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-0135593
Owner:	Fastlane Group Inc.
Address:	2299 South Spoede Lane, Warrenton, Missouri 63383
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Fastlane Taylor WWTP
Facility Address:	6725 State Highway 6, Taylor, Missouri 63471
Legal Description:	NE ¼, NE ¼, Sec. 14, T59N, R6W, Marion County
Latitude/Longitude:	+3954560/-09131440
Receiving Stream:	Unnamed tributary to North Fabius River (U)
First Classified Stream and ID:	North Fabius River (P) (00056)
USGS Basin & Sub-watershed No.:	(07110002-100002)

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

FACILITY DESCRIPTION

Outfall #001 – Gas and Service Station – SIC #5541– **No Certified Operator Required**
Extended aeration activated sludge / tablet chlorination and chlorine contact basin / tablet dechlorination / sludge holding tank / sludge disposal by contract hauler.
Design population equivalent is 224.
Design flow is 22,400 gallons per day.
Design sludge production is 5.08 dry tons/year.

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 11, 2010
Effective Date

Mark N. Templeton, Director
Department of Natural Resources

February 10, 2015
Expiration Date

Irene Crawford
Regional Director, Northeast Regional Office

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/quarter*****	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/quarter*****	composite**
Total Suspended Solids	mg/L		45	30	once/quarter*****	composite**
pH – Units	SU	****		****	once/quarter*****	grab
Ammonia as N	mg/L				once/quarter*****	grab
(May 1 – Oct 31)		3.8		1.4		
(Nov 1 – April 30)		7.6		2.9		
Temperature	°C	*		*	once/quarter*****	grab
Oil & Grease	mg/L	15		10	once/quarter*****	grab
Fecal Coliform (Notes 1 & 2)	#/100mL	1000		400	once/quarter*****	grab
Total Residual Chlorine (Note 3)	mg/L	0.017 (0.13ML)		0.008 (0.13ML)	once/quarter*****	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE April 28, 2010 . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions #9	once/permit cycle	Composite**

MONITORING REPORTS SHALL BE SUBMITTED ONCE/PERMIT CYCLE. THE FIRST REPORT IS DUE OCTOBER, 2010.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.
** A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.
**** 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.
***** 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

Note 1 - Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.

Note 2 - The Monthly Average Limit for Fecal Coliform is a geometric mean.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 3 - This permit contains a Total Residual Chlorine (TRC) limit.

(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 0.13 mg/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 0.13 mg/L will be considered violations of the permit and values less than the minimum quantification level of 0.13 mg/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 year-round unless the permit specifically states that "Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31." If your permit does not require disinfection during the non-recreational months, do not chlorinate in those months.

(c) Do not chemically dechlorinate **if it is not needed to meet the limits in your permit.**

(d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 mg/L" TRC.

C. 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 area-wide wastewater treatment system 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 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.

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

C. SPECIAL CONDITIONS (continued)

6. 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.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
   (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
   (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

8. 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.

9. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#001	100 %	Once/five years	Composite	August, 2010

   (a) Test Schedule and Follow-Up Requirements
      (1) Perform a SINGLE-dilution 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) For discharges of storm water, samples shall be collected within three hours from when discharge first occurs.
         (b) Samples submitted for analysis of storm water discharges shall be collected as a grab.
         (c) For discharges of non-storm water, samples shall be collected only when precipitation has not occurred for a period of forty-eight hours prior to sample collection. In no event shall sample collection occur simultaneously with the occurrence of precipitation excepting for storm water samples.

C. SPECIAL CONDITIONS (continued)

(d) A twenty-four hour composite sample shall be submitted for analysis of non-storm water discharges.
(e) Upstream receiving water samples, where required, shall be collected upstream from any influence of the effluent where downstream flow is clearly evident.
(f) Samples submitted for analysis of upstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
(g) 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.
(h) 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 analyses performed upon any other effluent concentration.
(i) 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.
(j) Where flow-weighted composite sample is required for analysis, the samples shall be composited at the laboratory where the test is to be performed.
(k) Where in stream testing is required downstream from the discharge, sample collection shall occur immediately below the established Zone of Initial Dilution in conjunction with or immediately following a release or discharge.
(l) Samples submitted for analysis of downstream receiving water may be collected as either a grab or twenty-four-hour composite as appropriate to the nature of the discharge.
(m) All instream samples, including downstream samples, shall be tested for toxicity at the 100% concentration in addition to any other assigned AEC for in-stream samples.

(2) 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.

(3) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days and biweekly thereafter, until one of the following conditions are met:
(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(4) Failure of at least two multiple-dilution tests during any period of accelerated monitoring violates the permit narrative requirement for aquatic life protection.

(5) The permittee shall submit a concise summary of all test results for the test series to the WATER PROTECTION PROGRAM, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

(6) Additionally, the following shall apply upon failure of the third MULTIPLE DILUTION test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall 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. 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 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.

(7) 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.

(8) 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.

(9) 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.

(10) Submit a concise summary in tabular format of all test results with the annual report.

C. SPECIAL CONDITIONS (continued)

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be 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 mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance 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 or other Federal guidelines as appropriate or required.

(2) To pass a multiple-dilution test:

(a) For facilities with a computed percent effluent at the edge of the zone of initial dilution, Allowable Effluent Concentration (AEC), OF 30% OR LESS THE AEC must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; **OR**,

(b) For facilities with an AEC greater than 30% the LC50 concentration must be greater than 100%; **AND**,

(c) All effluent concentrations equal to or less than the AEC must be nontoxic. Mortality observed in all effluent concentrations equal to or less than the AEC shall not be 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 mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the laboratory control. The appropriate statistical tests of significance 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 or other federal guidelines as appropriate or required. Failure of one multiple-dilution test may be considered an effluent limit violation.

(c) 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.

(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 "Acceptable Effluent Concentration" (AEC) specified above.

(5) When dilutions are required, 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) Single-dilution tests will be run with:

(a) Effluent at the AEC concentration;

(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and

(c) reconstituted water.

(7) Multiple-dilution tests will be run with:

(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;

(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and

(c) reconstituted water.

(8) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

(9) If upstream control mortality exceeds 10%, the entire test will be rerun using reconstituted water as the dilutant.

D. SPECIAL CONDITIONS (continued)

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures 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,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

PERMIT TRANSFER

This permit may be transferred to a new owner by submitting an "Application for Transfer of Operating Permit" signed by the seller and buyer of the facility, along with the appropriate modification fee.

PERMIT RENEWAL REQUIREMENTS

Unless this permit is terminated, the permittee shall submit an application for the renewal of this permit no later than six (6) months prior to the permit's expiration date. Failure to apply for renewal may result in termination of this permit and enforcement action to compel compliance with this condition and the Missouri Clean Water Law.

TERMINATION

In order to terminate this permit, the permittee shall notify the department by submitting Form J, included with the State Operating Permit. The permittee shall complete Form J and mail it to the department at the address noted in the cover letter of this permit. Proper closure of any storage structure is required prior to permit termination. A closure plan shall be submitted to the department and approved prior to initiating closure activities.

DUTY OF COMPLIANCE

The permittee shall comply with all conditions of this permit. Any noncompliance with this permit constitutes a violation of Chapter 644, Missouri Clean Water Law, and 10 CSR 20-6. Noncompliance may result in enforcement action, termination of this authorization, or denial of the permittee's request for renewal.

This permit authorizes only the activities described in this permit. Compliance with this permit may not be considered a shield from compliance with any local ordinance, State Regulation or State Law.

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF INITIAL PERMITTING
OF
MO-0135593
FASTLANE TAYLOR

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 ☐, Minor ☒, Industrial Facility ☐; Variance ☐;
Master General Permit ☐; General Permit Covered Facility ☐; and/or permit with widespread public interest ☐.

Part I – Facility Information

Facility Address: 6725 Hwy 6
Facility Type: NON-POTW
Facility SIC Code(s): 5541

Facility Description:
The facility is an extended aeration plant that serves a fueling station, convenience store, restaurant, and service shop. There is a flow equalization basin, an aerated sludge holding basin, four aeration basins, and a clarifier. Following the clarifier is a chlorinator, chlorine contact basin, a dechlorinator, and a weir box.

Application Date: August 28, 2008
Expiration Date: N/A, new facility
Last Inspection: N/A – new facility

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.03466	Secondary	Domestic	0.5

Outfall #001
Legal Description: NE ¼, NE ¼, Sec. 14, T59N, R6W, Marion County
Latitude/Longitude: +3954560/-09131440
Receiving Stream: Unnamed Tributary to North Fabius River (U)
First Classified Stream and ID: North Fabius River (P) (00056)
USGS Basin & Sub-watershed No.: (07110002100002)

Water Quality History:
This treatment facility is new. There is no water quality history. A water quality review to determine effluent limits was completed in 2007.

Comments:
Secondary treatment limitations apply. The receiving stream discharges into the North Fabius River approximately 0.5 miles past the proposed outfall. The North Fabius River is a classified stream that is designated for whole body contact. Ammonia limits were calculated using a modified Feed Forward Reaction decay formula to determine reduction in ammonia before the first classified water body. Due to the proximity of the outfall to the classified stream, fecal coliform limits apply.

There will be a laundry mat at this facility, which will produce a waste stream with higher BOD than normal domestic waste. Therefore, the treatment plant was designed for a BOD population equivalent of 282, and a flow population equivalent of 224. The plant was designed with the possibility of adding a second similar treatment facility in parallel at a later date

The North Fabius River was found on the 2002 303d list for sediment from non-point sources.

Part IIA – Operator Certification Requirements

Not Applicable ☒; This facility is not required to have a certified operator.

Part IIB– Operational Monitoring

As per [10 CSR 20-9.010(4))], the facility is not required to conduct operational monitoring.

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 list 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.
Please mark all appropriate designated waters of the state categories of the receiving stream.

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**
Unnamed tributary to the North Fabius River	U	-----	General Criteria	07110002	Central Plains/Cuivre/ Salt
North Fabius River	P	00056	IRR, LWW, AQL, WBC(B), SCR, DWS***		

* - 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
*** - UAA has not been conducted.

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.

☒ - This is a new facility. No previous permit exists.

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.

☒ - The application for a permit to construct this facility was received before the September 1 deadline. No antidegradation review is required.

APPLICABLE PERMIT PARAMETERS:
Effluent parameters contained in Factsheets and Missouri State Operating Permits are obtained from Technology Based Effluent Limit (TBEL), Missouri's Effluent Regulations [10 CSR 20-7.015], Missouri's Water Quality Standards [10 CSR 20-7.031], previous Missouri State Operating Permits, and from Operating Permit Applications.

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 (new operating permits) ☒;
The permittee has proposed that sludge and bio-solids are to be removed by a contract hauler for this facility.

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

Not Applicable ☒;
The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Limitations must control all pollutants or pollutant parameters that are or may be discharged at a level which will cause, have reasonable potential to cause, or contribute to an excursion above the Missouri Water Quality Standards.

Not Applicable ☒;
A RPA was not conducted for this facility.

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 (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs). 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

Not Applicable ☒;
This wastewater treatment facility is not a POTW. Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSOS), AND INFLOW & INFILTRATION (I&I):
Collection systems are a critical element in the successful performance of the wastewater treatment process. Under certain conditions, poorly designed, built, managed, operated, and/or maintained systems can pose risks to public health, the environment, or both. Causes of SSOs include, but are not limited to, the following: high levels of I&I during wet weather; blockages; structural, mechanical, or electrical failures; collapsed or broken sewer pipes; insufficient conveyance capacity; and vandalism. Effective and continuous management, operation, and maintenance, as well as ensuring adequate capacity and rehabilitation when necessary are critical to maintaining collection system capacity and performance while extending the life of the system.

Not Applicable ☒;
This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

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.

Not Applicable ☒;
This permit does not contain a SOC.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):
A plan to schedule activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. The plan may include, but is not limited to, treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

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 to 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:

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$ (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).

Not Applicable ☒;
Wasteload allocations were not calculated.

WLA MODELING:

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

WHOLE EFFLUENT TOXICITY (WET) TEST:
As per [10 CSR 20-7.031(1)(CC)], a toxicity test conducted under specified laboratory conditions on specific indicator organism; and as per [40 CFR Part 122.2], the aggregate toxic effect of an effluent measured directly by a toxicity test.

Applicable ☒;
As required or recommended; requiring scheduled WET testing is reasonably appropriate to include in site-specific Missouri State Operating Permits for discharge to waters of the state issued under the National Pollutant Discharge Elimination System. WET testing requirements are established by the WET Test Policy, Section 308 of the Federal Water Pollution Control Act, and [40 CFR § 136]. A WET test may be applied to facilities that meet the following criteria:

- All major (domestic & industrial) discharge facilities ☐
- Facilities that are exceeding or routinely exceed their design flow ☐
- Industrial dischargers or other dischargers that may alter their production processes throughout the year ☐
- Facilities that may handle large quantities of toxic substances, or substances that are toxic in large amounts ☐
- Facilities that have been granted seasonal relief of numeric limitations ☐
- Facilities that have WQBEL for toxic substances ☐
- Domestic dischargers ≤ 22,500 gpd ☒
- Municipal domestic ≥ 22,500 gpd ☐

A WET test, completed once per permit cycle, was recommended on the Water Quality Review Sheet. Since the facility will treat wastewater flows from a gas and service station, restaurant, and laundry, a WET test will ensure that the combination of these flows will not be toxic to the receiving stream.

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 ☒;
The North Fabius River is listed on the 2002 Missouri 303(d) List for Manganese and Sediment. Both pollutants were taken removed from the EPA approved portion of the 2004/2006 303(d) list. A TMDL was developed by the EPA for sediment in the North Fabius River. The TMDL explains that "Based on the assessment of sources, point sources do not contribute to water quality impairment relative to sediment impacts on stream biology. Thus, the [Wasteload Allocations] WLAs are zero percentage net reduction in sediment load."

☒ – This facility is not considered to be a source of the above listed pollutant(s) or considered to contributed to the impairment of the North Fabius River.

Part V – Effluent Limits Determination

Outfall #001 – Main Facility Outfall

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	1	*		*	NO	***
Biochemical Oxygen Demand$_5$	mg/L	1		45	30	NO	***
Total Suspended Solids	mg/L	1/10		45	30	NO	***
pH	SU	1	6 – 9		6 – 9	NO	***
Temperature	ºC	1	*		*	NO	***
Ammonia as N (May 1 – Oct 31)	mg/L	3/5	3.8		1.4	NO	***
Ammonia as N (Nov 1 – Apr 30)	mg/L	3/5	7.6		2.9	NO	***
Oil & Grease	mg/L	1	15		10	NO	***
Fecal Coliform	**	1	1000		400	NO	***
Escherichia coli	**	1	**Please see Escherichia Coli (E. coli) in the Derivation and Discussion Section below.**				
Chlorine, Total Residual	mg/L	2	.017		.008	NO	***
Whole Effluent Toxicity (WET) Test	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 Fecal Coliform is a geometric mean.
*** - Parameter not previously established in previous state operating permit.
N/A – Not applicable
S – Same as previous operating permit

Basis for Limitations Codes:

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

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

Recommendations regarding limitations and sampling frequencies made on the Water Quality Review Sheet were followed. Please see Appendix #2 – Water Quality Review Sheet.

- **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 [10 CSR 20-7.015(8)(B)1].

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1].

- **pH**. pH shall be maintained in the range from six to nine (6-9) standard units {10 CSR 20-7.015(8)(B)2.}

- **Temperature.** Monitoring requirement due to the toxicity of Ammonia varies by temperature.

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L.

Season	Temp (^{o}C)	pH (SU)	Total Ammonia Nitrogen CCC (mg/L)	Total Ammonia Nitrogen CMC (mg/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: May 1 – October 31, Winter: November 1 – April 30

Staff utilized a modified Feed Forward Reaction decay formula to allow degradation for ammonia prior to reaching the first classified water body:

$[NH_3N]_t = [NH_3N]_{t=0} * e^{-kt}$

Where
$[NH_3N]_t$ = ammonia concentration at confluence with classified segment.
$[NH_3N]_{t=0}$ = ammonia concentration at pipe = C_e
k = NH_3 oxidation per day $(k_{1,20})\Xi_1^{(Temp-20)}$

$k_{1,20} = 0.3(day^{-1})$
Ξ_1 = temperature correction factor = 1.083

t = time for effluent to travel to first classified segment (in days) = 0.06 days
Travel time was calculated using site-specific data submitted by Lewis-Bade, Inc.

Summer Temp. = 26ºC

Given $k = (0.3)(1.083)^{(26-20)} = 0.4841$ and t = 0.06 days; $e^{-kt} = e^{-(0.4841)(0.06)} = 0.97$

Which means 97 % of the ammonia concentration remains after leaving the facility and reaching the first classified stream segment.

C_e = (1.5 mg/L) / 0.97 = 1.55 mg/L

LTA_c = 1.55 mg/L (0.780) = **1.21 mg/L** [CV = 0.6, 99th Percentile, 30 day average]

MDL = 1.21 mg/L (3.11) = 3.8 mg/L [CV = 0.6, 99th Percentile]
AML = 1.21 mg/L (1.19) = 1.4 mg/L [CV = 0.6, 95th Percentile, n = 30]

Winter Temp. = 6ºC

Given k = (0.3)(1.083)$^{(6-20)}$ = 0.0982 and t = 0.06 days; $e^{-kt} = e^{-(0.0982)(0.06)} =$ 0.99.

Which means 99% of the ammonia concentration remains after leaving the facility and reaching the first classified stream segment.

C_e = (3.1 mg/L) / 0.99 = 3.13 mg/L

LTA_c = 3.13 mg/L (0.780) = **2.44 mg/L** [CV = 0.6, 99th Percentile, 30 day average]

MDL = 2.44 mg/L (3.11) = 7.6 mg/L [CV = 0.6, 99th Percentile]
AML = 2.44 mg/L (1.19) = 2.9 mg/L [CV = 0.6, 95th Percentile, n = 30]

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	3.8	1.4
Winter	7.6	2.9

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

- **Fecal Coliform**. Discharge shall not contain more than a monthly geometric mean of 400 colonies/ 100 mL and a daily maximum of 1000 colonies/100 mL during the recreational season (April 1 – October 31) [10 CSR 20-7.015(8)(B)4.A.]. The facility's operating permit will contain effluent limitations for *E. coli* that will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards when Missouri adopts the implementation of the E. coli standards. Also, please see **GENERAL ASSUMPTIONS OF THE WQRS #7.**

- **Escherichia coli (E. coli)**. This facility may be required to have *E. coli* effluent limitations when Missouri adopts the implementation of the *E. coli* standards, as per [10 CSR 20-7.031(4)(C)]. The operating permit will not be issued until the designing engineer has certified that construction is complete and the facility owner has applied for the final operating permit. If Missouri adopts the *E. coli* rule before construction is complete, the operating permit will be redrafted to include *E. coli* limitations instead of fecal coliform limitation.

- **Total Residual Chlorine (TRC)**. Warm-water Protection of Aquatic Life CCC = 10 □g/L, CMC = 19 □g/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 □g/L.

  C_e =(((Qe+Qs)*C) - (Qs*Cs))/Qe

  Chronic WLA: C_e = 10 □g/L

  Acute WLA: C_e = 19 □g/L

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

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

  Total Residual Chlorine effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average were recommended in the Water Quality Review Sheet, and were accepted for use in the permit. A minimum residual of 0.00013 is required.

- **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/PERMIT CYCLE:**

☒ A WET test was recommended on the Water Quality Review Sheet. Water quality based effluent limitations for ammonia were calculated to protect the first classified stream segment. The WET test will ensure that neither these limitations, nor the residual chlorine are acutely harmful to life in the receiving stream.

Allowable Effluent Concentration (AEC) calculations determine if the facility is to conduct single dilution or multiple dilution WET testing. Facilities that discharge to unclassified or Class C receiving streams, the AEC% is 100%. Facilities with less than 100% for an AEC% will have multiple dilution WET testing. Facilities that discharge to Lakes and have Acute WET testing, the AEC% is 100% due to [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] ZID not allowed for Lakes.

Minimum Sampling and Reporting Frequency

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/quarter	once/quarter
Biochemical Oxygen Demand$_5$	once/quarter	once/quarter
Total Suspended Solids	once/quarter	once/quarter
pH	once/quarter	once/quarter
Temperature	once/quarter	once/quarter
Ammonia as N (May 1 – Oct 31)	once/quarter	once/quarter
Ammonia as N (Nov 1 – Apr 30)	once/quarter	once/quarter
Oil & Grease	once/quarter	once/quarter
Fecal Coliform	once/quarter	once/quarter
Chlorine, Total Residual	once/quarter	once/quarter
Zinc, Total Recoverable	once/quarter	once/quarter

A sampling frequency of once per quarter was recommended on the Water Quality Review Sheet for all testing parameters except the WET test.

Part VI – 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.

PUBLIC NOTICE:
As per the Missouri Clean Water Law, the Missouri Clean Water Commission, and the federal Clean Water Act, persons wishing to comment on Missouri State Operating Permits are directed to do so by a department approved Public Notice coversheet. This Public Notice coversheet is attached to a Missouri State Operating Permit during the Public Notice period.

☒ - The Public Notice period for this operating permit was from December 5, 2008 to January 5, 2009. No responses received or responses to the Public Notice of this operating permit do not warrant the modification of effluent limits and/or the terms and conditions of this permit.

Date of Factsheet: October 28, 2008
Date of Public Notice: December 5, 2008

Submitted by:

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Josh Martin Date

Philip R. Wilson, P.E. Date

Missouri Department of Natural Resources
Water Protection Program
NPDES Permits and Engineering Section

Water Quality Review Sheet

Determination of Effluent Limits and

Facility Information

FACILITY NAME: Fastlane-Taylor WWTF NPDES #: NOT AVAILABLE

FACILITY TYPE/DESCRIPTION: Design flow will be 0.0224 MGD. Facility will be a mechanical treatment plant – Activated sludge.

EDU*: Plains/ MS Tribs btwn Des Moines and MO Rivers/ Des Moines Drainage 8- DIGIT HUC: 07110003 COUNTY: Marion

* - Ecological Drainage Unit

LEGAL DESCRIPTION: NE1/4, NE1/4, Sec 14, T59N, R6W LATITUDE/LONGITUDE: 3954560/9131440

WATER QUALITY HISTORY: The North Fabius River was listed on the 303(d) list of impaired waterbodies in 1998 due to naturally occurring manganese and sediment from agricultural runoff.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.04	Secondary	Unnamed Trib to North Fabius River Creek	0.5

Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Unnamed Trib to North Fabius River	U	-	-	-	-	General Criteria
North Fabius River	P	056	0.1	0.1	1.0	IRR, LWW, AQL, WBC(B), SCR, DWS

** 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)

COMMENTS: Geohydrological evaluation was submitted with the request. Lewis-Bade provided time of travel for ammonia decay allowance. North Fabius River is gaining more than 2 miles from the point of discharge.

Antidegradation Policy

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. ANTIDEGRADATION IS JUSTIFIED BY DOCUMENTING THE SOCIO-ECONOMIC IMPORTANCE OF A DISCHARGING ACTIVITY AFTER DETERMINING THE NECESSITY OF THE DISCHARGE. EFFECTIVE TENTATIVELY AUGUST 2008 (DEPENDING ON THE RULEMAKING PROCESS), A FACILITY WILL BE REQUIRED TO USE *MISSOURI'S ANTIDEGRADATION IMPLEMENTATION PROCEDURE*. THIS PROCEDURE WILL BE APPLICABLE TO NEW, UPGRADED, AND EXPANDED WASTEWATER FACILITIES.

General Assumptions of the Water Quality Review Sheet

1. A Water Quality Review Sheet (WQRS) assumes that [10 CSR 20-6.010(3) Continuing Authorities] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQRS does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQRS may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQRS does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQRS may change as Water Quality Standards, Methodology, and Implementation procedures change.

Mixing Considerations

Mixing Zone (MZ): Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(a)].

Zone of Initial Dilution (ZID): Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)]

Permit Limits and Information

WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):	USE ATTAINABILITY ANALYSIS CONDUCTED (Y OR N):	WHOLE BODY CONTACT USE RETAINED (Y OR N):
N	N	Y

OUTFALL #001

WET TEST (Y OR N):	FREQUENCY:	AEC:	METHOD:
Y	ONCE/PERMIT CYCLE	100%	SINGLE

Parameter	Daily Maximum	Weekly Average	Monthly Average	WQBEL (note 2)	Monitoring Frequency
Flow	*		*	N/A	Once/Quarter
BOD_5 (mg/L)		45	30	FSR	Once/Quarter
TSS (mg/L)		45	30	FSR	Once/Quarter
pH (S.U.)	6.0 – 9.0		6.0 – 9.0	FSR	Once/Quarter
Temperature (°C)	*		*	N/A	Once/Quarter
Ammonia as N (mg/L) (May 1 – Oct 31)	3.8		1.4	Y	Once/Quarter
Ammonia as N (mg/L) (Nov 1 – Apr 30)	7.6		2.9	Y	Once/Quarter
Escherichia coliform (E. coli)	Please see the E. coli discussion in the Derivation & Discussion of Limits section of this WQRS below.				
Fecal Coliform (Note 1)	1000		400**	FSR	Once/Quarter
Chlorine, Total Residual (mg/L)	0.017		0.008	Y	Once/Quarter
Grease & Oil (mg/L)	15		10	FSR	Once/Quarter

* - Monitoring requirements only.
** - The Monthly Average for Fecal Coliform shall be reported as a Geometric Mean.
Note 1 – Colonies/100 mL
Note 2 – This field informs the applicant if the parameter's effluent limitation is a Water Quality Based Effluent Limitation (WQBEL): Y – Yes; FSR – Federal/State Regulation; and N/A – Not Applicable. Also, please see the **General Assumptions of the WQRS #4 & #5.**

Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

Derivation and Discussion of Limits

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

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$ (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). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration.

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).

Outfall #001 – *Main Facility Outfall*

- **Biochemical Oxygen Demand (BOD_5).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1]. Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1]. Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **pH.** pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015 (8)(B)2.].

- **Temperature.** Monitoring requirement only. Temperature affects the toxicity of Ammonia.

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(4)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

Season	Temp (°C)	pH (SU)	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	26	7.8	1.5	12.1
Winter	6	7.8	3.1	12.1

Summer: May 1 – October 31, Winter: November 1 – April 30.

Staff utilized a modified Feed Forward Reaction decay formula to allow degradation for ammonia prior to reaching the first classified water body:

$[NH_3N]_t = [NH_3N]_{t=0} * e^{-kt}$

Where
$[NH_3N]_t$ = ammonia concentration at confluence with classified segment.
$[NH_3N]_{t=0}$ = ammonia concentration at pipe = C_e
k = NH_3 oxidation per day $(k_{1,20})\Xi_1^{(Temp-20)}$
$k_{1,20} = 0.3(day^{-1})$
Ξ_1 = temperature correction factor = 1.083

t = time for effluent to travel to first classified segment (in days) = 0.06 days
Travel time was calculated using site-specific data submitted by Lewis-Bade, Inc.

Summer Temp. = 26ºC

Given $k = (0.3)(1.083)^{(26-20)} = 0.4841$ and t = 0.06 days; $e^{-kt} = e^{-(0.4841)(0.06)} = 0.97$

Which means 97 % of the ammonia concentration remains after leaving the facility and reaching the first classified stream segment.

C_e = (1.5 mg/L) / 0.97 = 1.55 mg/L

LTA_c = 1.55 mg/L (0.780) = **1.21 mg/L** [CV = 0.6, 99th Percentile, 30 day average]

MDL = 1.21 mg/L (3.11) = 3.8 mg/L [CV = 0.6, 99th Percentile]
AML = 1.21 mg/L (1.19) = 1.4 mg/L [CV = 0.6, 95th Percentile, n = 30]

Winter Temp. = 6ºC

Given $k = (0.3)(1.083)^{(6-20)} = 0.0982$ and t = 0.06 days; $e^{-kt} = e^{-(0.0982)(0.06)} = 0.99$.

Which means 99% of the ammonia concentration remains after leaving the facility and reaching the first classified stream segment.

C_e = (3.1 mg/L) / 0.99 = 3.13 mg/L

LTA_c = 3.13 mg/L (0.780) = **2.44 mg/L** [CV = 0.6, 99th Percentile, 30 day average]

MDL = 2.44 mg/L (3.11) = 7.6 mg/L [CV = 0.6, 99th Percentile]
AML = 2.44 mg/L (1.19) = 2.9 mg/L [CV = 0.6, 95th Percentile, n = 30]

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	3.8	1.4
Winter	7.6	2.9

- **Fecal Coliform**. Discharge shall not contain more than a monthly geometric mean of 400 colonies/ 100 mL and a daily maximum of 1000 colonies/100 mL during the recreational season (April 1 – October 31) [10 CSR 20-7.015(8)(B)4.A.]. Future renewals of the facility operating permit will contain effluent limitations for E. coli that will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards when Missouri adopts the implementation of the E. coli standards. Also, please see **GENERAL ASSUMPTIONS OF THE WQRS #7.**

- **Total Residual Chlorine (TRC)**. Warm-water Protection of Aquatic Life CCC = 10 □g/L, CMC = 19 □g/L [10 CSR 20-7.031, Table A]. Background TRC = 0.0 □g/L.

  C_e =(((Qe+Qs)*C) - (Qs*Cs))/Qe

  Chronic WLA: C_e = 10 □g/L

  Acute WLA: C_e = 19 □g/L

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

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

  Total Residual Chlorine effluent limits of 0.017 mg/L daily maximum, 0.008 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.

Reviewer: Todd J. Blanc
Date: October 24, 2007
Unit Chief: Refaat Mefrakis

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.