFLUENT TOXICITY (WET) TEST	% Survival	11	Please see WET Test in the Derivation and Discussion Section below.				

* - Monitoring requirement only.

** - # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.

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. 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.
- **Carbonaceous Biochemical Oxygen Demand (CBOD₅).** 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. As establish in the 2002 WQRS and is achievable by the facility.
- **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. As establish in the 2002 WQRS and is achievable by the facility.
- **pH.** pH shall be maintained in the range from (6.5 – 9.0) standard units [10 CSR 20.7.015(8)(B)2.]

- **Total Ammonia Nitrogen.** A reasonable potential analysis was conducted for Total Ammonia Nitrogen and found to have no reasonable potential to exceed water quality standards at this time. Therefore, a monitoring only requirement will be retained in this permit.
- **Escherichia coli (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 designated uses 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).
- **Total Residual Chlorine (TRC).** 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. Design flow, 23.25 cfs. Mixing zone, 3,846 cfs. Zone of initial dilution, 204 cfs.

Chronic WLA: $C_e = ((23.25 + 3,846)10 - (0.0 * 3,846))/23.25$
 $C_e = 1,664 \mu\text{g/L}$

Acute WLA: $C_e = ((23.25 + 376)19 - (0.0 * 376))/23.25$
 $C_e = 326 \mu\text{g/L}$

$LTA_c = 1664 (0.527) = 877 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]
 $LTA_a = 326 (0.321) = 105 \mu\text{g/L}$ [CV = 0.6, 99th Percentile]

Use most protective number of LTA_c or LTA_a .

MDL = 105 (3.11) = 325 µg/L (0.33mg/L) [CV = 0.6, 99th Percentile]
AML = 105 (1.55) = 163 µg/L (0.16 mg/L) [CV = 0.6, 95th Percentile, n = 4]

Total Residual Chlorine effluent limits of 0.19 mg/L daily maximum, 0.09 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

- **Oil & Grease.** Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Dissolved Oxygen.** The Department has evaluated the D.O. monitoring data from the previous permit cycle and determined that future monitoring of D.O. may be useful, however, this NPDES permit does not require D.O. monitoring due to the lack of potential future stream modeling efforts. Furthermore, exceedances of the D.O. water quality standard associated with this discharge have not been demonstrated.
- **Metals.** RPA was conducted for Cadmium, Cyanide, Copper, Lead, Nickel, Zinc, Silver, Iron, Mercury, and Arsenic. No Reasonable Potential exists for these pollutants. Therefore, limits for these metals will not be included in the permit.
- **Chromium.** Data did not exist on the DMR for this facility. Therefore, a monitoring only requirement will be maintained in 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.
- Facility continuously or routinely exceeds their design flow.

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 C – 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 August 10, 2012 to September 10, 2012. Responses to the Public Notice of this operating permit warrant the modification of effluent limits and/or the terms and conditions of this permit. The comments and responses are summarized below:

- MSD requested to correction of several typographical errors contained in the draft permit and the fact sheet. These errors have been corrected.
- MSD requested the legal description and UTM coordinates for each outfall location be changed. However, no documentation was submitted to support the requested changes. Therefore, the data was retained in the permit and fact sheet.
- MSD requested the 30-minute interval be removed from the 24-hour sampling frequency in the draft permit. This request could not be granted. There must be an interval in order for the sample to be composite. Since no other alternative was proposed the sampling frequency was retained in the permit.
- MSD requested the removal of Dissolved Oxygen limits from the draft permit. The Department reevaluated the D.O. monitoring data from the previous permit cycle and determined that future monitoring of D.O. may be useful; however the D.O. monitoring requirement will be removed from the permit due to the lack of potential future stream modeling efforts.
- MSD requested the minimum sampling requirement table be removed from the draft permit to prevent redundancy. This table was removed from the permit.

- MSD requested that the stormwater monitoring requirement be removed from the draft permit due to the development of a facility SWPPP. Therefore, this condition was removed from the permit.
- MSD requested special condition #3 be removed from the draft permit. Since special condition does not apply to this facility it was removed from the permit.
- MSD requested special condition #4 in the draft permit, regarding Water Quality Standards, be changed to include “To the extent required by law.” At this time the Department wishes to maintain the language as written in the draft permit. In the future if the Department and various stakeholders groups determine a path forward regarding this issue the permittee retains the option to apply for a modification.
- MSD requested the removed of special conditions #9, #15 and #21 from the draft permit. Standard condition #21 was a repeat of special condition #15 and was removed from the permit. Special condition #9 and #15 will be retained in the permit. These conditions are standard conditions in all permits.
- MSD requested that the wording contained in special condition #13 be changed. However, upon further review the Department determined to remove the condition from the draft permit.
- MSD requested the removal of special condition #20 in the draft permit. After reevaluating this condition the Department changed the wording to better reflect this facility.
- MSD requested that the A.E.C. % be changed to reflect the current permit A.E.C %. The March 2012 Cormix Study conducted by Geosyntec Consultants, submitted for the New Lower Meramec Wastewater Treatment Plant outfall to the Mississippi River defines the allowable effluent concentration as follows:

$$\text{AEC} = \text{Qe}/(\text{Qs}+\text{Qe}), \text{ where } \text{Qe} = 23.25 \text{ cfs and } \text{Qs} = 7\text{Q}10 \text{ ZID} = 381 \text{ cfs}$$

$$= 23.25/(381+23.25)$$

$$= 5.8\%$$

Therefore the A.E.C% was retained in the permit at 5.8%.
- MSD requested the distances of each outfall to the classified segments be changed. The Department reevaluated this data. The distances of each outfall to the classified segments were updated in the fact sheet to reflect the appropriate distances.
- MSD requested the facility performance history section of the fact sheet language be changed from “As of the last compliance inspection on March 16, 2008, the facility was still bypassing” to “The bypassing noted during the compliance inspection on March 16, 2008, was corrected by August 26, 2008. The Department notes the efforts to fix bypassing at this facility. However, the requested language was not incorporated into the fact sheet. The fact was modified to include the following statement; “The facility states that modifications to the influent structure pipe have reduced bypassing.
- MSD requested that the TRC values be recalculated. These values were recalculated. The new values were incorporated into the draft permit and fact sheet.

DATE OF FACT SHEET: (01/23/2012, 07/12/2012, 07/13/2012, 10/09/2012)

COMPLETED BY:

HILLARY CLARK, ENVIRONMENTAL SPECIALIST III
NPDES PERMITS UNIT
PERMITTING AND ENGINEERING SECTION
WATER PROTECTION PROGRAM
(573) 751-7326
HILLARY.CLARK@DNR.MO.GOV

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.	10
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	10
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	5
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
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	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	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)	----	47

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	10
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	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	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	
Evaporative sludge drying	2	
Mechanical dewatering	8	8
Solids reduction (incineration, wet oxidation)	12	
Land application	6	
Total from page TWO (2)	----	32
Total from page ONE (1)	---	47
Grand Total	---	79

- 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	12.10	1.12	1.50	0.10	12	15.2/0.600	0.999	4.693	NO
Total Ammonia as Nitrogen (Winter) mg/L	12.1	1.12	3.10	0.10	13	15.1/0.100	1.05	4.714	NO
Iron, Total Recoverable	1000	22.26	1000	2.26	18	675/60	0.547	2.253	NO
Mercury, Total Recoverable	2.40	0.03	0.50	0.00	16	0.600/0.050	0.924	3.660	NO
Arsenic Total Recoverable	20.00	0.33	20.00	0.03	18	8.0/1.0	0.736	2.842	NO
Cadmium, Total Recoverable	10.61	0.89	0.47	0.09	18	9.0/0.05	1.811	6.779	NO
Copper, Total Recoverable	27.90	0.26	17.44	0.03	18	11/3.0	0.317	1.635	NO
Lead, Total Recoverable	207.31	0.84	8.08	0.09	18	20/0.15	0.745	2.871	NO
Nickel, Total Recoverable	872.36	1.84	96.98	0.19	18	40/3.0	0.827	3.145	NO
Zinc, Total Recoverable	222.85	4.66	222.85	0.47	17	128/15.0	0.610	2.488	NO
Silver, Total Recoverable	13.36	2.21	N/A	N/A	18	30/1.0	1.407	5.250	NO

N/A – Not Applicable

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

** - If the number of samples is 10 or greater, 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.

APPENDIX C – AFFORDABILITY ANALYSIS:

Missouri Department of Natural Resources
Water Protection Program
Affordability Determination and Finding
(In accordance with RSMo 644.145)

Operating Permit Renewal
MSD-Lower Meramec Wastewater Treatment Plant
MO-0127949

Section 644.145 RSMo requires DNR to make a “finding of affordability” when “issuing permits under” or “enforcing provisions of” state or federal clean water laws “pertaining to any portion of a combined or separate sanitary sewer system or publicly-owned treatment works.”

Description:

POTW – SIC #4952

Coarse screens, fine screens, primary sedimentation (with chemical addition, if necessary)/Trickling filter/secondary clarifiers (with chemical addition, if necessary)/ gravity thickeners, belt filter press with polymer system, odor control (with chemical addition, if necessary)/Disinfection with sodium hypochlorite and de-chlorination with sodium bisulfite used during the recreational season/sludge is land applied, land filled, incinerated, composted, or used in land application.

Design population equivalent is 150,000

Design flow is 15 MGD

Design peak daily flow is 42 MGD

Actual flow is 12.74 MGD

Design sludge production is 4,380 dry tons/year.

Receiving Stream: Mississippi River (P)

First Classified Stream and ID: Mississippi River (P)

USGS Basin & Sub-watershed No.: (07140101-0603) (1707)

Residential Connections: 20,290

Commercial Connections: 896

Total Connections: 21,186

New Permit Requirements or Requirements Now Being Enforced:

This is a renewal of an operating permit with no new or expanded conditions. This permit has less monitoring requirements in it than the previous permit. The facility has demonstrated its ability to meet these permit limits. Discharge Monitoring Reports (DMRs) provide data that support the Department’s finding that this facility is capable of meeting the final effluent limitations with no new cost.

All wastewater treatment facilities will experience a bypass if rainfall intensity is high enough, but facilities are required to maintain their collection systems so as to minimize bypasses to the extent practicable. This facility bypassed only 3 times in the past five years, with no water quality impacts noted.

Range of Anticipated Costs Associated with Complying with Requirements:

This is a modification of an operating permit with no new or expanded conditions that does not involve any significant costs for the permittee.

(1) A community's financial capability and ability to raise or secure necessary funding;

This is a renewal for an operating permit with no new or expanded conditions and does not involve any significant costs for the permittee. The community has no need to secure funding or require changes to the rate structure. Therefore, the community shall incur no new costs and financial capability exists.

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

This is a renewal for an operating permit with no new or expanded conditions, thus maintaining existing pollution control options. Therefore, no rate increase to individuals or households of the community is required to achieve the pollution control conditions of this permit.

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

This is a renewal for an operating permit with no new or expanded conditions, thus maintaining existing overall costs and environmental benefits. There will be no new costs or environmental benefits of control technologies unless the facility initiates technology upgrades.

(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;*

This is a renewal for an operating permit with no new or expanded conditions, thus no implementation schedule is required. No improvements are necessary, resulting in no new economic impacts on distressed populations and no other new cost burden.

The facility has demonstrated the ability to comply with the conditions in the permit, avoiding any violations or fines that would result in financial hardships.

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

This is a renewal for an operating permit with no new environmental improvements; therefore, it will not affect the timing or funding of other community investments.

(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.

This is a renewal for an operating permit with no new or expanded conditions. Existing efforts to control combined sewer overflows and wet weather flows at the facility are sufficient to meet the requirements of this permit. No new cost burden exists.

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

This is a renewal for an operating permit with no new or expanded conditions. It creates no new cost burden that could be affected by local economic conditions.

St. Louis's population has decreased 19.51% from 1990 to 2010. In terms of economic strength, St. Louis County is average when compared to other counties in the State. The percentage of labor force is 78% below the State average, the per capita wealth¹ is 67% above the State average and the per capita income is 70% above the State's average.

In terms of retail sales, St. Louis County has gained retail customers from surrounding counties and the County residents spend more than the state average on retail goods and services. The buying power index of St. Louis County residents is better than average compared to the rest of the regional economy².

Conclusion and Finding

This is a renewal for an operating permit with no new or expanded conditions. The facility is currently capable of meeting the permit requirements. No new cost burden exists. Also, the facility states that the removal of authorization for bypasses at outfall #002 does not require capital improvements.

All wastewater treatment facilities will experience a bypass if rainfall intensity is high enough, but facilities are required to maintain their collection systems so as to minimize bypasses to the extent practicable. This facility bypassed only 3 times in the past five years, with no water quality impacts noted.

As a result of reviewing the above criteria, the Department hereby finds that the action described above will result in low or no burden with regard to the community's overall financial capability and low or no financial impact for most individual customers/households.

¹ Per capita wealth is calculated by taking a sum of appraised value of residential property, mobile homes and motor vehicles and this sum is then divided by County population.

² http://www.missourieconomy.org/pdfs/wc_wia_retail_trade_analysis.pdf