

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-0028843

Owner: City of Excelsior Springs
Address: 201 East Broadway, Excelsior Springs MO 64024

Continuing Authority: Same as above
Address: Same as above

Facility Name: Excelsior Springs Wastewater Treatment Plant
Facility Address: 11800 McKee Road, Excelsior Springs MO 64024

Legal Description: NW¼, NE¼, Sec. 22, T52N, R30W, Clay County
UTM Coordinates: X= 391490, Y= 4351437

Receiving Stream: Fishing River (P)
First Classified Stream and ID: Fishing River (P) (0383)
USGS Basin & Sub-watershed No.: (10300101-0407)

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

FACILITY DESCRIPTION

See Page 2

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

February 1, 2013
Effective Date

November 5, 2013
Revised Date

Sara Parker Pauley
Sara Parker Pauley, Director, Department of Natural Resources

January 31, 2018
Expiration Date

Andrea D. Collier
Andrea D. Collier, P.E., Regional Director, Kansas City Regional Office

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 "B" Operator**
Excess Flow Holding Basins/Influent Screening/Schreiber GR Oxidation Ditch (Extended Aeration with secondary clarification)/Aerobic Digestion/UV Disinfection/re-aeration/Sludge is land applied.
Design population equivalent is 35,000.
Design flow is 3.5 million gallons per day.
Design sludge production is 1,065 dry tons/year.

Outfall #002 - **Eliminated**

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS				PAGE NUMBER 3 of 8		
				PERMIT NUMBER MO-0028843		
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until <u>January 31, 2015</u> . Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
bis(2-Ethylhexyl)phthalate (Note 2)	µg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
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 <u>February 1, 2015</u> 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
<u>Outfall #001</u>						
bis(2-Ethylhexyl)phthalate (Note 2)	µg/L	11.9		5.9	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>March 28, 2015</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 4 of 8	
					PERMIT NUMBER MO-0028843	
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
<u>Outfall #001</u>						
Flow	MGD	*		*	Daily	24 hr. total
Biochemical Oxygen Demand ₅	mg/L		24	16	once/week	24 hr. composite**
Total Suspended Solids	mg/L		45	30	once/week	24 hr. composite**
<i>E. coli</i> (Note 1)	#/100 mL		1030	206	once/week	grab
pH – Units	SU	***		***	once/week	grab
Ammonia as N (April 1 – Sept 30) (Oct 1 – March 31)	mg/L		5.6 8.2	2.1 3.1	once/week	grab
Oil & Grease	mg/L		15	10	once/month	grab
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	Units	Daily Minimum	Weekly Average Minimum	Monthly Average Minimum	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u>						
Dissolved Oxygen	mg/L	5.0		5.0	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE <u>December 28, 2013</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Whole Effluent Toxicity (WET) test	% Survival	See Special Conditions # 12		once/year	24 hr. composite**	
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>August 28, 2013</u> .						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I, II & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980; May 1, 2013 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** A 24-hour composite sample is composed of 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.

C. INFLUENT MONITORING REQUIREMENTS		PAGE NUMBER 5 of 8	
		PERMIT NUMBER MO-0028843	
The facility is required to meet a removal efficiency of 85% or more as a monthly average. The monitoring requirements shall become effective upon issuance and remain in effect until expiration of the permit. To determine removal efficiencies, the influent wastewater shall be monitored by the permittee as specified below:			
SAMPLING LOCATION AND PARAMETER(S)	UNITS	MONITORING REQUIREMENTS	
		MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Influent</u>			
Biochemical Oxygen Demand ₅	mg/L	once/month	grab
Total Suspended Solids	mg/L	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY ; THE FIRST REPORT IS DUE <u>December 28, 2013</u> .			

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).

Note 2 – The effluent limitation for bis(2-Ethylhexyl)phthalate is being placed in this permit cycle because the results from the expanded effluent testing required for the application of permit renewal show a value greater than the Water Quality Standard (WQS) for this pollutant. This exceedance provides the Department with evidence of reasonable potential for the facility to exceed WQS for this pollutant.

D. SPECIAL CONDITIONS

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

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

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

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;

D. SPECIAL CONDITIONS (continued)

- (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.
 6. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
 7. Water Quality Standards
 - (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
 8. 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. The permittee shall develop and implement a program for maintenance and repair of the collection system. The permittee shall submit a report annually in November to the Kansas City Regional Office with the Discharge and Monitoring reports which address measures taken to locate and eliminate sources of infiltration and inflow into the collection system serving the facility.
 10. Bypasses are not authorized at this facility and are subject to 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3)(i), and with Standard Condition Part I, Section B, subsection 2.b. Bypasses are to be reported to the Kansas City Regional Office.
 11. 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	100%	Annually	24 hr. composite*	July

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

Dilution Series						
100% effluent	50% effluent	25% effluent	12.5% effluent	6.25% effluent	(Control) 100% upstream, if available	(Control) 100% Lab Water, also called synthetic water

D. SPECIAL CONDITIONS (continued)

(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 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.
- (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.

D. SPECIAL CONDITIONS (continued)

(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

12. This permit establishes final ammonia limitations based on Missouri's current Water Quality Standard. On August 22, 2013, the Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect the designated uses of the water bodies. The Department of Natural Resources intends to adopt the new ammonia criteria during the next review.

Refer to Part V of this permit's factsheet for further information including estimated future effluent limits for this facility. It is recommended the permittee view the Department's 2013 EPA criteria Factsheet located at <http://dnr.mo.gov/pubs/pub2481.pdf>.

E. SCHEDULE OF COMPLIANCE

The facility shall implement local ordinances in order to attain compliance with final effluent limitations for bis(2-Ethylhexyl)phthalate as soon as reasonably achievable or no later than **two (2) years** of the effective date of this permit.

1. Within one (1) year of the effective date of this permit, the permittee shall submit a progress report detailing the implementation of local ordinances for industrial discharges into the wastewater treatment facility.
2. Within **2 years** of the effective date of this permit, the permittee shall attain compliance with the final effluent limits, for bis(2-Ethylhexyl)phthalate.

Please submit any progress reports to the Missouri Department of Natural Resources, Kansas City Regional Office, 500 NE Colbern Rd., Lee's Summit, Missouri, 64086.

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF MODIFICATION
OF
MO-0028843
EXCELSIOR SPRINGS WASTEWATER TREATMENT PLANT

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

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

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

This Factsheet is for a Major .

Part I – Facility Information

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

Facility Description:

Outfall #001 - POTW SIC #4952

The use or operation of this facility shall be by or under the supervision of a **Certified "B" Operator**
Excess Flow Holding Basins/Influent Screening/Schreiber GR Oxidation Ditch (Extended Aeration with secondary clarification)/Aerobic Digestion/UV Disinfection/re-aeration/Sludge is land applied.

Design population equivalent is 35,000.

Design flow is 3.5 million gallons per day.

Design sludge production is 1,065 dry tons/year.

Outfall #002 - Eliminated

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

- Yes; See facility description for upgrade of the facility.

Application Date: 03/17/2011
Expiration Date: 08/24/2011
Last Inspection: 11/29/2011 Non-Compliance

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	5.4	Secondary	Domestic (Sanitary) Wastewater	0.0

Outfall #001 and #002

Legal Description: NW¼, NE¼, Sec. 22, T52N, R30W, Clay County

UTM Coordinates: X= 391490, Y= 4351437

Receiving Stream: Fishing River (P)

First Classified Stream and ID: Fishing River (P) (0383)

USGS Basin & Sub-watershed No.: (10300101-0407)

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

The Excelsior Springs WWTP discharges domestic (sanitary) wastewater to the Fishing River (P). The Fishing River (P) is not on the Department's 303(d) list of impaired waters but is on the 2012 305(b) list. However, no Total Maximum Daily Load (TMDL) report exists for this river. A stream survey exists at three points along the Fishing River (P), including at the discharge point for the Excelsior Springs WWTP. This survey shows that the stream is not affected by effluent flow.

The most recent site inspection was conducted on November 29, 2011 and the facility was found to be in non-compliance. The facility exceeded Ammonia as N limitations. Department records explain that until the new Wastewater Treatment Facility is operable, the Ammonia as N limitations will continue to exceed Water Quality Standards (WQS).

Comments:

The facility is currently under construction. Upgrades include influent screening, a Schreiber GR Oxidation Ditch (extended aeration with secondary clarification), aerobic digestion and a UV disinfection system. This will also eliminate Outfall #002 and change the design flow of Outfall #001 to 3.5 million gallons per day. The construction permit was issued on November 23, 2011 and has been extended to an expiration date of November 23, 2013. Once construction is complete, the facility will need to apply for a modification to this operating permit. Final effluent limitations may be affected by the upgrade to the facility.

The expanded effluent testing data requested during the review of the application provided the Department with detection or non-detection of pollutants found in the facility's effluent. The results found that the toxic pollutant bis(2-Ethylhexyl)phthalate existed in the effluent and exceeded the Water Quality Standards (WQS) sanctioned by the Clean Water Commission. This is a known toxic organic pollutant from industry located within the City of Excelsior Springs. For this reason, the Department has calculated final effluent limitations for this toxic pollutant.

The WET test condition has been relocated to Outfall #001. Outfall #002 is being eliminated with the new outfall structure constructed under CP0001020. Outfall #001 will be the only outfall for the facility and discharges to the receiving stream. Please see WET Test section for Outfall #001 in Part VI of the factsheet for further information.

Please see the Schedule of Compliance (SOC) section in Part IV of the factsheet for further explanation of the SOC granted in the permit.

Please see the Reasonable Potential Analysis (RPA) section in Part IV of the factsheet for further explanation of the final effluent limitations in the permit.

This modification is in response to the following upgrades: expanding effluent design flow from 2.5 MGD to 3.5 MGD, and converting the existing aerated lagoon and two (2) cell lagoon facility to an extended aeration facility which would include the components listed under "Facility Description" above. The existing aerated lagoon and two cell lagoon facility will be used for peak flow equalization.

Part II – Operator Certification Requirements

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

Check boxes below that are applicable to the facility;

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

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

- Department required:
The Department requires this facility to retain the services of a certified operator due to: the facility is a major.

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

Operator's Name: Charles Haygood
Certification Number: 10179
Certification Level: B

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)]:
- 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*	12-DIGIT HUC	EDU**
Fishing River	P	0383	IRR, LWW, AQL, WBC-B	10300101-0407	Central Plains/Blackwater /Lamine

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

** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
Fishing River (P)	0.1	0.1	1.0

MIXING CONSIDERATIONS TABLE:

MIXING ZONE (CFS) [10 CSR 20-7.031(4)(A)4.B.(II)(a)]		ZONE OF INITIAL DILUTION (CFS) [10 CSR 20-7.031(4)(A) 4.B.(II)(b)]	
7Q10	30Q10	1Q10	7Q10
0.025	0.25	0.0025	0.0025

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

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

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

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

Not Applicable ;

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

ANTI-BACKSLIDING:

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

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

- Information is available which was not available at the time of the previous permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

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.

- New and/or expanded discharge. The Water Quality and Antidegradation Review from 2010 has been attached. Please see Part V for further information.

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.

BIOSOLIDS & SEWAGE SLUDGE:

Biosolids 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 biosolids 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 biosolids in accordance with Standard Conditions III.

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):

Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Applicable .

A RPA was conducted on appropriate parameters. Please see **APPENDIX B – RPA RESULTS**. The Department reviewed the application and the Discharge Monitoring Report (DMR) data and determined that reasonable potential to exceed Water Quality Standards (WQS) exists for both Ammonia as N and bis(2-Ethylhexyl)phthalate. A RPA analysis was conducted on the Ammonia as N but those values will not be used. The Water Quality and Antidegradation Review from 2010 will be used for Ammonia as N final effluent limitations. See the calculations in Part V for further explanation.

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 85% removal [40 CFR Part 133.105(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.

SCHEDULE OF COMPLIANCE (SOC):

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

Applicable ;

The time given for effluent limitations of this permit listed under Interim Effluent Limitation and Final Effluent Limitations were established in accordance with [10 CSR 20-7.031(10)]. The Department has allowed one year for the permittee to implement local ordinances regarding discharges to the facility. An additional year has been granted in order for the facility to complete any construction that may be required. If the facility feels that a longer SOC should be granted, then justification must be submitted to the Department explaining the reason for a longer SOC.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

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

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

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

Not Applicable ;

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

VARIANCE:

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

Not Applicable ;

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

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:

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

Applicable ;

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

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

Where C = downstream concentration

Cs = upstream concentration

Qs = upstream flow

Ce = effluent concentration

Qe = effluent flow

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

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

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.
- Facility continuously or routinely exceeds its design flow.
- Facility (industrial) that alters its production process throughout the year.
- Facility handles large quantities of toxic substances, or substances that are toxic in large amounts.
- Facility has Water Quality-based Effluent Limitations for toxic substances (other than NH₃)
- Facility is a municipality or domestic discharger with a Design Flow ≥ 22,500 gpd.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from “bypassing” untreated or partially treated sewage (wastewater) beyond the headworks. A bypass 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.

- Not Applicable, this facility does not bypass.

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

Not Applicable ;

This facility does not discharge to a 303(d) listed stream.

Part V – 2013 Water Quality Criteria for Ammonia

Upcoming changes to the Water Quality Standard for ammonia may require significant upgrades to wastewater treatment facilities.

On August 22, 2013, the U.S. Environmental Protection Agency (EPA) finalized new water quality criteria for ammonia, based on toxicity studies of mussels. Missouri's current ammonia criteria are based on toxicity testing of several species, but did not include data from mussels. Missouri is home to 65 of North America's mussel species, spread across the state. According to the Missouri Department of Conservation nearly two-thirds are considered to be "of conservation concern". Nine are listed as federally endangered, with one more currently proposed as endangered and another proposed as threatened.

The adult forms of mussels seen in rivers, lakes, and streams are sensitive to pollutants because they are sedentary filter feeders. They vacuum up many pollutants with the food they bring in and cannot escape to new habitats, so they can accumulate toxins in their bodies and die. But very young mussels, called glochidia, are exceptionally sensitive to ammonia in water. As a result of a citizen suit, the EPA was compelled to conduct toxicity testing and develop ammonia water quality criteria that would be protective if young mussels may be present in a waterbody. These new criteria will apply to any discharge with ammonia levels that may pose a reasonable potential to violate the standards. Nearly all discharging domestic wastewater treatment facilities (cities, subdivisions, mobile home parks, etc.), as well as certain industrial and stormwater dischargers with ammonia in their effluent, they will be affected by this change in the regulations.

When new water quality criteria are established by the EPA, states must adopt them into their regulations in order to keep their authorization to issue permits under the National Pollutant Discharge Elimination System (NPDES). States are required to review their water quality standards every three years, and if new criteria have been developed they must be adopted. States may be more protective than the Federal requirements, but not less protective. Missouri does not have the resources to conduct the studies necessary for developing new water quality standards, and therefore our standards mirror those developed by the EPA. However we will utilize any available flexibility based on actual species of mussels native to Missouri and their sensitivity to ammonia.

Many treatment facilities in Missouri are currently scheduled to be upgraded so as to comply with the current water quality standards. But these new standards may require a different treatment technology than the one being considered by the permittee. It is important that permittees discuss any new and upcoming requirements with their consulting engineers to ensure that their treatment systems are capable of complying with the new requirements. The Department encourages permittees to construct treatment technologies that can attain effluent quality that supports the EPA ammonia criteria.

Ammonia toxicity varies by temperature and by pH of the water. Assuming a stable pH value, but taking into account winter and summer temperatures, Missouri includes two seasons of ammonia effluent limitations. Current effluent limitations for ammonia in this permit are:

Summer – 5.6 mg/L daily maximum, 2.1 mg/L monthly average.

Winter – 8.2 mg/L daily maximum, 3.1 mg/L monthly average.

Under the new EPA criteria, where mussels are present or expected to be present, your estimated effluent limitations will be:

Summer – 1.8 mg/L daily maximum, 0.7 mg/L monthly average.

Winter – 5.8 mg/L daily maximum, 2.2 mg/L monthly average.

Actual effluent limits will depend in part on the actual performance of the facility and receiving stream.

Operating permits for facilities in Missouri must be written based on current statutes and regulations. It is expected that the new WQS will be adopted in the next review of our standards. Therefore permits will be written with the existing effluent limitations until the new standards are adopted. To aid permittees in decision making, an advisory will be added to permit Fact Sheets notifying permittees of the expected effluent limitations for ammonia. When setting schedules of compliance for ammonia effluent limitations, consideration will be given to facilities that have recently constructed upgraded facilities to meet the current ammonia limitations.

For more information on this topic feel free to contact the Missouri Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, Operating Permits Section at (573) 751-1300.

Part VI – Effluent Limits Determination

Outfall #001 – Overland Flow 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	*/*
BOD ₅	MG/L	1		24	16	YES	45/30
TSS	MG/L	1		45	30	YES	80/60
pH	SU	1	6.5-9.0		6.5-9.0	YES	≤ 6.5
AMMONIA AS N (APRIL 1 – SEPT 30)	MG/L	1/2/5	5.6		2.1	YES	3.7/1.9
AMMONIA AS N (OCT 1 – MARCH 31)	MG/L	1/2/5	8.2		3.1	YES	7.5/3.7
ESCHERICHIA COLI	**	1/3		1030	206	YES	FECAL COLIFORM 1000/400
OIL & GREASE (MG/L)	MG/L	1/3	15		10	NO	15/10
BIS(2-ETHYLHEXYL) PHTHALATE	µg/L	1/3	11.9		5.9	YES	***
DISSOLVED OXYGEN (DO)	MG/L	3	5.0****		5.0****	YES	***

* - Monitoring requirement only.

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

*** - Parameter not previously established in previous state operating permit.

**** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum

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.
- **Biochemical Oxygen Demand (BOD₅).** Upgrade of the facility, derivation and rationale for effluent limitations can be found in Appendix C; Water Quality and Antidegradation Review.
- **Total Suspended Solids (TSS).** Upgrade of the facility, derivation and rationale for effluent limitations can be found in Appendix C; Water Quality and Antidegradation Review.
- **pH.** Upgrade of the facility, derivation and rationale for effluent limitations can be found in Appendix C; Water Quality and Antidegradation Review.
- **Total Ammonia Nitrogen.** Upgrade of the facility, derivation and rationale for effluent limitations can be found in Appendix C; Water Quality and Antidegradation Review.

- **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 Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(4)(C). Weekly Average effluent variability will be evaluated in development of a future effluent limit. An effluent limit for both monthly average and weekly average is required by 40 CFR 122.45(d).

- **Bis(2-Ethylhexyl)phthalate, Total Recoverable**. Human Health Protection – Fish Consumption
The application information for the expanded effluent limitations shows that the facility has reasonable potential to exceed WQS for this pollutant. Effluent limitations for total recoverable toxins were developed using methods and procedures outlined in the “Technical Support Document For Water Quality-based Toxic Controls” (EPA/505/2-90-001).

Chronic Criteria = 5.9 µg/L

Acute Criteria = Chronic Criteria * multiplier [CV = 0.6, Average 95th Percentile, n = 4] = 5.9*2.01 = 11.9 µg/L.

- **Oil & Grease**. Conventional pollutant, effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.
- **Dissolved Oxygen**. Derivation and rationale for effluent limitations can be found in Appendix C; Water Quality and Antidegradation Review.
- **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 \geq 1.0 MGD.

Facility continuously or routinely exceeds their design flow.

Facility exceeds its design population equivalent (PE) for BOD₅ whether or not its design flow is being exceeded.

Facility has Water Quality-based effluent limitations for toxic substances (other than NH₃).

Acute and/or Chronic Allowable Effluent Concentrations (AECs) for facilities that discharge to unclassified, Class C, Class P (with default Mixing Considerations), or Lakes [10 CSR 20-7.031(4)(A)4.B.(IV)(b)] are 100%, 50%, 25%, 12.5%, & 6.25%.

Outfall #002 – Eliminated

Part VII - 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 D – Affordability Analysis**.

Part VIII – 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:

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 began on November 9, 2012 and ended on December 10, 2012. There were no Public Notice comments received during the Public Notice period.

DATE OF FACT SHEET: 04/27/2012

REVISED DATE OF FACT SHEET: 10/25/2013

COMPLETED BY:

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Appendices

APPENDIX A - CLASSIFICATION WORKSHEET:

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Maximum Population Equivalent (P.E.) served (Max 10 pts.)	1 pt./10,000 PE or major fraction thereof.	3.5
Maximum: 10 pt Design Flow (avg. day) or peak month; use greater (Max 10 pts.)	1 pt. / MGD or major fraction thereof.	3.5
EFFLUENT DISCHARGE RECEIVING WATER SENSITIVITY:		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact	1	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	
PRELIMINARY TREATMENT - Headworks		
Screening and/or comminution	3	3
Grit removal	3	3
Plant pumping of main flow (lift station at the headworks)	3	3
PRIMARY TREATMENT		
Primary clarifiers	5	
Combined sedimentation/digestion	5	
Chemical addition (except chlorine, enzymes)	4	
REQUIRED LABORATORY CONTROL – performed by plant personnel (highest level only)		
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	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	
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)	----	22

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	0
Recurring deviations or excessive variations of 100 to 200 % in strength and/or flow	2	
Recurring deviations or excessive variations of more than 200 % in strength and/or flow	4	
Raw wastes subject to toxic waste discharge	6	
SECONDARY TREATMENT		
Trickling filter and other fixed film media with secondary clarifiers	10	
Activated sludge with secondary clarifiers (including extended aeration and oxidation ditches)	15	15
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Waste Treatment Polishing Pond	2	
Chemical/physical – without secondary	15	
Chemical/physical – following secondary	10	
Biological or chemical/biological	12	
Carbon regeneration	4	
DISINFECTION		
Chlorination or comparable	5	
Dechlorination	2	
On-site generation of disinfectant (except UV light)	5	
UV light	4	4
SOLIDS HANDLING - SLUDGE		
Solids Handling Thickening	5	
Anaerobic digestion	10	
Aerobic digestion	6	6
Evaporative sludge drying	2	
Mechanical dewatering	8	8
Solids reduction (incineration, wet oxidation)	12	
Land application	6	6
Total from page TWO (2)	----	39
Total from page ONE (1)	---	22
Grand Total	---	61

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

APPENDIX B – RPA RESULTS:

OUTFALL #001

<u>Symbol</u>	<u>Analyte</u>	<u>Units</u>	<u>CMC</u>	<u>RWC Acute</u>	<u>CCC</u>	<u>RWC Chronic</u>	<u>Reasonable Potential</u>	<u>n*</u>	<u>Range max/min</u>	<u>CV**</u>
NH3	Total Ammonia as Nitrogen (Summer)	mg/L	12.10	47.19	1.50	44.35	YES	27	16.000/0.170	0.967362264
NH3	Total Ammonia as Nitrogen (Winter)	mg/L	12.10	13.79	3.10	12.97	YES	7	4.200/0.900	0.577506891

OUTFALL #002 - Eliminated

<u>Symbol</u>	<u>Analyte</u>	<u>Units</u>	<u>CMC</u>	<u>RWC Acute</u>	<u>CCC</u>	<u>RWC Chronic</u>	<u>Reasonable Potential</u>	<u>n*</u>	<u>Range max/min</u>	<u>CV**</u>
NH3	Total Ammonia as Nitrogen (Summer)	mg/L	12.10	21.94	1.50	20.62	YES	10	3.900/0.000	1.057746265
NH3	Total Ammonia as Nitrogen (Winter)	mg/L	12.10	64.83	3.10	60.94	YES	33	30.200/1.700	0.707915173

N/A – Not Applicable

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

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

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

n – Is the number of samples.

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 – ANTIDegradation ANALYSIS:

Water Quality and Antidegradation Review

*For the Protection of Water Quality
and Determination of Effluent Limits for Discharge to
Fishing River*

by
City of Excelsior Springs, Wastewater Treatment Facility



June, 2010

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1. FACILITY INFORMATION

FACILITY NAME: City of Excelsior Springs WWTF NPDES #: MO-0028843

FACILITY TYPE/DESCRIPTION: The current permitted design flow is 2.1 MGD. Actual flow is 2.5 MGD, which exceeds the design flow. A pilot project was approved by the Kansas City Regional Office (in a letter dated May 16, 2007) to expand the lagoon's capacity to 2.5 MGD without a construction permit. The pilot project was intended to create an activated sludge plant to meet 2009 limitations. The current facility is a sprinkler irrigation system during recreation season and a two-cell aeration lagoon during the remainder of the year. The proposed design flow will be 3.5 MGD. The proposed facility will be a Schreiber GR oxidation ditch with a center-clarifier treatment unit. The applicant submitted a portion of the facility planning report that describes the facility as having influent screening, flow equalization, extended aeration using an oxidation ditch, secondary clarification, sludge pumping, aerobic digestion, filtration, and ultraviolet disinfection. Note that the City will eliminate Outfall 002 and the current outfall 001 will continue.

EDU*: Central Plains/ Blackwater/ Lamline Ecoregion: Plains 8-DIGIT 103000101 COUNTY: Clay
HUC: _____

* - Ecological Drainage Unit

LEGAL DESCRIPTION: NW1/4, NE1/4 Section 22, T 52N, R30W UTM COORDINATES: X- 391345.2 /Y-4351340.5

2. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (MDNR) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, a facility is required to use Missouri's *Antidegradation Rule and Implementation Procedure (AIP)* for new and expanded wastewater discharges.

2.1. WATER QUALITY HISTORY:

The current permit has outfall #001 that is associated with the sprinkler irrigation system during recreation season. This outfall had exceedences of ammonia in September 2009 and January of 2010 and pH, once in 2006. The City also had a few failures to report grease and oil. The aerated lagoon discharges during the remainder of the year from outfall #002. This outfall failed to report oil and grease on several occasions and had exceedences of ammonia in October 2009 and January 2010. During our site visit in January of this year, we noted visible and persistent foaming for a few hundred feet in the Fishing River due the discharge. The facility was discharging from Outfall 002.

OUTFALL	(CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001*	5.4	Secondary	Fishing River	0.0

*NOTE THAT OUTFALL 002 WILL BE ELIMINATED AND THE CURRENT OUTFALL 001 WILL CONTINUE.

3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Fishing River	P	00383	0.1	0.1	1.0	IRR, LWW, AQL, WBC(B) General Criteria

** 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)

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RECEIVING WATER BODY SEGMENT #1: Fishing River
 Upper end segment* UTM coordinates: X-391345.2 / Y-4351340.5 (Outfall#001)
 Lower end segment* UTM coordinates: X-392547 / Y-4348922 (Tributary to Fishing River classified)
 *Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

4. GENERAL COMMENTS

Larkin Group Consulting Engineers prepared, on behalf of City of Excelsior Springs, the *Antidegradation Review Report on 3.5 MGD Wastewater Treatment Plant Expansion for Excelsior Springs, Missouri* dated April 2010. The facility currently exceeds its permitted design flow—2.5 MGD as actual flow and 2.1 MGD as permitted design flow. A pilot project to meet 2009 limitations altered the plant capacity to 2.5 MGD. According to the Division of Geology and Land Survey, a Geohydrological Evaluation is not needed for this facility. The stream is gaining for discharge purposes (Appendix A: Map). Applicant elected to determine that discharge of all pollutants of concern (POC) is non-degrading or insignificant to the receiving stream. This analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and, after a Level 1 review, Larkin Group Consulting Engineers submitted a letter of inquiry to the Missouri Department of Conservation for further review. Subsequently, MDC found no record of endangered species within one mile of the site (see report in Appendix B). The review report had clarification on the meaning of the record search and general recommendations to protect aquatic life.

5. ANTIDegradation REVIEW INFORMATION

The following is a review of the *Antidegradation Review Report on 3.5 MGD Wastewater Treatment Plant Expansion for Excelsior Springs, Missouri* dated April 2010.

5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D: Tier Determination and Effluent Limit Summary). Pollutants of concern are defined as those pollutants “proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge.” (AIP, Page 7). Tier 2 is assumed for all POCs; however, tier determinations were not possible with maintenance of mass loading determinations (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD5/DO	*	Insignificant	
Total Suspended Solids (TSS)	**	Insignificant	
Ammonia	*	Insignificant	
pH	***	Insignificant	Permit limits applied
Bacteria/ <i>Escherichia coli</i> (E. coli)	*	Insignificant	Permit limits applied

*Tier determination not possible with the demonstration of mass loading maintenance. Tier determination not possible: ** No in-stream standards for these parameters. *** Standards for these parameters are ranges.

The following Antidegradation Review Summary attachments in Appendix D were used by the applicant:

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Example: 8.34 (lbs/MG)/(mg/L) * mg/L * 3.5 MGD = 62.6 lbs/day

5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required. Thus, the Tier 2 Review is not required.

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR 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 WQAR 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 WQAR 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 WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.

7. MIXING CONSIDERATIONS

Mixing Zone (MZ): One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile. [10 CSR 20-7.031(4)(A)4.B.(II)(a)].

Zone of Initial Dilution (ZID): One-tenth (0.1) of the mixing zone volume of flow. [10 CSR 20-7.031(4)(A)4.B.(II)(b)].

Applicant provided low flow calculations but did not demonstrate how 1Q10, 7Q10, and 30Q10 values were determined. Only three years of data are available for the 10-year recurrence interval that we must calculate. Because of the lack of data, we used default flow values.

	Flow (cfs)	MZ (cfs)	ZID (cfs)
	0.1	0.025	0.0025
	0.1	0.025	0.0025
30Q10	1.0	0.25	N/A

$$AEC\% = \left(\frac{100}{DilutionRatio + 1} \right)$$

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Tier Determination and Effluent Summary

For pollutants of concern, the attachments are:

Attachment B, Tier 2 with minimal degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted.

5.3. DEMONSTRATION OF INSIGNIFICANCE

In Section II.A of the *Missouri's Antidegradation Rule and Implementation Procedure*, a demonstration of insignificance of the discharge requires the applicant to show a reduction, or maintenance of loading, i.e., no change in ambient water quality concentrations in the receiving waters. As demonstrated in *Antidegradation Report* dated, Table 2 below summarizes the results of current loading based on the current permit concentrations and proposed loadings based on the proposed permit concentrations. Proposed permit concentrations are based upon chronic criteria to protect aquatic life

Table 2. Net Change in Loadings Based upon Current and Proposed Permit Limits.

POLLUTANTS OF CONCERN	CURRENT WEEKLY AVERAGE OR MAXIMUM DAILY LIMIT (MG/L)	PROPOSED MAXIMUM DAILY LIMIT (NOTE 1) (MG/L)	CURRENT LOADING (LBS/DAY)	PROPOSED LOADING (LBS/DAY)	NET CHANGE (LBS/DAY)
BOD5	45 (AWL)	32 (AWL)	938.3	938.3	0.0
Total Suspended Solids (TSS)	80 (AWL)	57 (AWL)	1668.0	1668.0	0.0
pH	6.5-9.0 SI units	6.5-9.0 SI units	Not applicable	Not applicable	Not applicable
Ammonia (Summer)	7.8***	5.6	162.5	162.5	0.0
Ammonia (Winter)	11.5***	8.2	239.8	239.8	0.0
Bacteria/ Escherichia coli (E. coli)	Regulatory limits apply	Regulatory limits apply	Not applicable**	Not applicable	Not applicable
Oil and Grease	15	15	Not applicable	Not applicable	Not applicable

**See Derivation and Discussion of Limits, Section 10.

***Values are not currently in the permit. These limits were determined to bring the facility into compliance with water quality standards.

AWL = average weekly limit.

Note 1--Proposed effluent limits that were provided by applicant were determined by using the *ratio of current flow (2.5 MGD) to proposed design flow or 0.71; thus 71% of the current limit is applied as the proposed limit.* For BOD5 and TSS, weekly average limits were retained.

Current design flow (Qd) = 3.5 MGD

Mass conversion -- 1 mg/L = 8.34 lbs/million gallons

Wasteload Allocation (WLA) = maximum daily or weekly average

Existing Load (lbs/day) = Mass conversion * WLA * Qd

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8. PERMIT LIMITS AND MONITORING INFORMATION

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

UAA WAS CONDUCTED IN MARCH 13, 2005. NO DECISION HAS BEEN MADE ON THE UAA, THUS WBCR (B) IS RETAINED.

OUTFALL #001

WET TEST (Y OR N): Y FREQUENCY: ONCE/YEAR AEC: 99% METHOD: MULTIPLE

TABLE 3. EFFLUENT LIMITS

PARAMETER	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	EFFLUENT LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	*		*		ONCE/DAY
BOD ₅ (MG/L)***		24	16	NDEL	ONCE/WEEK
TSS (MG/L)		45	30	NDEL/FSR	ONCE/WEEK
PH (S.U.)	6.5-9.0		6.5-9.0	FSR	ONCE/WEEK
TEMPERATURE (°C)	*		*	N/A	ONCE/WEEK
AMMONIA AS N (MG/L) (MAY 1 - OCT 31)	7.8		2.9	NDEL	ONCE/WEEK
AMMONIA AS N (MG/L) (NOV 1 - APR 30)	11.5		4.4	NDEL	ONCE/WEEK
DISSOLVED OXYGEN (MG/L)	5.0 MINIMUM		5.0 MINIMUM	WQBEL	ONCE/WEEK
OIL & GREASE (MG/L)	15		10	FSR	ONCE/MONTH
ESCHERICHIA COLIFORM (E. COLI) (NOTE 1)			206**	FSR	ONCE/WEEK
NUTRIENTS, TOTAL NITROGEN OR TOTAL PHOSPHORUS	THE DEPARTMENT IS CURRENTLY DEVELOPING CRITERIA FOR STREAMS.				

NOTE 1 - COLONIES/100 mL

NOTE 2 - WATER QUALITY-BASED EFFLUENT LIMITATION --WQBEL; OR MINIMALLY DEGRADING EFFLUENT LIMIT--MDEL; OR PREFERRED ALTERNATIVE EFFLUENT LIMIT-PEL; TECHNOLOGY-BASED EFFLUENT LIMIT-TBEL; OR NO DEGRADATION EFFLUENT LIMIT--NDEL; OR FSR --FEDERAL/STATE REGULATION; OR N/A--NOT APPLICABLE. ALSO, PLEASE SEE THE GENERAL ASSUMPTIONS OF THE WQAR #4 & #5.

* - Monitoring requirements only.

** - The Monthly Average for E. coli shall be reported as a Geometric Mean.

***This facility is required to meet a removal efficiency of 85% or more for BOD₅ and TSS. Influent BOD₅ and TSS data should be reported to ensure removal efficiency requirements are met.

9. RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

10. DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based - Using water quality criteria or water quality model results and the dilution equation below:

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

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).

Chronic wasteload allocations (WLAc) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations are only determined in the absence of applicable chronic criteria.

10.1. OUTFALL #001 – MAIN FACILITY OUTFALL

10.2. LIMIT DERIVATION

- **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).** BOD₅ limits of 16 mg/L monthly average, 24 mg/L average weekly. These limitations are non-degrading and protective of existing water quality.

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
Maint							
BOD	Monthly	30.0	8.34	2.5	825.5	3.5	21.4
	Weekly	45.0	8.34	2.5	938.3	3.5	32.1

The applicant used site-specific dissolved oxygen (DO) water quality data that was collected by the facility for an upstream location as input to the Streeter Phelps model. The applicant also assumed 5.0 mg/L as DO in the effluent. For that reason, a dissolved oxygen limitation for the effluent will be imposed. Initial modeling using the above expansion limit concentrations produced DO concentrations that were below water quality standards for DO.

Using the final limitation stated above, modeling in Appendix C demonstrated that BOD₅ effluent is protective of water quality standards for DO. Streeter Phelps modeling indicated that at approximately 0.50 miles from the outfall location, DO was modeled to be 5.03 mg/L, which was lowest DO concentration resulting from BOD decay. At one-quarter mile (mixing zone length allowance) from the discharge, the DO concentration was above the water quality standards. Therefore, staff consider the effluent limitations of 24 mg/L as the average weekly and 16 mg/L as the monthly average protective of aquatic life. The month average was calculated by dividing the 24 mg/L by 1.5..... This is an accepted

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procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

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 average weekly limit. The technology-based secondary limitations at 10 CSR 20-7.015 (8) of 30 mg/L monthly and 45 mg/L average weekly are more protective of water quality standards than the expansion limitations in the table below. Therefore, the technology-based limitations must be applied.

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
Maint							
TSS	Monthly	60.0	8.34	2.5	1251.0	3.5	42.9
	Weekly	80.0	8.34	2.5	1668.0	3.5	57.1

The influent monitoring may be required for this facility in its Missouri State Operating Permit.

- **pH.** pH shall be maintained in the range from 6.5– 9.0 standard units [10 CSR 20-7.031].
- **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

For average chronic and acute water quality standards, the data shall be broken into summer and winter. Summer should be May 1 – October 31, and winter, November 1 – April 30. According to the Environmental Protection Agency's 1999 Update of Ambient Water Quality Criteria for Ammonia, "...calculation of an average pH and temperature can be avoided. For example, if samples are obtained from a receiving water over a period of time during which pH and/or temperature is not constant, the pH, temperature, and the concentration of total ammonia in each sample should be determined. For each sample, the criterion should be determined at the pH and temperature of the sample." (Page 84-85, <http://www.epa.gov/waterscience/criteria/ammonia/>) The average of ammonia criteria over the respective pH and temperature is then determined.

Season	Temp (°C)*	pH (SU)*	Total Ammonia Nitrogen CCC (mg N/L)	Total Ammonia Nitrogen CMC (mg N/L)
Summer	20	7.4	3.2	30.6
Winter	4	7.2	4.7	25.1

Summer: May 1 – October 31, Winter: November 1 – April 30. * Average pH and temperature are provided; however, the method described above was used. Data were provided by the City of Excelsior Springs. No quality assurance project plan was provided.

The department calculated the following limitations to be protective of water quality standards for the current discharge design flow. The facility would receive these limitations if a reasonable potential to exceed criteria exists and no expansion was planned. The expansion limitations are based on the loading to the stream using these water quality-based effluent limitations. The table below shows the maximum daily and average monthly limitations for winter and summer.

Summer

$$C_e = (((Q_e + Q_s) * C) - (Q_s * C_s)) / Q_e$$

$$\text{Chronic WLA: } C_e = ((5.4 + 0.0)3.2 - (0.025 * 0.01)) / 5.4$$

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$$C_e = 3.2 \text{ mg/L}$$

Acute WLA: $C_e = ((5.4 + 0.0)30.6 - (0.0025 * 0.01))/5.4$
 $C_e = 30.6 \text{ mg/L}$

$LTA_c = 3.2 \text{ mg/L} (0.780) = 2.5 \text{ mg/L}$ [CV = 0.6, 99th Percentile, 30 day avg.]
 $LTA_n = 30.6 \text{ mg/L} (0.321) = 9.8 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

MDL = $2.5 \text{ mg/L} (3.11) = 7.8 \text{ mg/L}$ [CV = 0.6, 99th Percentile]
 AML = $2.5 \text{ mg/L} (1.19) = 2.9 \text{ mg/L}$ [CV = 0.6, 95th Percentile, n = 30]

Winter

Chronic WLA: $C_e = ((5.4 + 0.0)4.7 - (0.025 * 0.01))/5.4$
 $C_e = 4.7 \text{ mg/L}$

Acute WLA: $C_e = ((5.4 + 0.0)25.1 - (0.0025 * 0.01))/5.4$
 $C_e = 25.1 \text{ mg/L}$

$LTA_c = 4.7 \text{ mg/L} (0.780) = 3.7 \text{ mg/L}$ [CV = 0.6, 99th Percentile, 30 day avg.]
 $LTA_n = 25.1 \text{ mg/L} (0.321) = 8.1 \text{ mg/L}$ [CV = 0.6, 99th Percentile]

MDL = $3.7 \text{ mg/L} (3.11) = 11.5 \text{ mg/L}$ [CV = 0.6, 99th Percentile]
 AML = $3.7 \text{ mg/L} (1.19) = 4.4 \text{ mg/L}$ [CV = 0.6, 95th Percentile, n = 30]

Current design flow limitations

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	7.8	2.9
Winter	11.5	4.4

Note: The current permit contains effluent limitations for ammonia that were provided for the existing facility as a schedule of compliance. These limitations were incorrectly calculated and should have used the AML multiplier in the above calculations. The more stringent of the schedule of compliance or the expansion limitations in the table below must be applied. Therefore, the limitations in the table below will apply

Table for development of expansion limitations

Parameter	Limit	WLA (mg/L)	(LBS/MG)/(mg/L)	Current Qd MGD	Load (lbs/ day)	Expanded Qd MGD	Expansion limit (mg/L)
Ammonia	Summer	2.9	8.34	2.5	60.5	3.5	2.1
	Weekly	7.8	8.34	2.5	162.6	3.5	5.6
Winter	Monthly	4.4	8.34	2.5	91.7	3.5	3.1
	Weekly	11.5	8.34	2.5	239.8	3.5	8.2

Expansion limitations

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	5.6	2.1
Winter	8.2	3.1

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- **E. coli**. Effluent limitations for WBCR(B) are 206 colonies per 100 ml [10 CSR 20-7.031, Table A]. The proposed E. coli rule was published in the Missouri Register on November 2, 2009 and was adopted by the Missouri Clean Water Commission on March 3, 2010. In the rule, weekly monitoring is required during the recreational season with compliance to be determined by calculating the geometric mean of all samples collected each calendar month. The U.S. Environmental Protection Agency (EPA) requires effluent limits to be expressed as average weekly for Publicly-Owned Treatment Works that continuously discharge. The Department is currently working with EPA to develop appropriate shorter frequency limits. Also, please see **GENERAL ASSUMPTIONS OF THE WQAR #7**.
- **Dissolved Oxygen** [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life is 5.0 mg/L daily minimum and monthly average.
- **Oil & Grease**. Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum. These limits are water quality based and were created to prevent a sheen on surface water. Therefore, there are no antidegradation requirements for oil and grease beyond meeting the above limits.
- **Total Nitrogen and Total Phosphorus**. One or both of these nutrients must be addressed once the nutrient criteria for streams are included in the water quality standards in 2012. No limitation or monitoring will be required for this review.

11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed new facility discharge, City of Excelsior Springs WWTF, 3.5 MGD will result in no degradation of the segment identified in the Fishing River. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. MDNR has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Todd J. Blanc

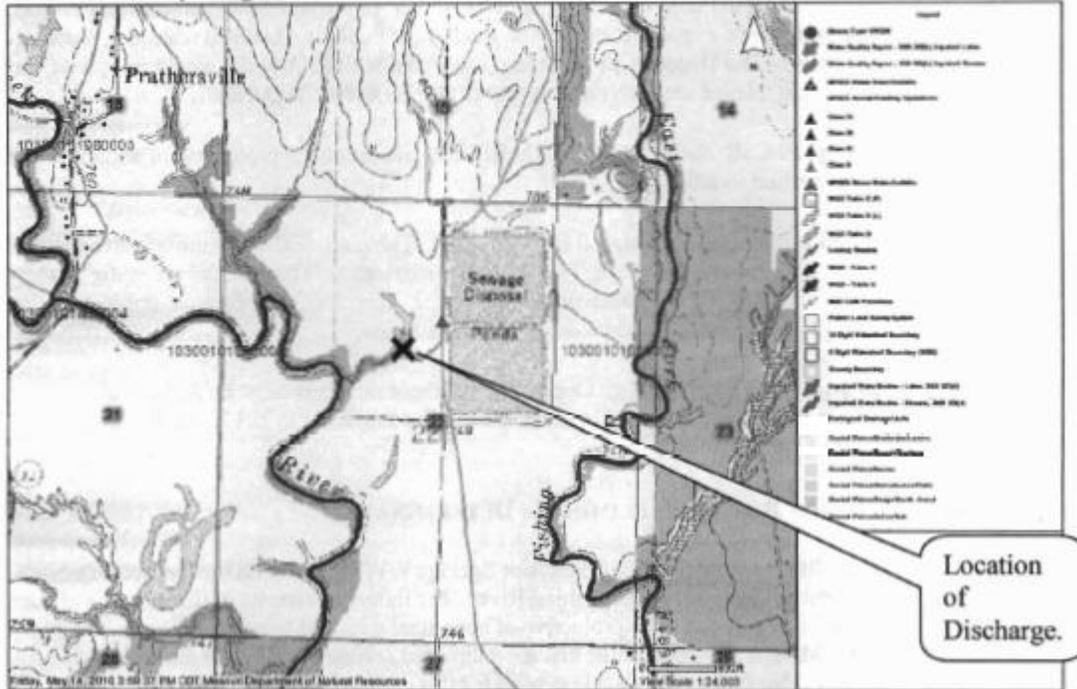
Date: 6/2010

Unit Chief: John Rustige, P.E.

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Appendix A: Map of Discharge Location

Excelsior Springs WWTF



Missouri
Department of
Natural Resources

Disclaimer: Although this map has been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

Appendix B: Natural Heritage Review

 <p>Missouri Department of Conservation Heritage Review Report May 25, 2010 -- Page 1 of 2</p>		<p>Policy Coordination Unit P. O. Box 180 Jefferson City, MO 65102 heritagereview@mdc.mo.gov 573-522-4115 X 3367</p>
<p>Mr. Vance A. Neal, P.E. Larkin Group Consulting Engineers 9200 Ward Parkway, Suite 200 Kansas City, MO 64114</p>	<p>Project type: Waste Water Treatment Plant Expansion Location/Scope: NW ¼, NE ¼, Section 22, T52N, R30W County: Clay Query reference: Larkin Project No. KC06-0005.0100 Query received: May 21, 2010</p>	<p><i>[Signature]</i> Prepared by: Shannon Cave</p>
<p>This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. On-site verification is the responsibility of the project. Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information may be found at www.mdc.mo.gov/naturalheritagereview/ and www.mdc.mo.gov/naturalheritagereview/ and www.mdc.mo.gov/naturalheritagereview/. Contact information for the department's Natural History Ecologist is online at http://www.mdc.mo.gov/naturalheritagereview/.</p>		
<p>Level 3 (federal-listed) and Level 2 (state listed) issues: Records of listed species or critical habitats:</p> <p>Heritage records identify no wildlife preserves, no state or federal designated wilderness areas or critical habitats, no state or federal endangered-list species records within one mile of the site, or in public land survey section 22 or sections adjacent, or within five miles downstream on streams draining the project site.</p> <p>The project should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor those after rain events and until a well-rooted ground cover is reestablished.</p> <p><small>FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Consult with U.S. Fish and Wildlife Service, 101 Park Drive Suite A, Columbia, Missouri 65203-0007, 573-234-2132</small></p>		
<p>General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific heritage records):</p> <ul style="list-style-type: none"> ➢ Streams in the area should be protected from soil erosion, water pollution and in-stream activities that modify or diminish aquatic habitats. Best management recommendations relating to streams and rivers may be found at http://mdc.mo.gov/79. ➢ Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites. <ul style="list-style-type: none"> • Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area. • Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells. 		

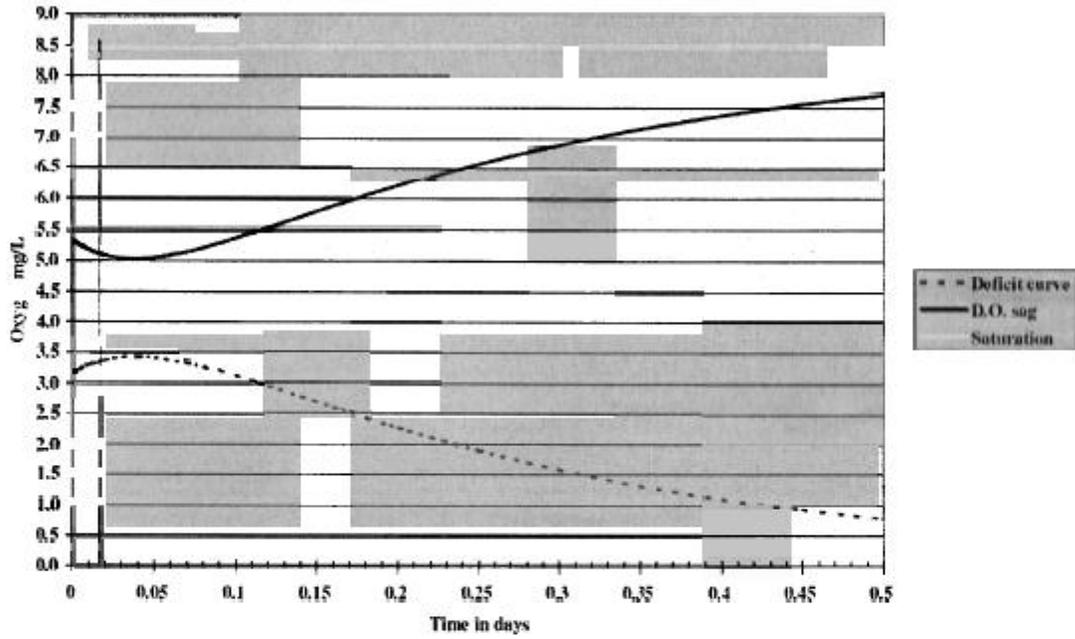
Appendix C: Dissolved Oxygen Modeling using Streeter Phelps

Excelsior Springs, MO 3.5 MGD WWTP				Avg. Week Limit	Average Monthly Limit	dist miles	time days	deficit mg/l	D.O. mg/l	Saturation mg/l
Streeter-Phelps analysis of critical dissolved oxygen sag. Based on Lotus File DOSAG2.WK1 Revised 19-Oct-93						0	0	3.16	5.31	8.475
						0.08	0.005	3.24	5.23	8.475
						0.13	0.008	3.26	5.19	8.475
INPUT						0.02	0.001	3.18	5.30	8.475
1. EFFLUENT CHARACTERISTICS						0.20	0.012	3.33	5.15	8.475
Discharge (cfs):	5.4153	3.50 MGD				0.21	0.013	3.34	5.14	8.475
CBOD5 (mg/L):	19					0.23	0.0153	3.36	5.11	8.475
NBOD (mg/L):	5					0.26	0.016	3.37	5.11	8.475
Dissolved Oxygen (mg/L):	5					0.29	0.018	3.38	5.09	8.475
Temperature (deg C):	20					0.33	0.02	3.40	5.08	8.475
2. RECEIVING WATER CHARACTERISTICS						0.49	0.03	3.44	5.03	8.475
Upstream Discharge (cfs):	7Q10	2.48	1.00 MGD			0.65	0.04	3.45	5.03	8.475
Upstream CBOD5 (mg/L):		1.0				0.69	0.06	3.45	5.04	8.475
Upstream NBOD (mg/L):		5				1.15	0.07	3.34	5.14	8.475
Upstream Dissolved Oxygen (mg/L):		6				1.31	0.08	3.27	5.20	8.475
Upstream Temperature (deg C):		98				1.47	0.09	3.20	5.28	8.475
Elevation (ft NGVD):	730	21,000 Length				1.64	0.1	3.12	5.36	8.475
Downstream Average Channel Slope (ft/ft):	0.001	0.0010				1.80	0.11	3.03	5.41	8.475
Downstream Average Channel Depth (ft):	1	12.00 inch				1.96	0.12	2.95	5.53	8.475
Downstream Average Channel Velocity (fps):	1	5.289 ft/mile				2.14	0.14	2.77	5.70	8.475
3. REAERATION RATE (Base e) AT 20 deg C (day⁻¹):						2.28	0.16	2.60	5.88	8.475
Reference	Applic. Vel (fps)	Applic. Dep (ft)	Suggested Values			2.78	0.17	2.51	5.96	8.475
Churchill	1.5 - 6	2 - 50	11.60			2.94	0.18	2.43	6.05	8.475
O'Connor and Dobbins	0.1 - 1.5	2 - 50	12.96			3.11	0.19	2.34	6.13	8.475
Owens	0.1 - 6	1 - 2	21.60			3.27	0.2	2.28	6.21	8.475
Tsivoglou-Wallace	0.1 - 6	0.1 - 2	6.91			3.60	0.22	2.11	6.38	8.475
4. BOD DECAY RATE (Base e) AT 20 deg C (day⁻¹):						4.09	0.25	1.80	6.58	8.475
Reference			Suggested Value			4.91	0.3	1.59	6.89	8.475
Wright and McDonnell 1979			3.33			5.73	0.35	1.32	7.15	8.475
OUTPUT						6.55	0.4	1.10	7.37	8.475
1. INITIAL MIXED RIVER CONDITION						7.36	0.45	0.92	7.55	8.475
CBOD5 (mg/L):			13.3			8.18	0.5	0.77	7.71	8.475
NBOD (mg/L):			5.0			9.00	0.55	0.64	7.83	8.475
Dissolved Oxygen (mg/L):			5.3			9.82	0.6	0.53	7.94	8.475
Temperature (deg C):			21.9			10.64	0.65	0.45	8.03	8.475
2. TEMPERATURE ADJUSTED RATE CONSTANTS (Base e)						11.45	0.7	0.37	8.10	8.475
Reaeration (day ⁻¹):			22.59			11.82	0.71	0.36	8.12	8.475
BOD Decay (day ⁻¹):			3.63			11.78	0.72	0.35	8.13	8.475
3. CALCULATED INITIAL ULTIMATE CBODU AND TOTAL BODU						11.95	0.73	0.35	8.14	8.475
Initial Mixed CBODU (mg/L):			19.6			12.11	0.74	0.32	8.16	8.475
Initial Mixed Total BODU (CBODU + NBOD, mg/L):			24.6			12.27	0.75	0.31	8.16	8.475
4. INITIAL DISSOLVED OXYGEN DEFICIT						12.44	0.76	0.30	8.18	8.475
Saturation Dissolved Oxygen (mg/L):			8.475			12.80	0.77	0.29	8.19	8.475
Initial Deficit (mg/L):			3.16			12.76	0.78	0.28	8.20	8.475
5. TRAVEL TIME TO CRITICAL DO CONCENTRATION (days):						12.93	0.79	0.27	8.21	8.475
6. DISTANCE TO CRITICAL DO CONCENTRATION (miles):						12.99	0.8	0.26	8.22	8.475
7. CRITICAL DO DEFICIT (mg/L):						13.25	0.81	0.25	8.23	8.475
8. CRITICAL DO CONCENTRATION (mg/L):						13.42	0.82	0.24	8.23	8.475
						13.58	0.83	0.23	8.24	8.475
						13.75	0.84	0.22	8.25	8.475
						13.91	0.85	0.22	8.26	8.475
						14.07	0.86	0.21	8.27	8.475
						14.14	0.87	0.20	8.27	8.475
						14.40	0.88	0.19	8.28	8.475
						14.56	0.89	0.19	8.29	8.475
						14.73	0.9	0.18	8.29	8.475
						14.89	0.91	0.17	8.30	8.475
						15.05	0.92	0.17	8.31	8.475
						15.22	0.93	0.16	8.31	8.475
						15.38	0.94	0.16	8.32	8.475
						15.55	0.95	0.15	8.32	8.475
						15.71	0.96	0.14	8.33	8.475
						15.87	0.97	0.14	8.34	8.475
						16.04	0.98	0.13	8.34	8.475
						16.20	0.99	0.13	8.35	8.475
						16.36	1	0.12	8.35	8.475

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Appendix C. continued.

Graph 2 - Fishing River Oxygen Sag Curve Below Expanded WWTP
DO vs. Time



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Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant. MDNR staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the MDNR WQAR:

- 1) Tier Determination and Effluent Limit Summary Sheet: Only one water body segment end location was not provided but was determined by staff. The proposed BOD effluent concentration were not accurate given the DO modeling. The proposed ammonia concentrations were correctly applied but as described in the WQAR were not accurately calculated during the last permit cycle.
- 2) Attachment B: No changes needed.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
ANTIDEGRADATION REVIEW SUMMARY
TIER DETERMINATION AND EFFLUENT LIMIT SUMMARY

1. FACILITY			
NAME EXCELSIOR SPRINGS WASTEWATER TREATMENT PLANT		TELEPHONE NUMBER WITH AREA CODE 816-630-9524	
ADDRESS (PHYSICAL) 11800 MCKEE ROAD		CITY EXCELSIOR SPRINGS	STATE ZIP CODE MO 64024
2. RECEIVING WATER BODY SEGMENT #1			
NAME FISHING RIVER			
2.1	UPPER END OF SEGMENT (Location of discharge) UTM _____ OR Lat: +3918167, Long -9415367		
2.2	LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____		
<small>Per the Missouri Antidegradation Rule and Implementation Procedure, or AIP, the definition of a segment: "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."</small>			
3. WATER BODY SEGMENT #2 (IF APPLICABLE)			
NAME			
3.1	UPPER END OF SEGMENT UTM _____ OR Lat _____ Long _____		
3.2	LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____		
4. WATER BODY SEGMENT #3 (IF APPLICABLE)			
NAME			
4.1	UPPER END OF SEGMENT UTM _____ OR Lat _____ Long _____		
4.2	LOWER END OF SEGMENT UTM _____ OR Lat _____ Long _____		
5. PROJECT INFORMATION			
Is the receiving water body an Outstanding National Resource Water, an Outstanding State Resource Water, or drainage thereto? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
In Tables D and E of 10 CSR 20-7.031, Outstanding National Resource Waters and Outstanding State Resource Water are listed. Per the Antidegradation Implementation Procedure Section 1.B.3, "any degradation of water quality is prohibited in these waters unless the discharge only results in temporary degradation." Therefore, if degradation is significant or minimal, the Antidegradation Review will be denied.			
Will the proposed discharge of all pollutants of concern, or POCs, result in no net increase in the ambient water quality concentration of the receiving water after mixing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
If yes, submit a summary table showing the levels of each pollutant of concern before and after the proposed discharge in the receiving water and then complete Attachment B for the first downstream classified water body segment.			
Will the discharge result in temporary degradation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete Attachment C.			
Has the project been determined as non-degrading? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If yes, complete No Degradation Evaluation - Conclusion of Antidegradation Review form. Submit with the appropriate Construction Permit Application as no antidegradation review is required.			
If yes to one of the above questions, skip to Section 8 - Wet Weather.			

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6. EXISTING WATER QUALITY DATA OR MODEL SUMMARY		
Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II A 1: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data by approved the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Water Quality Monitoring and Assessment Section		
Date existing water quality data was provided by the Water Quality Monitoring and Assessment Section:		
Approval date of the QAPP by the Water Quality Monitoring and Assessment Section:		
Approval date of the project sampling plan by the Water Quality Monitoring and Assessment Section:		
Approval date of the data collected for all appropriate pollutants of concern by the Water Quality Monitoring and Assessment Section:		
Comments/Discussion:		
7. POLLUTANTS OF CONCERN AND TIER DETERMINATION(S)		
Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II S. The tier protection levels are specified and defined in rule at 10 CSR 20-7 031 (2)		
Water Body Segment One		
Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
BACTERIA (FECAL C)		
BACTERIA (E COLI)		
BOD5, DO		
TSS		
AMMONIA		
Note: Add an asterisk to items that you only assume are Tier 2 with significant degradation		
Water Body Segment Two		
Pollutants of Concern and Tier Determination(s)		
Tier 1	Tier 2 with Minimal Degradation	Tier 2 with Significant Degradation
<ul style="list-style-type: none"> For pollutants of concern that are Tier 2 with significant degradation, complete Attachment A For pollutants of concern that are Tier 2 with minimal degradation, complete Attachment B For pollutants of concern that are Tier 1, complete Attachment D. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment. 		
B. WET WEATHER ANTICIPATIONS		
If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(n)(4). Attach the feasibility analysis to this report.		
What is the Wet Weather Flow Peaking Factor in relation to design flow? 2.57		

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Wet Weather Design Summary:
PLANT IS ABLE TO HANDLE 9 MGD PEAK FLOWS CAN ALSO BE EQUALIZED IN THE EXISTING AERATED EARTHEN BASIN AND 2 CELL LAGOON.

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9. SUMMARY OF THE PROPOSED ANTIDEGRADATION REVIEW EFFLUENT LIMITS
Verify on the proposed pollutants or concern and that respective effluent limits that the proposed treatment system will comply with.

Pollutant of Concern	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	MG/L	19	19	29
TSS	MG/L	30	30	45
Dissolved Oxygen	MG/L	5.0 MINIMUM		
Ammonia	MG/L	SUMMER 1.9/ WINTER 3.7	SUMMER 1.9/ WINTER 3.7	SUMMER 3.7/ WINTER 7.5
Bacteria (E. Coli)	#/100 ML	206	206	
OIL & GREASE	MG/L	10	10	

These proposed limits must not violate water quality standards, be protective of beneficial uses and achieve the highest statutory and regulatory requirements

Attach the Antidegradation Review report and all supporting documentation

CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulation.

SIGNATURE: *Vance Allen Neal* DATE: 5-25-2010

NAME AND OFFICIAL TITLE:
ASSOCIATE ENGINEER

COMPANY NAME:
LARKIN GROUP, INC

ADDRESS: 9200 Ward Parkway, Suite 200 CITY: Kansas City STATE: MO ZIP CODE: 64114

TELEPHONE NUMBER WITH AREA CODE: (816) 361-0440 E-MAIL ADDRESS: VNEAL@LARKIN-GRP.COM

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE: *Tom Wall* DATE: 5-26-10

NAME AND OFFICIAL TITLE:
TOM WALL, DIRECTOR OF UTILITIES

ADDRESS: 11800 MCKEE ROAD CITY: 201 East Broadway STATE: MO ZIP CODE: 64024

TELEPHONE NUMBER WITH AREA CODE: (816) 630-9524 E-MAIL ADDRESS: TWALL@ci.excelsior-springs.mo.us

CONTINUING AUTHORITY: Continuing Authority is the permanent organization that will be responsible for the operation, maintenance and modernization of the facility. The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE: *Tom Wall* DATE: 5-26-10

NAME AND OFFICIAL TITLE:
TOM WALL, DIRECTOR OF UTILITIES

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH
ANTIDEGRADATION REVIEW SUMMARY
ATTACHMENT B: TIER 2 – MINIMAL DEGRADATION

1. FACILITY						
NAME EXCELSIOR SPRINGS WASTEWATER TREATMENT PLANT		TELEPHONE WITH AREA CODE 816-630-9524				
ADDRESS (PHYSICAL) 11800 MCKEE ROAD	CITY EXCELSIOR SPRINGS	STATE MO	ZIP CODE 64024			
2. RECEIVING WATER BODY SEGMENT #1						
NAME Fishing River						
3. WATER BODY SEGMENT #2 (IF APPLICABLE)						
NAME						
4. ASSIMILATIVE CAPACITY TABLE						
Determining the facility assimilative capacity, or FAC, and the segment assimilative capacity, or SAC for each pollutant of concern is explained in detail in the Antidegradation Implementation Procedure Section II A.3 and Appendix 3. POCs to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II A. Provide all calculations in the Antidegradation Review report.						
Pollutant of Concern	Facility Assimilative Capacity (lb/day)	New Load (lb/day)	Percent of Facility Assimilative Capacity (%)			
BOD5	625.5 Existing Plant Load	554.61	88.7%			
TSS	1,251 Existing Plant Load	875.7	70%			
Pollutant of Concern	Water Body Segment #1 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #1 SAC	Water Body Segment #2 SAC	Cumulative Net Increase in Load	Cumulative % of Water Body Segment #2 SAC
Assimilative Capacity Summary						
Is degradation considered minimal for all Pollutants of Concern? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
Degradation is considered minimal if the new or proposed loading is less than 10 percent of the FAC and the cumulative degradation is less than 20 percent of the SAC according to the Antidegradation Implementation Procedure Section II A.3. If yes, an alternatives analysis and a social and economic importance analysis are not required.						
Comments/Discussion UPSTREAM AND DOWNSTREAM MONITORING INDICATES THAT THE PRESENT LOADING DOES NOT IMPACT THE FISHING RIVER.						
MINIMAL DEGRADATION CALCULATIONS						

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5. OIL AND GREASE

Is this a publicly owned treatment works, or POTW, restaurant, school or other domestic wastewater treatment facility with oil and grease as a Pollutant of Concern? Yes No

In accordance with 10 CSR 20-7.031(3)(B), waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. In accordance with 10 CSR 20-7.031 Table A, oil and grease has a chronic toxicity of 10 mg/L for protection of aquatic life. This facility will meet the effluent limits (MDL and AML of 15 mg/L and 10 mg/L, respectively).

6. DECHLORINATION

If Chlorination and Dechlorination is the existing or proposed method of disinfection treatment, will the effluent discharged be equal to or less than the Water Quality Standards for Total Residual Chlorine stated in Table A of 10 CSR 20-7.031? Yes No

Based on the disinfection treatment system being designed for total removal of Total Residual Chlorine, minimal degradation for Total Residual Chlorine is assumed and the facility will be required to meet the water quality based effluent limits. These compliance limits for Total Residual Chlorine are much less than the method detection limit of 0.13 mg/L.

7. PROPOSED PROJECT SUMMARY

EXCELSIOR SPRINGS IS PROPOSING TO UPGRADE AND EXPAND THE EXISTING WWTP FROM 2.5 MGD TO 3.5 MGD. THE PROPOSED FACILITY IS A DEEP OXIDATION DITCH WITH COUNTER CURRENT AERATION WITH FINE BUBBLE DIFFUSERS, FINE SCREENING, GRIT REMOVAL, SEPARATE CLARIFIERS, UV DISINFECTION, REAERATION, DIGESTERS, SLUDGE DEWATERING AND DEWATERED SLUDGE STORAGE

Attach the Antidegradation Review report and all supporting documentation

CONSULTANT: I have prepared or reviewed this from and all attached reports and documentation. The conclusion proposed is consistent with the AIP and current state and federal regulations.

SIGNATURE

Vance Allen

DATE

5-26-2010

PRINT NAME

Vance Allen Neal Associate Engineer, Larkin Group, Inc.

TELEPHONE NUMBER WITH AREA CODE

816-361-0440

E-MAIL ADDRESS

vneal@larkin-grp.com

OWNER: I have read and reviewed the prepared documents and agree with this submittal

SIGNATURE

Tom Wall

DATE

5-26-10

CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal

SIGNATURE

Tom Wall

DATE

5-26-10

MO 780-2022 (01/09)

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APPENDIX D– AFFORDABILITY ANALYSIS:

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

**FOR THE PURPOSE OF RENEWAL
OF
MO-0028843
EXCELSIOR SPRINGS WASTEWATER TREATMENT PLANT**

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:

Outfall #001 - POTW SIC #4952

The use or operation of this facility shall be by or under the supervision of a **Certified “B” Operator** Excess Flow Holding Basins/Influent Screening/Schreiber GR Oxidation Ditch (Extended Aeration with secondary clarification)/Aerobic Digestion/UV Disinfection/re-aeration/Sludge is land applied.

Design population equivalent is 35,000.

Design flow is 3.5 million gallons per day.

Design sludge production is 1,065 dry tons/year.

Outfall #002 - Eliminated

Residential Connections:	3,952
Commercial Connections:	419
Total Connections:	4,371

New Permit Requirements or Requirements Now Being Enforced:

This operating permit renewal includes the addition of final effluent limitations for Bis(2-Ethylhexyl)phthalate (DEHP) and adjusted final effluent values for Ammonia as N. The WET Test is not new to the permit, however has been relocated to the main outfall location to the receiving stream for the facility, Outfall #002. A Schedule of Compliance has been placed in the permit to allow the permittee time to adjust operations in order for the facility to meet final effluent limitations, especially the parameter DEHP.

Range of Anticipated Costs Associated with Complying with Requirements:

The City of Excelsior Springs is currently constructing a new wastewater treatment plant that will include influent screening, a Schreiber GR Oxidation Ditch (extended aeration with secondary clarification), aerobic digestion and a UV disinfection system, which will increase the design flow to 3.5 million gallons per day (MGD). This new system has the ability to meet more stringent effluent limitations including ammonia and organic pollutants. Ammonia as N testing currently exists at the facility, however the new final effluent limitations for DEHP will cause an additional sample and reporting requirement for the facility. The potential cost burdens are explained below.

Update; September 20, 2013 the Department Kansas City Regional Office received a Substantial Completion and Operable Wastewater Construction form for the new wastewater treatment plant. A final construction inspection was performed on October 2, 2013.

The Department has completed a study in order to estimate costs for different treatment types based on known costs from several facilities around the State of Missouri. The following cost ranges have been projected from this study to provide potential expenditures to the City of Excelsior Springs in order to meet Ammonia as N final effluent limitations. This does not take into account the addition of the DEHP sampling and testing costs. These costs are addressed below the table.

Treatment Type: BOD/TSS/AMMONIA

Flow (mgd)	Capital Cost		Annual O&M		Total Present Worth		User Rate (5,000 gpd/month)	
	Low	High	Low	High	Low	High	Low	High
2.5	\$9,108,333	\$13,950,000	\$342,800	\$515,583	\$13,380,379	\$ 20,375,308	\$12	\$18
3.5	\$11,425,000	\$18,250,000	\$426,000	\$647,150	\$16,733,902	\$26,314,919	\$11	\$17

Pace Analytical Services, Inc. laboratories provided the following cost estimates for sampling and testing of for organic pollutants using EPA Method 625. This is a projected cost on the sampling and testing for this pollutant, however does not take into account operations and maintenance of the facility in order to maintain Water Quality Standards (WQS) for this pollutant. Running one test on one sample for EPA Method 625 will cost \$200, according to a representative from Pace Analytical Services.

(1) A community’s financial capability and ability to raise or secure necessary funding (*examine key indicators of the communities ability to raise funds*);

Current User Rates: Sewer (per 5,000 gallons) = \$30.09

Rate Capacity or Pay as You Go Option: Rate Capacity

Municipal Bond Rating (if applicable): A+

Bonding Capacity: up to 20%
(General Obligation Bond capacity allowed by constitution: cities=up to 20% of taxable tangible property sewer districts=up to 5% of taxable tangible property)

Current outstanding debt: \$31,796,114 increase in FY11 (467%)

Other indicators:

The permittee has provided an independent auditor’s report, which highlights several financial elements regarding the City of Excelsior Springs. These highlights have been listed below and have been noted to show the City of Excelsior Springs ability to afford one knew condition of the permit:

- End of FY11, assets exceeded liabilities by \$36,215,432. Of this amount \$7,425,549 may be used to meet the government’s ongoing obligations to citizens and creditors.
- The government’s total net assets increased by \$3,051,088 and \$1,861,475 for fiscal years ended September 30, 2011 and 2012, respectfully.
- In FY11, government funds reported combined ending fund balances of \$11,491,240, an increase of \$1,345,033. Approximately \$2,414,707 of this amount is available for spending at the government’s discretion.
- End of FY11, unassigned balance for General Fund was \$2,503,528 or 36% of total General Fund.

The permittee has provided other indicators that show operations and maintenance costs on the facility from current projects and other conditions affecting the community. The following is a list of the current projects being completed at the facility along with dates and cost estimates:

- Infiltration and Inflow inspection, testing, and evaluation completed 5/2011 – 3/2012 at \$200,000
- Sanitary Sewer facility plan completed 7/2012 at \$70,000
- New Wastewater Treatment Plant being constructed 4/2012 – 10/2013 at \$12,000,000
- Collection system repairs and upgrades – continuous 2011 – 2015 at \$1,000,000 per year
- Lift Stations rehabilitations 2012 – 2013 at \$1,500,000

The other conditions that are affecting the community, as indicated by the permittee, are listed below:

- Closing of the MAGNA plant for changeover to new Ford Motor Company projected a loss of 90 jobs
- Potential changes to AIPC plant that would provide for sewer credits and subsequent loss of revenue

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

It appears that a rate increase is necessary however the permittee has indicated that a rate increase has already been analyzed and implemented with regard to current operations, future expansions, and planned construction phases including the new 3.5 million gallon per day Wastewater Treatment Plant.

The following are cost estimates for operations of the facility under the renewal permit with the new condition. Note again that the permittee has indicated the current user rate of \$30.09 was established to take into account future expansions and construction costs. Therefore, for the purpose of the complete Finding of Affordability the information has been filled out accordingly but is not significant to the renewal permit with the new condition.

Current annual operating costs (exclude depreciation):	<u>\$1,330,063 - FY2011</u>
Current user rate:	<u>\$30.09 / 5,000 gallons</u>
Estimated capital cost of pollution control options*:	<u>\$11,425,000 - \$18,250,000</u>
Annual cost of additional (<i>operating costs and debt service</i>):	<u>\$426,000 - \$647,150 (+\$2400 for EPA Method 625)</u>
Estimated resulting user rate/5,000 gpd/month**:	<u>\$11 - \$17</u>
Median Household Income (Clay County/Ray County):	<u>\$54,884 ± \$2,957 / \$50,756 ±4,505</u>
Current User Rates as a percent of Median Household Income (Clay County/Ray County): (<i>Rate/MHI</i>)	<u>0.055% / 0.059%</u>
Projected User Rates as a percent of MHI (at current design flow) (Clay County/Ray County):	<u>0.077% - 0.088% / 0.083% - 0.095%</u>
Projected User Rates as a percent of MHI (at future design flow) (Clay County/Ray County):	<u>0.075% - 0.086% / 0.081% - 0.093%</u>

* The City of Excelsior Springs is currently constructing a new wastewater treatment facility that will consist mainly of an oxidation ditch and will increase the flow to 3.5 million gallons per day. The price range listed is an estimated capital cost range at 3.5 mgd had the permittee not replaced or been in the process of replacing the current facility.

** Resulting user rate is in addition to current monthly user rate as indicated by permittee.

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

Based on the information above, it appears that the community will be able to afford potential further rate increase if the facility feels it is necessary in order to meet final effluent limitations.

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

The following is a discussion of the environmental benefit of the new condition of the permit. DEHP is commonly used in the production of polyvinyl chloride (PVC) and exhibits low toxicity from acute and chronic exposures, which is harmful to aquatic life and human health. High enough toxicity can damage habitat for semi-volatile organic sensitive aquatic species and can potentially be hazardous to human health, more commonly causing gastrointestinal distress. Removal of DEHP is beneficial to the environment by reducing damage to aquatic life and lowering the risk of adversely affecting human health in accordance with 10 CSR 20-7 and the Clean Water Act. Removal can also enable the stream habitat to support a more healthy and diverse population of aquatic life.

The application submitted by the permittee for renewal of the operating permit provided sample results that showed a detection level for DEHP. This detection prompted consideration for this pollutant by the Department, upon which the Department determined that reasonable potential existed to exceed Water Quality Standards (WQS) for DEHP. The Department has added final effluent limitations in order for the facility to gather sample data for DEHP and then re-evaluate whether the facility can meet WQS with the current or future treatment system. This re-evaluation will consist of a Reasonable Potential Analysis (RPA) based on actual sample data provided by the permittee in the required Discharge Monitoring Reports (DMRs) as stated in the permit. The following provides numerical data contributing to evidence of environmental benefit of removing DEHP from the wastewater:

$$\text{Pounds of DEHP per day} = (\text{flow, MGD}) \times (\text{concentration of DEHP, ug/L}) \times (\text{conversion factor, 0.00834})$$

Current Performance (application data sample)

Design Flow = 2.5 MGD:

$$\text{Monthly Average} = 2.5 \times 14.8 \times 0.00834 = 0.31 \text{ lbs/day}$$

Necessary Performance

Design Flow = 2.5 MGD:

$$\text{Monthly Average} = 2.5 \times 5.9 \times 0.00834 = 0.12 \text{ lbs/day}$$

Future Design Flow = 3.5 MGD:

$$\text{Monthly Average} = 3.5 \times 5.9 \times 0.00834 = 0.17 \text{ lbs/day}$$

Environmental Benefit

Design Flow = 2.5 MGD:

Current Performance	=	0.31 lbs/day
-Necessary Performance	=	0.12 lbs/day
Environmental Benefit	=	0.19 lbs/day

Environmental Benefit

Future Design Flow = 3.5 MGD:

Current Performance	=	0.31 lbs/day
-Necessary Performance	=	0.17 lbs/day
Environmental Benefit	=	0.14 lbs/day

It appears that in both cases, current design flow and future design flow, there is environmental benefit to removal of DEHP. With the removal of either 0.19 lbs/day or 0.14 lbs/day of DEHP, the facility would be contributing to the reduction of damage to aquatic life and reducing the risk to adverse human health effects. The Department speculates that based on the information above, and the oxidation ditch treatment system currently being construction to replace the lagoon system, that the facility may be able to meet the final effluent limitations for DEHP. The oxidation ditch system is a more sophisticated treatment type that has the potential to reduce pollutant levels well below the existing final effluent limitations, specifically BOD, Ammonia and organics such as DEHP.

Once construction of the new oxidation ditch has been completed, with proper operation and maintenance, the facility should be able to perform at a much better rate than the current permit conditions. Note that once construction is complete, the facility will be permitted with more stringent final effluent limitations based on that treatment type, in accordance with 10 CSR 20-7.015. However, the new facility should also be able to meet the revised final effluent limitations based on that treatment technology.

At this time, the Department is not aware of any other alternative technologies that would be equally environmentally beneficial.

- (4) *An inclusion of ways to reduce economic impacts on distressed populations in the community, including but not limited to low and fixed income populations. This requirement includes but is not limited to:*
- (a) *Allowing adequate time in implementation schedules to mitigate potential adverse impacts on distressed populations resulting from the costs of the improvements and taking into consideration local community economic considerations; and*

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

Potentially Distressed Populations	
Unemployment ¹ for Clay County/Ray County	7.8%/10.9%
Median Household Income ² Clay County/Ray County	\$58,352 ±1,453 / \$50,756 ±4,505
Percent Population Growth/Decline ³ (1990-2010) Clay County/Ray County	44.7% growth / 6.9% growth
Percent of Households in Poverty ⁴ Clay County/Ray County	5.6% ±0.8 / 7.4% ±2.6

Opportunity for cost savings or cost avoidance:

The permittee has already begun construction on a new wastewater treatment system. This new system will meet the final effluent limitations in the renewal permit. However, if the permittee should require financial assistance, they may apply for State Revolving Fund (SRF) financial support in order to help fund a Capital Improvements Plan. Other loans and grants also exist for which the facility may be eligible for. More information about the SRF and other loans and grants can be found on the Department’s website at <http://dnr.mo.gov/env/wpp/srf/wastewater-assistance.htm>. You may also contact the Financial Assistance Center (FAC) by clicking on the appropriate link on the website listed above.

Opportunity for changes to implementation/compliance schedule:

The Department has granted a Schedule of Compliance (SOC) to allow the permittee to make any necessary changes to the treatment facility in order to meet final effluent limitations. The Department has determined that the existing term of the Construction Permit is sufficient timing for the permittee to complete construction of the upgrades. The Department issue a Construction Permit that expires November 23, 2012. With regards to this information, it appears that the facility will be able to meet final effluent limitations prior to the end of the SOC granted in this renewal permit.

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

The permittee has provided a list of current and future major projects for the City of Excelsior Springs. This list also shows operations and maintenance costs on the facility from current projects and other conditions affecting the community:

- Infiltration and Inflow inspection, testing, and evaluation completed 5/2011 – 3/2012 at \$200,000
- Sanitary Sewer facility plan completed 7/2012 at \$70,000
- New Wastewater Treatment Plant being constructed 4/2012 – 10/2013 at \$12,000,000
- Collection system repairs and upgrades – continuous 2011 – 2015 at \$1,000,000 per year
- Lift Stations rehabilitations 2012 – 2013 at \$1,500,000

The permittee has not indicated any other relevant community investments that may impact the City of Excelsior Springs’ ability to afford the new effluent limitations.

¹ Unemployment data from Missouri Department of Economic Development (June 2012) – <http://www.missourieconomy.org/pdfs/urel1206.pdf>

² Median Household Income data from American Community Survey – Median income in the past 12 months – <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

³ 2010 Census Population Data - <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>
1990 Census Population Data – <http://www.census.gov/prod/cen1990/cp1/cp-1-27.pdf>

⁴ Poverty data – American Community Survey -<http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

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

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

Secondary indicators for consideration:

Socioeconomic, Debt and Financial Indicators

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

* Separated into Clay County/Ray County if values are different. If values are the same, then no separation occurred.
** Data was not readily available to the Department of Natural Resources; therefore, proper scores could not be given within these categories.

Average Score for Financial Capability Matrix: 2.25/1.75*
Residential Indicator (from Criteria #2 above): Low

Financial Capability Matrix

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

Estimated Financial Burden: Low Burden

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

The permittee has indicated other conditions that are affecting the community that may cause a burden on the community, which are listed below:

- Closing of the MAGNA plant for changeover to new Ford Motor Company projected a loss of 90 jobs
- Potential changes to AIPC plant that would provide for sewer credits and subsequent loss of revenue

The permittee has not indicated any other relevant local economic conditions that may impact the City of Excelsior Springs' ability to afford the new effluent limitations.

Conclusion and Finding

This operating permit renewal includes the addition of final effluent limitations for Bis(2-Ethylhexyl)phthalate (DEHP) and adjusted final effluent values for Ammonia as N. The WET Test is not new to the permit, however has been relocated to the main outfall location to the receiving stream for the facility, Outfall #002. A Schedule of Compliance has been placed in the permit to allow the permittee time to adjust operations in order for the facility to meet final effluent limitations, especially the parameter DEHP.

The information above only provides the Department with an estimate for potential financial burdens with regards to the facility and the community's financial capability to comply with the MSOP MO-0028843. This information and determination does not take into account costs already budgeted for construction of the new facility. Furthermore, these cost estimates have been calculated as though the current construction project does not exist. Actual cost burdens may vary based on performance of the future treatment system with respect to the Water Quality Standards and the current permit conditions. Note that permit conditions may change in accordance with 10 CSR 20-7 in order to ensure proper protection of waters of the state based on effluent loading from a mechanical treatment plant, which may in turn alter the cost burden from this determination.

As a result of reviewing the above criteria, the Department hereby finds that the action described above will result in a low burden with regard to the community's overall financial capability and low financial impact for most individual customers/households.

APPENDIX D – OUTFALL MAP for the Excelsior Springs WWTF

