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-0137324
Owner: Spot Properties LLC
Address: 31 New Street, Sullivan, MO 63080
Continuing Authority: Same as above
Address: Same as above
Facility Name: Crossroads Plaza WWTF
Facility Address: 5633 Old Highway 21, Imperial, MO 63052
Legal Description: SE¼, NW¼, SE¼, Sec. 18, T42N, R05E, Jefferson County
UTM Coordinates: X= 718290, Y= 4250137
Receiving Stream: Tributary to Heads Creek (U) (losing)
First Classified Stream and ID: Heads Creek (C) (2182) (losing)
USGS Basin & Sub-watershed No.: (07140104-0406)

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

FACILITY DESCRIPTION

Outfall #001 – NON-POTW – Miscellaneous General Merchandise Stores – SIC #5399
The use or operation of this facility does not require a Certified Operator
Orenco Advantex AX100 recirculating filter / Chlorine Disinfection / Dechlorination / Sludge disposal by contract hauler
Design population equivalent is 10.
Design flow is 1,000 gallons per day.
Actual flow is 800 gallons per day.
Design sludge production is 0.38 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 621.250 RSMo, Section 640.013 RSMo and Section 644.051.6 of the Law.

Edward B. Galbraith, Director, Division of Environmental Quality

Chris Wieberg, Director, Water Protection Program
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect through **April 30, 2021**. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

### Table A-1.
**INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

<table>
<thead>
<tr>
<th>EFFLUENT PARAMETER(S)</th>
<th>UNITS</th>
<th>INTERIM EFFLUENT LIMITATIONS</th>
<th>MONITORING REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DAILY MAXIMUM</td>
<td>WEEKLY AVERAGE</td>
</tr>
<tr>
<td>Flow</td>
<td>MGD</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Biochemical Oxygen Demand&lt;sub&gt;5&lt;/sub&gt;</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>E. coli (Note 1, Page 3)</td>
<td>#/100 ml</td>
<td>126</td>
<td>126</td>
</tr>
<tr>
<td>pH – Units ***</td>
<td>SU</td>
<td>6.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Ammonia as N (April 1 – Sept 30)</td>
<td>mg/L</td>
<td>3.7</td>
<td>1.4</td>
</tr>
<tr>
<td>(Oct 1 – March 31)</td>
<td></td>
<td>7.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Total Residual Chlorine (Note 2, Page 3)</td>
<td>µg/L</td>
<td>17</td>
<td>8</td>
</tr>
</tbody>
</table>

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE JULY 28, 2018. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

### Table A-2.
**FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **May 1, 2021** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

<table>
<thead>
<tr>
<th>EFFLUENT PARAMETER(S)</th>
<th>UNITS</th>
<th>FINAL EFFLUENT LIMITATIONS</th>
<th>MONITORING REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DAILY MAXIMUM</td>
<td>WEEKLY AVERAGE</td>
</tr>
<tr>
<td>Flow</td>
<td>MGD</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Biochemical Oxygen Demand&lt;sub&gt;5&lt;/sub&gt;</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>E. coli (Note 1, Page 3)</td>
<td>#/100 ml</td>
<td>126</td>
<td>126</td>
</tr>
<tr>
<td>pH – Units ***</td>
<td>SU</td>
<td>6.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Ammonia as N (April 1 – Sept 30)</td>
<td>mg/L</td>
<td>3.7</td>
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</tr>
<tr>
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<td></td>
<td>7.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Total Residual Chlorine (Note 2, Page 3)</td>
<td>µg/L</td>
<td>17</td>
<td>8</td>
</tr>
</tbody>
</table>

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2021. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

* Monitoring requirement only.

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

*** pH is measured in pH units and is not to be averaged.

**** See table on Page 3 for quarterly sampling requirements.
### Minimum Sampling Requirements

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Months</th>
<th>Effluent Parameters</th>
<th>Report is Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>January, February, March</td>
<td>Sample at least once during any month of the quarter</td>
<td>April 28th</td>
</tr>
<tr>
<td>Second</td>
<td>April, May, June</td>
<td>Sample at least once during any month of the quarter</td>
<td>July 28th</td>
</tr>
<tr>
<td>Third</td>
<td>July, August, September</td>
<td>Sample at least once during any month of the quarter</td>
<td>October 28th</td>
</tr>
<tr>
<td>Fourth</td>
<td>October, November, December</td>
<td>Sample at least once during any month of the quarter</td>
<td>January 28th</td>
</tr>
</tbody>
</table>

Note 1 – Effluent limits of 126 #/100 mL daily maximum and monthly average for *E. coli* are applicable year round due to losing stream designation. No more than 10% of samples over the course of a calendar year shall exceed the 126 #/100 mL daily maximum.

Note 2 - This permit contains a Total Residual Chlorine (TRC) limit.
(a) The Water Quality Based Effluent Limit for Total Residual Chlorine was calculated to be 17 µg/L (daily maximum limit) and 8 µg/L (monthly average limit). These limits are below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The Department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation.
(b) Disinfection is required year-round.
(c) Do not chemically de-chlorinate **if it is not needed to meet the limits in your permit.**
(d) If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as “0 µg/L” TRC.

### B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I & III standard conditions dated August 1, 2014 and March 1, 2015, and hereby incorporated as though fully set forth herein.

### C. SPECIAL CONDITIONS

1. **Electronic Discharge Monitoring Report (eDMR) Submission System.**
   (a) Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
   (b) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
      (1) Bypass reporting. See Special Condition #9 for 24-hr. bypass reporting requirements.
      (c) Electronic Submissions. To access the eDMR system, use the following link in your web browser: [https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx](https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx).
      (d) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: [http://dnr.mo.gov/forms/780-2692-f.pdf](http://dnr.mo.gov/forms/780-2692-f.pdf). The Department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

2. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
   (a) To 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 CWA, 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.

3. All outfalls must be clearly marked in the field.
C. SPECIAL CONDITIONS (CONTINUED)

4. 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.

5. Changes in Discharges of Toxic Substances
   The permittee shall notify the Director as soon as it knows or has reason to believe:
   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels;"
      (1) One hundred micrograms per liter (100 µg/L); 
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established by the Director in accordance with 40 CFR 122.44(f).

6. Report as No Discharge when a discharge does not occur during the report period.

7. Reporting of Non-Detects:
   (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   (b) The permittee shall not report a sample result as “Non-Detect” without also reporting the detection limit of the test. Reporting as “Non Detect” without also including the detection limit will be considered failure to report, which is a violation of this permit.
   (c) The permittee shall provide the “Non-Detect” sample result using the less than sign and the minimum detection limit (e.g. <10).
   (d) Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   (e) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   (f) When calculating monthly averages, one-half of the method detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the “<MDL” shall be reported as indicated in item (c).

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

9. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the St. Louis Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: http://dnr.mo.gov/modncag/ or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.

10. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.

11. At least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain closed except when temporarily opened by the permittee to access the facility to perform operational monitoring, sampling, maintenance, or mowing. The gates shall also be temporarily opened for inspections by the Department. The gate shall be closed and locked when the facility is not staffed.

12. At least one (1) warning sign shall be placed on each side of the facility enclosure in such positions as to be clearly visible from all directions of approach. There shall also be one (1) sign placed for every five hundred feet (500') (150 m) of the perimeter fence. A sign shall also be placed on each gate. Minimum wording shall be SEWAGE TREATMENT FACILITY—KEEP OUT. Signs shall be made of durable materials with characters at least two inches (2") high and shall be securely fastened to the fence, equipment or other suitable locations.
C. SPECIAL CONDITIONS (CONTINUED)

13. An Operation and Maintenance (O & M) manual shall be maintained by the permittee and made available to the operator. The O & M manual shall include key operating procedures and a brief summary of the operation of the facility.

14. An all-weather access road shall be provided to the treatment facility.

15. The discharge from the wastewater treatment facility shall be conveyed to the receiving stream via a closed pipe or a paved or rip-rapped open channel. Sheet or meandering drainage is not acceptable. The outfall sewer shall be protected against the effects of floodwater, ice or other hazards as to reasonably insure its structural stability and freedom from stoppage. The outfall shall be maintained so that a sample of the effluent can be obtained at a point after the final treatment process and before the discharge mixes with the receiving waters.
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
STATEMENT OF BASIS  
MO-0137324  
CROSSROADS PLAZA WWTF

This Statement of Basis (Statement) gives pertinent information regarding minor modification(s) to the above listed operating permit without the need for a public comment process. A Statement is not an enforceable part of a Missouri State Operating Permit.

**Part I – Facility Information**

- Facility Type: Non-POTW
- Facility Description: Orenco Advantex AX100 recirculating filter / Chlorine Disinfection / Dechlorination / Sludge disposal by contract hauler

**Part II – Modification Rationale**

This operating permit is hereby modified to reflect a change in ownership from Queens Realty Venture to Spot Properties LLC.

No other changes were made at this time.

**Part III – 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.

**DATE OF FACT SHEET:** NOVEMBER 30, 2020

**COMPLETED BY:**

ASHLEY KEELY, ENVIRONMENTAL SPECIALIST  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT  
(573) 751-7326  
ASHLEY.KEELY@DNR.MO.GOV
MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF PERMITTING NEW FACILITY
OF
MO-0137324
CROSSROADS PLAZA WWTF

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

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

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

This Factsheet is for a Minor ☒.

Part I – Facility Information

Facility Type: NON-POTW – Miscellaneous General Merchandise Stores (Strip Shopping Center) – SIC #5399

Facility Description:
Orenco Advantex AX100 recirculating filter / Chlorine Disinfection / Dechlorination / Sludge disposal by contract hauler

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒ N/A – New facility

Application Date: 02/25/2013

OUTFALL(S) TABLE:

<table>
<thead>
<tr>
<th>OUTFALL</th>
<th>DESIGN FLOW (CFS)</th>
<th>TREATMENT LEVEL</th>
<th>EFFLUENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>#001</td>
<td>0.0015</td>
<td>Secondary</td>
<td>Domestic</td>
</tr>
</tbody>
</table>

Facility Performance History:
The existing septic tank system at this facility was cited by the Jefferson County Building Department for failure of the drain field due to surfacing of the effluent. Consequently, the owners were being required to pump and haul and the wastewater was land applied in Bonne Terre, MO. The owners are planning to install an Advantex AX100 system with chlorine disinfection and dechlorination. Existing water usage at Crossroads Plaza is approximately 780 gallons per day.

Comments:
Since the public notice of this operating permit modification in 2013 several changes were made. Special conditions were updated to include the reporting of Non-detects, Bypass Reporting requirements, and Electronic Discharge Monitoring Report (eDMR) requirements. All other requirements remained the same.

Part II – Operator Certification Requirements

Not Applicable ☒: This facility is not required to have a certified operator.
Part III – Operational Monitoring

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

Part IV – Receiving Stream Information

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: Outfall #001

<table>
<thead>
<tr>
<th>WATER-BODY NAME</th>
<th>CLASS</th>
<th>WBID</th>
<th>DESIGNATED USES*</th>
<th>12-DIGIT HUC</th>
<th>DISTANCE TO CLASSIFIED SEGMENT (MI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributary to Heads Creek (losing)</td>
<td>U</td>
<td>-</td>
<td>General Criteria</td>
<td>07140104-0406</td>
<td>1.9 to classified</td>
</tr>
<tr>
<td>Heads Creek (losing)</td>
<td>C</td>
<td>2182</td>
<td>AQL, LWW, SCR</td>
<td></td>
<td>0.0 to losing</td>
</tr>
</tbody>
</table>

* - 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).

## Receiving Stream(s) Low-Flow Values:

<table>
<thead>
<tr>
<th>RECEIVING STREAM (U, C, P)</th>
<th>LOW-FLOW VALUES (CFS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1Q10</td>
</tr>
<tr>
<td>Tributary to Heads Creek (U)</td>
<td>0.0</td>
</tr>
</tbody>
</table>

MIXING CONSIDERATIONS

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

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

Receiving Water Body’s Water Quality
Heads Creek is not listed on the 303(d) or 305(b) lists.

Part V – 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.

Applicable ☒: This facility discharges to a Losing Stream, as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], and has completed an alternatives analysis as part of the Antidegradation Review (Please see APPENDIX: ANTIDEGRADATION REVIEW).

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.

☒ - New facility, backsliding does not apply.
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 discharge, please see APPENDIX: ANTIDEGRADATION REVIEW.

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 is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler.

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)].

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 given 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.

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

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals.

Not Applicable ☒;
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 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.

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

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

Applicable ☒: This permit contains a SOC. The interim sampling and monitoring frequencies have been established because this is a new facility. Having a minimum monthly sampling and monitoring requirement allows the department, through submitted monthly Discharge Monitoring Reports, to review the new facility’s effluent performance. Monthly sampling for three years ensures that the new facility’s discharge is not causing or having a prolonged negative impact on the receiving stream.

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.

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:

\[ C_e = \frac{\left( Q_e + Q_s \right) C - \left( C_s \times Q_s \right)}{Q_e} \]

(EPA/505/2-90-001, Section 4.5.5)

Where
\[ C = \text{downstream concentration} \]
\[ C_s = \text{upstream concentration} \]
\[ Q_s = \text{upstream flow} \]
\[ C_e = \text{effluent concentration} \]
\[ Q_e = \text{effluent flow} \]
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.

Not Applicable: At this time, the permittee is not required to conduct WET test for this facility.

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

Not Applicable: This facility does not anticipate bypassing.

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

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

Not Applicable: This facility does not discharge to a 303(d) listed stream.
Part VI – Effluent Limits Determination

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)]

Outfall #001 – Main Facility Outfall

Effluent Limitations Table:

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>Unit</th>
<th>Basis for Limits</th>
<th>Daily Maximum</th>
<th>Weekly Average</th>
<th>Monthly Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>MGD</td>
<td>1 *</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>BOD₅</td>
<td>mg/L</td>
<td>1, 6 15</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSS</td>
<td>mg/L</td>
<td>1, 6 15</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>SU</td>
<td>1, 6 6.5 – 9.0</td>
<td>6.5 – 9.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia as N (April 1 – Sept 30)</td>
<td>mg/L</td>
<td>2, 3, 5 3.7</td>
<td>1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia as N (Oct 1 – March 31)</td>
<td>mg/L</td>
<td>2, 3, 5 7.5</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>**</td>
<td>1 126</td>
<td>126</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine, Total Residual</td>
<td>µg/L</td>
<td>1, 3 17</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Antidegradation Review
7. Antidegradation Policy
8. Water Quality Model
9. Best Professional Judgment
10. TMDL or Permit in lieu of TMDL
11. WET Test Policy
OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

Please see APPENDIX: ANTIDEGRADATION REVIEW for derivation and discussion of limits.

Minimum Sampling and Reporting Frequency Requirements.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>INTERIM SAMPLING FREQUENCY</th>
<th>INTERIM REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>BOD₅</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>TSS</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>pH</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>Ammonia as N</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>E. coli</td>
<td>once/month</td>
<td>once/month</td>
</tr>
<tr>
<td>Total Residual Chlorine (TRC)</td>
<td>once/month</td>
<td>once/month</td>
</tr>
</tbody>
</table>

**Sampling Frequency Justification:**
This facility is a new facility; monthly sampling is required to determine if the facility will be in compliance with the operating permit in accordance with Appendix U of Missouri’s Water Pollution Control Permit Manual. The Clean Water Commission has directed the Department to proceed with amending 10 CSR 20-7.015 to reduce the sampling frequency required for E. coli to a lesser frequency, still protective of water quality standards, for smaller facilities, including those with discharges of 100,000 gallons per day or less.

**Sampling Type Justification:**
As per 10 CSR 20-7.015, BOD₅ and TSS samples collected for mechanical plants shall be a 24 hour modified composite sample. Due to the small size of this facility this composite sample shall be made up from a minimum of four grab samples collected within a 24-hour period with a minimum of two hours between each grab sample. Grab samples, however, must be collected for pH, Ammonia as N, E. coli, and TRC. This is due to the holding time restriction for E. coli, the volatility of Ammonia and TRC, and the fact that pH cannot be preserved and must be sampled in the field. As Ammonia samples must be immediately preserved with acid, these samples are to be collected as a grab.

**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.

☑ Not Applicable;
The Department is not required to determine findings of affordability because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.
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.

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

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

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

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

☑ - The Public Notice period for this operating permit was from May 24, 2013 to June 23, 2013. No responses received, however since the public notice of this operating permit modification in 2013 several changes were made. Special conditions were updated to include the reporting of Non-detects, Bypass Reporting requirements, and Electronic Discharge Monitoring Report (eDMR) requirements. All other requirements remained the same.

DATE OF FACT SHEET: 04/19/2013  REVISED: 04/09/2018

COMPLETED BY:       REVISED BY:

Cailie McKinney, E.I. Cindy LePage, P.E.
Environmental Engineer II Construction Permits Chief
Missouri Department of Natural Resources Missouri Department of Natural Resources
Water Protection Program Water Protection Program
Engineering Section Engineering Section
573-526-1289 573-751-6618
cailie.mckinney@dnr.mo.gov cindy.lepage@dnr.mo.gov
APPENDIX – ANTIDEGRADATION REVIEW:

JAN 1, 2013

Queens Realty Venture
ATTN: Chuck Kimes
2100 Rock Road
DeSoto, MO 63020

RE: Water Quality and Antidegradation Review Preliminary Determination for Crossroads Plaza WWTF

Dear Mr. Kimes:

Enclosed please find the finalized Water Quality and Antidegradation Review (WQAR) for the Crossroads Plaza Wastewater Treatment Facility (WWTF) in Jefferson County. The WQAR contains pertinent antidegradation review information based on the use of existing water quality, effluent limitations and monitoring requirements for the facility discharge. It was developed in accordance with 10 CSR 20-7.031, the Clean Water Commission approved Missouri Antidegradation Implementation Procedure (AIP) dated May 2, 2012, U.S. Environmental Protection Agency (US EPA) guidance, the applicant-supplied antidegradation review documentation, and the State of Missouri’s effluent regulations (10 CSR 20-7.015). Please refer to the General Assumptions of the Water Quality and Antidegradation Review section of the enclosed WQAR. The WQAR is preliminary and subject to change as new information becomes available during future permit application processing.

Based on the Missouri Department of Natural Resources, Water Protection Program (Department), initial review, preliminary determination is that the applicant-supplied antidegradation review documentation satisfies the requirements of the AIP. This WQAR/preliminary determination may be appealed within 30 days of this letter in accordance with the AIP Section II.F.4.

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a complete application for a construction permit. These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited.

Following the Department’s public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the Department will review any public notice comments received. If significant comments are made, the project may require another public notice and potentially another antidegradation review. If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final.
Following issuance of the construction permit and completion of the actual facility construction, the department will proceed with the issuance of the operating permit.

If you should have questions regarding the enclosed WQAR, please contact Cailie McKinney by telephone at (573) 526-1289, by e-mail at cailie.mckinney@dnr.mo.gov, or by mail at the Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

[Signature]
Refaat Mefrakis, P.E., Chief
Engineering Section

Enclosures

RM: cmn

c: Eugene Fribis, P.E., Fribis Engineering, Inc.
File Copy
Water Quality and Antidegradation Review

For the Protection of Water Quality
and Determination of Effluent Limits for Discharge to
Unnamed tributary to Heads Creek
by
Crossroads Plaza Wastewater Treatment Facility

December 2012
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1. FACILITY INFORMATION

FACILITY NAME: Crossroads Plaza WWTF
NPDES #: NEW FACILITY

FACILITY TYPE/DESCRIPTION: The proposed treatment facility is located in the populated place of Otto, Missouri. As a result of the submitted alternative analysis, the applicant’s preferred alternative is the Orenco AdvanTex AX100 treatment system with chlorine disinfection and dechlorination. The design flow will be 1,000 GPD.

The existing treatment is accomplished by three separate septic tanks that discharge to a common drain field.

COUNTY: Jefferson
12-Digit HUC: 07140104-0406
EDU*: Ozark/Meramec
* - Ecological Drainage Unit

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:
Heads Creek is not on the Missouri 303(d) list or the 305(b) list. The existing septic tank system was recently cited by the Jefferson County Building Department for failure of the drain field due to surfacing of the effluent. Consequently, the owners have been required to pump and haul. The wastewater is currently being land applied in Bonne Terre, MO by All Type Septic and Aeration, which is located in De Soto, MO. Existing water usage at Crossroads Plaza is approximately 780 gallons per day.

<table>
<thead>
<tr>
<th>OUTFALL</th>
<th>DESIGN FLOW (CFS)</th>
<th>TREATMENT LEVEL</th>
<th>RECEIVING WATERBODY</th>
<th>DISTANCE TO CLASSIFIED SEGMENT (MI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.0015</td>
<td>Secondary</td>
<td>Unnamed tributary to Heads Creek (losing)</td>
<td>1.9 miles to classified</td>
</tr>
</tbody>
</table>

3. RECEIVING WATERBODY INFORMATION

<table>
<thead>
<tr>
<th>WATERBODY NAME</th>
<th>CLASS</th>
<th>WBID</th>
<th>LOW-FLOW VALUES (CFS)</th>
<th>DESIGNATED USES**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unnamed tributary to Heads Creek (losing)</td>
<td>U</td>
<td>-</td>
<td>0.0 0.0 0.0</td>
<td>General Criteria</td>
</tr>
<tr>
<td>Heads Creek</td>
<td>C</td>
<td>2182</td>
<td>0.0 0.0 0.1</td>
<td>AQL, LWW, SCR, General Criteria</td>
</tr>
</tbody>
</table>

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

RECEIVING WATER BODY SEGMENT #1: Unnamed tributary to Heads Creek
Upper end segment* UTM coordinates: X= 718290 / Y= 4250137 (Outfall)
Lower end segment* UTM coordinates: X= 715514 / Y= 4251093 (meets 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**

Fribis Engineering prepared, on behalf of Queens Realty Venture, the *Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility* dated August 28, 2012. Geohydrological Evaluation was submitted with the request and the receiving stream is losing for discharge purposes (Appendix A: Map). Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternatives 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 C was used to develop this review document. A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no records of endangered species were found for the project area (Appendix B).

5. **ANTIDEGRADATION REVIEW INFORMATION**

The following is a review of the *Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility* dated August 28, 2012.

### 5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (provided in the *Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility* dated August 28, 2012). 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 was assumed for all POCs (*Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility*).

#### TABLE 1. POLLUTANTS OF CONCERN AND TIER DETERMINATION

<table>
<thead>
<tr>
<th>POLLUTANTS OF CONCERN</th>
<th>TIER*</th>
<th>DEGRADATION</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD₅/DO</td>
<td>2</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>Total Suspended Solids (TSS)</td>
<td>**</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>2</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>***</td>
<td>Significant</td>
<td>Permit limits applied</td>
</tr>
<tr>
<td>Escherichia coli (E. coli)</td>
<td>2</td>
<td>Significant</td>
<td></td>
</tr>
<tr>
<td>Chlorine, Total Residual</td>
<td>2</td>
<td>Significant</td>
<td></td>
</tr>
</tbody>
</table>

* Tier assumed.  
** Tier determination not possible.  
*** Standards for these parameters are ranges

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

- Attachment A, Tier 2 with significant degradation.

5.2. **EXISTING WATER QUALITY**

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.
5.3. **Demonstration of Necessity and Social and Economic Importance**

Missouri’s antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Six alternatives from non-degrading to less degrading to degrading alternatives were evaluated.

Alternative one is land application on the owner’s property. Geology of the area limits the ability to land apply (geologic limitations rating of severe in geohydrologic evaluation). Additionally, the site is bordered by a state highway on two sides and the other sides are bordered by a large ravine and residential property. Due to lack of availability of suitable land, this alternative is considered not practicable.

Alternative two is pumping wastewater to the Otto Express Mart (MO-0136468) currently owned and operated by House Springs Sewer Company. A simplex or duplex pump station and 675 feet of force main would need to be constructed to connect to the Otto Express Mart Wastewater Treatment Facility. The Otto Express Mart would also likely require an upgrade to accommodate additional flow from Crossroads Plaza. The estimated capital cost of connecting to the Otto Express Mart treatment system is $40,010, and the upgrades to the facility are estimated to cost $164,954. This alternative was considered not economically efficient due to the capital cost being 238% of the base case capital cost.

Alternative three is the Pentair/Delta Environmental ECOPOD System with chlorine disinfection. This is an aerobic treatment system that utilizes an attached growth process. The reactor unit is preceded by a primary tank (septic tank) and sludge would need to be removed periodically from the primary tank, and less frequently from the main reactor. This system has capacity for expansion by adding additional pods units. One unit rated at 2,000 GPD (by the manufacturer) would be used in initial construction in order to meet ammonia limits. This alternative is considered an unproven technology in Missouri.

Alternative four, the Orenco AdvanTex AX100 treatment system with chlorine disinfection, is the applicant’s preferred alternative. This is a multiple pass, packed bed, aerobic system that is similar to a recirculating sand filter, but with fabric filter. This system is also easy to expand to accommodate for future development. According to the applicant, there is a good history of performance in Missouri for these systems and the maintenance required is minimal and less expensive than the other alternatives. One unit capable of treating 2,500 GPD (by the manufacturer) would be used at this facility. This alternative is considered an unproven technology in Missouri. This is the base case alternative based on present worth cost (see Table 2).

Alternative five is a recirculating sand filter (RSF) with chlorine disinfection. This system is reliable and requires minimal maintenance. In order to meet ammonia limits, the influent loading rate would be reduced from the typical 5 gpd/sf to 2 gpd/sf. The cost estimate for this alternative accounts for the larger sand filter size required by the lower loading rate.

Alternative six is the BioMicrobics membrane bioreactor (MBR). This system is capable of producing higher quality effluent, and because of the small membrane opening size, the applicant would not be using disinfection with this system. Small package MBR systems, however, are relatively untested and likely require extra maintenance. The module evaluated has a minimum capacity of 3,000 GPD. One such module would be used for this facility, with supplemental aeration by Lixor units, preceded by one settling tank. This alternative is also considered an unproven technology in Missouri.

Only those alternatives that were considered practicable were included in the economic efficiency analysis (Table 2). All of the treatment systems (alternatives 3 through 6) were considered practicable and only the MBR was considered not economically efficient. This analysis showed that the cost and performance of all the evaluated systems was similar (see Appendix C, Attachment A). The Orenco AdvanTex system was the preferred alternative based on this analysis.
TABLE 2: ALTERNATIVES ANALYSIS COMPARISON

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD (mg/L)</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TSS (mg/L)</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Ammonia as N (mg/L) (s/w)</td>
<td>&lt;1.5/3.1</td>
<td>&lt;1.5/3.1</td>
<td>&lt;1.5/3.1</td>
<td>&lt;1.5/3.1</td>
</tr>
<tr>
<td>Practicable</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Economical</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Capital Cost</td>
<td>$71,160</td>
<td>$69,220</td>
<td>$95,770</td>
<td>$106,200</td>
</tr>
<tr>
<td>Present Worth*</td>
<td>$163,947</td>
<td>$162,007</td>
<td>$174,998</td>
<td>$238,475</td>
</tr>
<tr>
<td>Ratio of Present Worth Costs</td>
<td>1:1.01</td>
<td>1:1 (base)</td>
<td>1:1.08</td>
<td>1:1.47</td>
</tr>
</tbody>
</table>

*Present Worth cost at 20 years and 5% interest.

5.3.1. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional waste water collection system is mentioned. There is no regional authority within a reasonable distance from the proposed treatment facility.

NEEDS A WAIVER TO PREVENT CONFLICT WITH AREA WIDE MANAGEMENT PLAN APPROVED UNDER SECTION 208 OF THE CLEAN WATER ACT AND/OR UNDER 10 CSR 20-6.010(3) (B) 1 OR 2 CONTINUING AUTHORITIES? (Y OR N) N

5.3.2. SOCIAL AND ECONOMIC IMPORTANCE EVALUATION

The applicant first identified the community that will be affected by the proposed degradation of water quality. The affected community is mainly the populated place of Otto, MO and a population equivalent of approximately 2000 people in the surrounding area. The area is relatively isolated and most traffic passes through en route to other destinations, so commercial development has been stagnant for the last 25 years. The existing retail businesses, which include a shopping center, grocery store, restaurant, and other retailers, in Otto have long established customers living within 2 miles. Well established churches bring many people to Otto as well. Without the Crossroads Plaza, people seeking such services in the area would have to travel a minimum of 5 miles to shop or eat, causing more wear and tear on the roads and consuming approximately 40,000 to 50,000 gallons of gasoline annually, assuming three trips per household per week. The applicant also mentioned other relevant factors such as an increased tax benefit, increased jobs, and environmental benefits within a Social and Economic Importance section of the Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility. Appendix C, Attachment A: Tier 2 with Significant Degradation form contains a summary of this information.

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.
9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

6. MIXING CONSIDERATIONS

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

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

7. PERMIT LIMITS AND MONITORING INFORMATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Daily Maximum</th>
<th>Weekly Average</th>
<th>Monthly Average</th>
<th>Basis for Limit (Note 2)</th>
<th>Monitoring Frequency</th>
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</thead>
<tbody>
<tr>
<td>FLOW</td>
<td>MGD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>FSR</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>BIOCHEMICAL OXYGEN DEMAND$_5$</td>
<td>MG/L</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>PEL/FSR</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>TOTAL SUSPENDED SOLIDS</td>
<td>MG/L</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>PEL</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>PH</td>
<td>SU</td>
<td>6.5 – 9.0</td>
<td>6.5 – 9.0</td>
<td></td>
<td>FSR</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>AMMONIA as N (APR 1 – SEPT 30)</td>
<td>MG/L</td>
<td>3.7</td>
<td>1.4</td>
<td></td>
<td>WQBEL</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>AMMONIA as N (OCT 1 – MAR 31)</td>
<td>MG/L</td>
<td>7.5</td>
<td>2.9</td>
<td></td>
<td>WQBEL</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>ESCHERICHIA COLIFORM (E. coli)</td>
<td>NOTE 1</td>
<td>126**</td>
<td>126**</td>
<td></td>
<td>FSR</td>
<td>ONCE/MONTH</td>
</tr>
<tr>
<td>CHLORINE, TOTAL RESIDUAL</td>
<td>MG/L</td>
<td>0.017 (0.13 ML)</td>
<td>0.008 (0.13 ML)</td>
<td></td>
<td>WQBEL</td>
<td>ONCE/MONTH</td>
</tr>
</tbody>
</table>

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-TEBEL; 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 BOD$_5$ and TSS. Influent BOD$_5$ 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:

\[ C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \]  

(EPA/505/2-90-001, Section 4.5.5)

Where:
- \( C \) = downstream concentration
- \( C_s \) = upstream concentration
- \( Q_s \) = upstream flow
- \( C_e \) = effluent concentration
- \( Q_e \) = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration).

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

2) Alternative Analysis-based – Using the preferred alternative’s treatment capacity for conventional pollutants such as BOD5 and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA’s “Technical Support Document For Water Quality-based Toxics Control” (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD5 and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD5 and SS effluent values that could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

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 10 mg/L monthly average, 15 mg/L daily maximum were proposed. These limits are the same as the losing stream limits at [10 CSR 20-7.015(4)(B)1.].

- **Total Suspended Solids (TSS).** 10 mg/L monthly average, 15 mg/L daily maximum limits were proposed. According to EPA, because TSS and BOD are closely correlated, we may apply the same limits for TSS as BOD. These limits are more stringent than the losing stream limits at [10 CSR 20 7.015(4)(B)1.].
• **pH.** pH shall be maintained in the range from six and one-half to nine (6.5–9.0) standard units [10 CSR 20-7.015(4)(B)3.].

• **Total Ammonia Nitrogen.** The applicant-proposed ammonia limits of 1.5 mg/L summer and 3.1 mg/L winter are the same as the chronic water quality criteria which were used to calculate WQBELs below. 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

<table>
<thead>
<tr>
<th>Season</th>
<th>Temp (°C)</th>
<th>pH (SU)</th>
<th>Total Ammonia Nitrogen CCC (mg N/L)</th>
<th>Total Ammonia Nitrogen CMC (mg N/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>26</td>
<td>7.8</td>
<td>1.5</td>
<td>12.1</td>
</tr>
<tr>
<td>Winter</td>
<td>6</td>
<td>7.8</td>
<td>3.1</td>
<td>12.1</td>
</tr>
</tbody>
</table>


**Summer**

\[ C_e = \frac{((Q_e + Q_s) * C) - (Q_s * C_s)}{Q_e} \]

Chronic WLA: \[ C_e = \frac{(0.0015 + 0.0)1.5 - (0.0 * 0.01))}{0.0015} \]

\[ C_e = 1.5 \text{ mg/L} \]

Acute WLA: \[ C_e = \frac{(0.0015 + 0.0)12.1 - (0.0 * 0.01))}{0.0015} \]

\[ C_e = 12.1 \text{ mg/L} \]

\[ \text{LTAc} = 1.5 \text{ mg/L (0.780) = 1.2 mg/L [CV = 0.6, 99th Percentile, 30 day avg.]} \]

\[ \text{LTAa = 12.1 mg/L (0.321) = 3.88 mg/L [CV = 0.6, 99th Percentile]} \]

\[ \text{MDL = 1.2 mg/L (3.11) = 3.7 mg/L [CV = 0.6, 99th Percentile]} \]

\[ \text{AML = 1.2 mg/L (1.19) = 1.4 mg/L [CV = 0.6, 95th Percentile, n = 30]} \]

**Winter**

Chronic WLA: \[ C_e = \frac{(0.0015 + 0.0)3.1 - (0.0 * 0.01))}{0.0015} \]

\[ C_e = 3.1 \text{ mg/L} \]

Acute WLA: \[ C_e = \frac{(0.0015 + 0.0)12.1 - (0.0025 * 0.01))}{0.0015} \]

\[ C_e = 12.1 \text{ mg/L} \]

\[ \text{LTAc = 3.1 mg/L (0.780) = 2.4 mg/L [CV = 0.6, 99th Percentile, 30 day avg.]} \]

\[ \text{LTAa = 12.1 mg/L (0.321) = 3.9 mg/L [CV = 0.6, 99th Percentile]} \]

\[ \text{MDL = 2.4 mg/L (3.11) = 7.5 mg/L [CV = 0.6, 99th Percentile]} \]

\[ \text{AML = 2.4 mg/L (1.19) = 2.9 mg/L [CV = 0.6, 95th Percentile, n = 30]} \]

<table>
<thead>
<tr>
<th>Season</th>
<th>Maximum Daily Limit (mg/l)</th>
<th>Average Monthly Limit (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>3.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Winter</td>
<td>7.5</td>
<td>2.9</td>
</tr>
</tbody>
</table>
• **E. coli.** Effluent limitations for losing streams are 126 colonies per 100 ml monthly average and 126 colonies per 100 ml daily maximum [10 CSR 20-7.015 (4)(B)4.] and [10 CSR 20-7.031(4)(C), Table A]. For facilities less than 100,000 gpd: Per the Clean Water Commission Directive in January 2011, the *E. coli* sampling/monitoring frequency shall be set to match the monitoring frequency of other parameters in the permit during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar month for the monthly average). Further, the limit may change depending on the outcome of future state effluent regulation revision. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7.**

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

\[
C_e = \frac{((Q_e+Q_s)\times C) - (Q_s\times C_s)}{Q_e}
\]

Chronic WLA: \( C_e = \frac{(0.0015 + 0.0)10 - (0.0 \times 0.0)}{0.0015} \)

\( C_e = 10 \mu g/L \)

Acute WLA: \( C_e = \frac{(0.0015 + 0.0)19 - (0.0 \times 0.0)}{0.0015} \)

\( C_e = 19 \mu g/L \)

\[
LTA_e = 10 \mu g/L (0.527) = 5.3 \mu g/L \quad [CV = 0.6, 99^{th} Percentile]
\]

\[
LTA_a = 19 \mu g/L (0.321) = 6.1 \mu g/L \quad [CV = 0.6, 99^{th} Percentile]
\]

\[
MDL = 5.3 \mu g/L (3.11) = 16.5 \mu g/L \quad [CV = 0.6, 99^{th} Percentile]
\]

\[
AML = 5.3 \mu g/L (1.55) = 8.2 \mu g/L \quad [CV = 0.6, 95^{th} Percentile, n = 4]
\]

Total Residual Chlorine effluent limits of 0.017 mg/L daily maximum, 0.008 mg/L monthly average are recommended if chlorine is used as a disinfectant. Standard compliance language for TRC, including the minimum level (ML), should be included in the permit.

11. **Antidegradation Review Preliminary Determination**

The proposed new facility discharge, Crossroads Plaza WWTF, 1,000 GPD will result in significant degradation of the segment identified in the unnamed tributary to Heads Creek. The Orenco AdvanTex AX100 treatment system was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The cost effectiveness of the other technologies were evaluated, and the Orenco AdvanTex AX100 treatment system was found to be cost effective and was determined to be the preferred alternative.

The System is not covered in 10 CSR 20-8 Design Guides and may be considered a new treatment technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly and that the technology will consistently achieve the proposed effluent limits. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. 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: Cailie McKinney
Date: 12/28/2012
Unit Chief: John Rustige, P.E.
APPENDIX A: MAP OF DISCHARGE LOCATION

Meets Classified - Heads Creek (C)

Location of Discharge
APPENDIX B: NATURAL HERITAGE REVIEW

On-line LEVEL 1 Report

Your project information

First Name: Jonathan
Last Name: Fribis
Email Address: jfribis@fribis.com
Business: Fribis Engineering
Project: Water Control Structures

Your query information

Details

Cautions related to species/habitats of concern or project type. Please reflect these concerns and recommendations in your plans:

7/10/2012
- Even if records of species/habitats of concern do not exist, there is a possibility that your project will encounter a species of concern that is not on record. In Missouri, 93% of the land is in private ownership, and most of that has never been checked for endangered species. Animals move over varying ranges, and in time both animal and plant populations can move.

- If your project encounters and potentially affects a federally-listed species, immediately report it to the U.S. Fish and Wildlife Service or Missouri Department of Conservation.

No further consultation with the U.S. Fish and Wildlife Service or the Missouri Department of Conservation is necessary. Print this document to establish compliance with requirements to consult with U.S. Fish and Wildlife Service and the Missouri Department of Conservation about this project.

If you need additional information, please contact:

MDC Natural Heritage Review or U.S. Fish and Wildlife Service Ecological
Resource Science Division Services
P.O. Box 180 101 Park Deville Drive, Suite A
Jefferson City, MO 65102-0180 Columbia, Missouri 65203-0007
(Phone 573-522-4115 ext. 3250) (Phone 573-234-2132)
www.mdc.mo.gov

A HERITAGE REVIEW provides information about species and habitats of concern that could be affected by the project. Heritage records note things that were positively identified at some date and time, marked at a location that may be more or less precise. Animals move quickly but plant communities can move also. 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 the project may not encounter something. Because of this, reports include information about records near but not necessarily on the project site. Three different kinds of information are provided.

- FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife

7/10/2012
Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

- **STATE** Concerns are species/habitats known to exist near enough to the project site to warrant concern and protected under the Wildlife Code of Missouri (RSMo 3 CSR 10) "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR10-4.111. "State Rank" is numeric rank of relative rarity, protected under general provisions of the Wildlife Code but not endangered.

- "Concerns & management recommendations" are things for which one might prudently look. There is no specific heritage record, but our knowledge of the surrounding landscape suggests consideration. 93% of Missouri's land is in private ownership, so most sites have never been carefully inspected by conservation professionals.

This report is not a site clearance letter. Rather, it provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from our Heritage Database into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive natural resources. However, the Heritage Database is only one reference that should be used to evaluate potential adverse impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information and species biological characteristics would additionally ensure that species of conservation concern are appropriately identified and addressed.

Additional information on rare, endangered and watched species may be found at http://mdc.mo.gov/discover-nature/field-guide/endangered-species. Detailed information about species mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. If you would like printed copies of best management practices cited as internet URLs, please contact us.

7/10/2012
APPENDIX C: ANTIDEGRADATION REVIEW SUMMARY ATTACHMENTS

The attachments that follow contain summary information provided by the applicant, Crossroads Plaza WWTF. 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) A Tier Determination and Effluent Limit Summary form was not submitted; however the required information from the form was included in the Antidegradation Review: Crossroads Plaza Wastewater Treatment Facility dated August 28, 2012.

2) Attachment A: The level of treatment attainable for ammonia as N was changed and the proposed design flow was reduced to 1,000 GPD in the revised Antidegradation Report.

3) Water Quality Review Assistance/Antidegradation Review Request: The new design flow was reduced to 1,000 GPD.
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH**  
**WATER QUALITY REVIEW ASSISTANCE/ANTIDEGRADATION REVIEW REQUEST**  
**PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS**

<table>
<thead>
<tr>
<th>TYPE OF PROJECT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Grant</td>
<td>☐ SRF Loan</td>
</tr>
</tbody>
</table>

**REQUESTER**  
Fribis Engineering  
TELEPHONE NUMBER WITH AREA CODE: (636) 464-3610  
REMITTEE  
Queens Realty Venture  
TELEPHONE NUMBER WITH AREA CODE: (314) 806-8738

**REASON FOR REQUEST**  
☑ New Discharge (See Instruction #9)  
☐ Upgrade (No expansion) (See AIP)  
☐ Expansion

**DESCRIPTION OF PROPOSED ACTIVITY:**  
Replacement of Septic Tank and Drainfield with Point Discharge

**FACILITY INFORMATION**  
**FACILITY NAME**  
Crossroads Plaza  
**MSOP NUMBER (IF APPLICABLE)**  
**COUNTY**  
Jefferson County  
**SIG / NAICS CODE**  
453

**METHOD OF BACTERIA COMPLIANCE**  
☐ Chlorine Disinfection  
☐ Ultraviolet Disinfection  
☐ Ozone  
☑ Not Applicable

**WATER QUALITY ISSUES**  
Water quality issues include: effluent limit compliance issues, notice(s) of violation, water body beneficial uses not attained or supported, etc.

<table>
<thead>
<tr>
<th>OUTFALL</th>
<th>LOCATION (LAT/LONG OR LEGAL DESCRIPTION)</th>
<th>MAPPED? (CHECK)</th>
<th>RECEIVING WATER BODY?</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Section 18, T42N, R5E, Jefferson County, MO</td>
<td>✓</td>
<td>Unnamed Tributary to Heads Creek</td>
</tr>
</tbody>
</table>

1. Attach topographic map (See www.dnr.mo.gov/internet/mapviewer/) with outfall location(s) clearly marked.  
2. For additional outfalls, attach a separate form.

**OUTFALL**  
<table>
<thead>
<tr>
<th>NEW DESIGN FLOW **</th>
<th>TREATMENT TYPE</th>
<th>EFFLUENT TYPES*</th>
</tr>
</thead>
<tbody>
<tr>
<td>001 2,000 GPD</td>
<td>Advantex Fixed Film Media (recommended)</td>
<td>Domestic Wastewater</td>
</tr>
</tbody>
</table>

* Describe predominant character of effluent. Example: domestic wastewater, municipal wastewater, industrial wastewater, storm water, mining leachate, etc.  
** If expansion, indicate new design flow.

☑ Checked for rare or endangered species and provided determination with this request. See Instruction #8.

**ANTIDEGRADATION REVIEW SUBMISSION**  
See attached Antidegradation Instructions. Applicant supplied a summary within:  
☐ Tier Determination and Effluent Limit Summary  
☐ Attachment A - Significant Degradation  
☐ Attachment B - Minimal Degradation  
☐ Attachment C - Temporary degradation  
☐ Attachment D - Tier 1 Review  
☐ No Degradation Evaluation - Conclusion of Antidegradation Review

MO 783-1893 (05-08)
The water quality review assistance is a process to determine effluent limits for new facilities or existing facilities seeking to increase loading into the receiving stream. Limits can be calculated by the permittee and submitted for review the department.

**GENERAL INSTRUCTIONS**

1. Please attach:  
   A. A list of pollutants expected to be discharged.  
   B. The location of each outfall clearly shown on map(s). A U.S. Geological Survey topographic map is available at [www.dnr.mo.gov/internet/MapViewer/](http://www.dnr.mo.gov/internet/MapViewer/).

2. Discharge(s) to all gaining streams: Applicant must submit dissolved oxygen analysis (i.e., using Missouri Department of Natural Resources approved models such as Streeter Phelps (www.ecy.wa.gov/programs/aap/pws/det/pwsd facult.html)) or Qual2K/Qual2E (Q2K/Q2E) stream water quality study (www.epa.gov/athens/wwqsc/index.html) indicating that the preferred alternative's BOD₅ effluent limitations from the alternative analysis or the technology-based/ regulatory BOD₅ effluent limits are protective of Missouri's water quality standard for dissolved oxygen. **Note:** If Q2K/Q2E is used, wastewater allocation for ammonia must be assumed. All Q2K/Q2E studies must have department approved Quality Assurance Project Plans. Recommended modeling procedures from the department (may differ with discharge) for this analysis are available upon request.

3. Discharge(s) to unclassified gaining stream: Applicant may provide the time of travel to the confluence with the classified stream segment for modeling pollutant decay (See Total Ammonia Nitrogen Criteria Implementation Guidance Policy at [www.dnr.mo.gov/env/wmp/permits/antideg-implementation.htm](http://www.dnr.mo.gov/env/wmp/permits/antideg-implementation.htm)). Otherwise, the applicant may determine limits based on no decay of discharge pollutants, which typically results in lower permit limits. Please use the TR-55 method (Natural Resource Conservation Service, Urban Hydrology for Small Watersheds, Technical Release No. 55, June 1986) for time of travel determination (http://directives.sc.egov.usda.gov/22192, wba). Please include a map, schematic or description of flow segments with your calculations. A worksheet with instructions is available upon request.

4. For all discharges, the chronic water quality criteria point of compliance is the classified stream or the confluence with the classified stream. No mixing is allowed for streams with seven-day Q10 low flow less than 0.1 cfs (10 CSR 20-7.03(4)(AB)(I)), while mixing is allowed for streams with seven-day Q10 low flow greater than 0.1 cfs (10 CSR 20-7.03(4)(AB)(II)).

5. For industrial facilities, a list of all chemicals, compounds, elements, etc. found in the discharge must be submitted with the request. Proprietary names of chemicals are not sufficient, as these chemicals may contain several pollutants for which the department must evaluate separate effluent limits. A pre-construction review meeting is highly recommended.

6. Do not submit water quality review assistance requests for renewals. All water quality-based effluent limits will be determined during the renewal process.

7. 10 CSR 20-7.015(6)(B)3. allows alternative limitations (i.e., lagoon or trickling filters) if a water quality impact study is conducted. This impact study should indicate that equivalent to secondary treatment for lagoons or trickling filters are protective of Missouri Water Quality standards for dissolved oxygen and ammonia.

8. Applicant must check for rare and endangered aquatic species that may be affected by the discharge at [http://mdoigs.mdc.mo.gov/heritage/newheritage/heritage.htm](http://mdoigs.mdc.mo.gov/heritage/newheritage/heritage.htm).

9. Additional requirements for new facilities:
   A. Division of Geology and Land Survey Geohydrologic Evaluations must be submitted with the request.
   B. Coordinates of outfall(s) in lat/long or in the public land survey system must be provided.
   C. Please submit a letter with project timeframe.

**Note:** Lack of response for additional information within a reasonable timeframe will result in return of request.
1. FACILITY

NAME: Crossroads Plaza
ADDRESS (PHYSICAL): Highway 21 & Old Highway M
TELEPHONE NUMBER WITH AREA CODE: (314) 908-6738

2. RECEIVING WATER BODY SEGMENT #1

NAME: Unnamed Tributary to Heads Creek

3. WATER BODY SEGMENT #2 (IF APPLICABLE)

NAME:

4. IDENTIFYING ALTERNATIVES

Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Discharges likely to cause significant degradation, an analysis of non-degrading and less-degrading alternatives must be provided," as stated in the Antidegradation Implementation Procedure Section II.B.1. Per 10 CSR 20-6.010(4)(D)(1), the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report.

Non-degrading alternatives: Land Application

Alternatives ranging from less-degrading to degrading including Preferred Alternative (All must meet water quality standards):

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>BOO (mg/L)</th>
<th>TSS (mg/L)</th>
<th>Ammonia as N (mg/L)</th>
<th>Bacteria (E. Coli)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump to Otto Express Mart</td>
<td>30</td>
<td>15</td>
<td>0.5 - 5.0</td>
<td>0-126</td>
</tr>
<tr>
<td>Sewage Treatment Plant</td>
<td>30</td>
<td>30</td>
<td>0.5 - 5.0</td>
<td>0-126</td>
</tr>
</tbody>
</table>

Identifying Alternatives Summary: ____
5. DETERMINATION OF THE REASONABLE ALTERNATIVE

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report.

Practicability Summary:
"The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts." according to the Antidegradation Implementation Procedure Section II.B.2.a. Examples of factors to consider, including secondary environmental impacts, are given in the Antidegradation Implementation Procedure Section II.B.2.a.

Two alternatives were practical, an on-site treatment plant and pumping to Otto Express Mart owned by House Springs Sewer Company.

Economic Efficiency Summary:
Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Means to determine economic efficiency are provided in the Antidegradation Implementation Procedure Section II.B.2.b.

A direct cost comparison was made with the determination that an on-site tertiary sewage treatment plant was preferable.

Affordability Summary:
Alternatives identified as most practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis. An affordability analysis per the Antidegradation Implementation Procedure Section II.B.2.c. "may be used to determine if the alternative is too expensive to reasonably implement."

It was determined that an on-site treatment was affordable.

Preferred Chosen Alternative:

An on-site treatment facility capable of treating an average daily flow of 2,000 gallons per day.

Reasons for Rejecting the other Evaluated Alternatives:

Other reasons were deemed unaffordable or having unproven technology.

Comments/Discussion:

Please see report for further explanation.
6. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

Identify the affected community:

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community "in the geographical area in which the waters are located. Per the Antidegradation Implementation Procedure Section II.E.1, "the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project."

The attached report explains in detail the surrounding community.

Identify relevant factors that characterize the social and economic conditions of the affected community:

Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1, but specific community examples are encouraged.

The report details the existing commercial plaza and the immediate need for improved wastewater treatment.

Describe the important social and economic development associated with the project:

Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.

The report details the fuel savings with the existing grocery store and the availability of additional services.

PROPOSED PROJECT SUMMARY:

Recommendation is to construct an on-site treatment system to serve the existing Crossroads Plaza with an average daily flow of 2,000 gallons per day.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed, sealed and dated by a registered professional engineer of Missouri.

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 regulations.

SIGNATURE DATE
Eugene A. Fribis August 28, 2012
LICENSE #: E-17109
TELEPHONE NUMBER WITH AREA CODE (636) 464-3610
E-MAIL ADDRESS: gfrbis@frbis.com

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

SIGNATURE DATE
08/28/2012

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

SIGNATURE DATE
08/28/2012
These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. Sampling Requirements.
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. Monitoring Requirements.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. Sample and Monitoring Calculations. Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. Test Procedures. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternatives are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when: 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine whether a facility is a new source in 40 CFR 122.29(b); or

5. Record Retention. Except for records of monitoring information required by the permit related to the permittee’s sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. Illegal Activities.
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. Planned Changes.
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional sites or sites not reported during the permit application process or not reported pursuant to an approved land application plan development process.
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
b. Notice. i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
  ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).

3. **Prohibition of bypass.**
   i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
      1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      3. The permittee submitted notices as required under paragraph 2. b. of this section.
   ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permittee facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
   c. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   d. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement
imposed in a pretreatment program approved under section 402 of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(ii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. Duty to Reapply.

a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. Permit Actions.

a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

i. Violations of any terms or conditions of this permit or the law;

ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;

iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or

iv. Any reason set forth in the Law or Regulations.

b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Permit Transfer.

a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.

b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.

c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. Property Rights. This permit does not convey any property rights of any sort, or any exclusive privilege.
10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
   a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
   d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
   a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
   b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
   a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
   b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
   c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.
PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.

2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.

3. Sludge and Biosolids Use and Disposal Practices:
   a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
   b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
   c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.

4. Sludge Received from other Facilities:
   a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
   b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge.

5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.

6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.

7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act under Chapter 644 RSMo.

8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.

9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
   a. A site specific permit must be obtained for each operating location, including application sites.
   b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.

10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.
SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.
SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.

2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.

3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.

2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
   a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
   b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.

2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee’s land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.

3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.

4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
   a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
   b. This permit authorizes “Class A or B” biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.

5. Public Contact Sites:
   Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
   a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
   b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.

6. Agricultural and Silvicultural Sites:

   Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
   a. Haulers that land apply septage must obtain a state permit
   b. Do not apply more than 30,000 gallons of septage per acre per year.
   c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
   d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
   e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants

b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.

c. Table 1 gives the maximum concentration allowable to protect water quality standards

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Milligrams per kilogram dry weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>75</td>
</tr>
<tr>
<td>Cadmium</td>
<td>85</td>
</tr>
<tr>
<td>Copper</td>
<td>4,300</td>
</tr>
<tr>
<td>Lead</td>
<td>840</td>
</tr>
<tr>
<td>Mercury</td>
<td>57</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>75</td>
</tr>
<tr>
<td>Nickel</td>
<td>420</td>
</tr>
<tr>
<td>Selenium</td>
<td>100</td>
</tr>
<tr>
<td>Zinc</td>
<td>7,500</td>
</tr>
</tbody>
</table>

1 Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Milligrams per kilogram dry weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>41</td>
</tr>
<tr>
<td>Cadmium</td>
<td>39</td>
</tr>
<tr>
<td>Copper</td>
<td>1,500</td>
</tr>
<tr>
<td>Lead</td>
<td>300</td>
</tr>
<tr>
<td>Mercury</td>
<td>17</td>
</tr>
<tr>
<td>Nickel</td>
<td>420</td>
</tr>
<tr>
<td>Selenium</td>
<td>36</td>
</tr>
<tr>
<td>Zinc</td>
<td>2,800</td>
</tr>
</tbody>
</table>

1 You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>CEC 15+</th>
<th>CEC 5 to 15</th>
<th>CEC 0 to 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Annual</td>
<td>Total 1</td>
<td>Annual</td>
</tr>
<tr>
<td>Arsenic</td>
<td>1.8</td>
<td>36.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Cadmium</td>
<td>1.7</td>
<td>35.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Copper</td>
<td>66.0</td>
<td>1,335.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Lead</td>
<td>13.0</td>
<td>267.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.7</td>
<td>15.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Nickel</td>
<td>19.0</td>
<td>347.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Selenium</td>
<td>4.5</td>
<td>89.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Zinc</td>
<td>124.0</td>
<td>2,492.0</td>
<td>50.0</td>
</tr>
</tbody>
</table>

1 Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)
TABLE 4 - Guidelines for land application of other trace substances

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Cumulative Loading (Pounds per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>4,000</td>
</tr>
<tr>
<td>Beryllium</td>
<td>100</td>
</tr>
<tr>
<td>Cobalt</td>
<td>50</td>
</tr>
<tr>
<td>Fluoride</td>
<td>800</td>
</tr>
<tr>
<td>Manganese</td>
<td>500</td>
</tr>
<tr>
<td>Silver</td>
<td>200</td>
</tr>
<tr>
<td>Tin</td>
<td>1,000</td>
</tr>
<tr>
<td>Dioxin</td>
<td>(10 ppt in soil)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

2 This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.
4 Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
   i. PAN can be determined as follows and is in accordance with WQ426
      \[
      \text{(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor)}
      \]
   \[1 \text{Volatilization factor is 0.7 for surface application and 1 for subsurface application.}
   g. Buffer zones are as follows:
      i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
      ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
      iii. 150 feet if dwellings;
      iv. 100 feet of wetlands or permanent flowing streams;
      v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
   h. Slope limitation for application sites are as follows:
      i. A slope 0 to 6 percent has no rate limitation
      ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
      iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
   i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.
SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.

2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6.010 and 10 CSR 20 – 6.015.

3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
   a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
   b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
   c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
      i. PAN can be determined as follows:
         \[
         \text{PAN} = \left( \text{Nitrate} + \text{nitrite nitrogen} \right) + \left( \text{organic nitrogen} \times 0.2 \right) + \left( \text{ammonia nitrogen} \times \text{volatilization factor}^1 \right).
         \]
      1 Volatilization factor is 0.7 for surface application and 1 for subsurface application.

4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered “septage” under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
   a. Testing for metals or fecal coliform is not required.
   b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
   c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.

5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.

6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.

7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
   a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
   b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
   c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.

8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.
SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

<table>
<thead>
<tr>
<th>Design Sludge Production (dry tons per year)</th>
<th>Monitoring Frequency (See Notes 1, 2, and 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals, Pathogens and Vectors</td>
<td>Nitrogen TKN 1</td>
</tr>
<tr>
<td></td>
<td>Nitrogen PAN 2</td>
</tr>
<tr>
<td></td>
<td>Priority Pollutants and TCLP 3</td>
</tr>
<tr>
<td>0 to 100</td>
<td>1 per year</td>
</tr>
<tr>
<td>1 per year</td>
<td></td>
</tr>
<tr>
<td>101 to 200</td>
<td>biannual</td>
</tr>
<tr>
<td>1 per year</td>
<td></td>
</tr>
<tr>
<td>201 to 1,000</td>
<td>quarterly</td>
</tr>
<tr>
<td>1 per month</td>
<td></td>
</tr>
<tr>
<td>1 per month</td>
<td></td>
</tr>
<tr>
<td>1,001 to 10,000</td>
<td>1 per month</td>
</tr>
<tr>
<td>1 per month</td>
<td></td>
</tr>
<tr>
<td>1 per week</td>
<td></td>
</tr>
<tr>
<td>10,001 +</td>
<td>1 per week</td>
</tr>
<tr>
<td>1 per week</td>
<td></td>
</tr>
<tr>
<td>1 per day</td>
<td></td>
</tr>
</tbody>
</table>

Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

1 Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

2 Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

3 One sample for each 1,000 dry tons of sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.

3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.

4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, “POTW Sludge Sampling and Analysis Guidance Document,” United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.

2. Reporting period
   a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
   b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.

3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.

4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

- DNR regional office listed in your permit
- (see cover letter of permit)
- ATTN: Sludge Coordinator
- EPA Region VII
- Water Compliance Branch (WACM)
- Sludge Coordinator
- 11201 Renner Blvd.
- Lenexa, KS 66219
5. Annual report contents. The annual report shall include the following:
   a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
   b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
   c. Gallons and % solids data used to calculate the dry ton amounts.
   d. Description of any unusual operating conditions.
   e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
      i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
      ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
   f. Contract Hauler Activities:
      If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
   g. Land Application Sites:
      i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
      ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
      iii. Report the method used for compliance with pathogen and vector attraction requirements.
      iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.
# Missouri Department of Natural Resources
## Water Protection Program
## Application for Transfer of Operating Permit

**1. Facility**

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone Number with Area Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossroads Plaza WWTP</td>
<td>314-873-6183</td>
</tr>
</tbody>
</table>

**Address (Physical)**

<table>
<thead>
<tr>
<th>City</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>Jefferson</td>
</tr>
</tbody>
</table>

**Permit Number**

| MO-00137324 |

**2. Current Owner**

<table>
<thead>
<tr>
<th>Name</th>
<th>Email Address</th>
<th>Telephone Number with Area Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queens Realty Venture</td>
<td><a href="mailto:office@qrsstores.com">office@qrsstores.com</a></td>
<td>314-873-6183</td>
</tr>
</tbody>
</table>

**Address**

<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeSoto</td>
<td>MO</td>
<td>63020</td>
</tr>
</tbody>
</table>

**3. Continuing Authority**

<table>
<thead>
<tr>
<th>Name</th>
<th>Email Address</th>
<th>Telephone Number with Area Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**City | State | Zip  |
|-------|-------|------|

**4. Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

<table>
<thead>
<tr>
<th>Name (Type or Print)</th>
<th>Official Title</th>
<th>Telephone Number with Area Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrea Sampson</td>
<td>Managing Partner</td>
<td>314-803-6374</td>
</tr>
</tbody>
</table>

**Signature**

| MO-00137324 |

**Date Signed**

10/28/20
THE FOLLOWING ITEMS (5 – 10) WILL APPLY AFTER THE COMPLETION OF TRANSFER (SALE) AND ARE TO BE COMPLETED BY THE APPLICANT FOR TRANSFER OF OPERATING PERMIT (BUYER) OR AUTHORIZED AGENT.

5. FACILITY (IF DIFFERENT THAN ABOVE)

NAME

6. FUTURE OWNER

NAME

EMAIL ADDRESS

ADDRESS

CITY

STATE

ZIP

TELEPHONE NUMBER WITH AREA CODE

573-860-2514

Is the owner PSC regulated? ☐ Yes ☐ No If YES, please provide your Certificate of Convenience and Necessity.

7. CONTINUING AUTHORITY

NAME

EMAIL ADDRESS

ADDRESS

CITY

STATE

ZIP

TELEPHONE NUMBER WITH AREA CODE

573-860-2514

8. FACILITY CONTACT

NAME

EMAIL ADDRESS

ADDRESS

CITY

STATE

ZIP

TELEPHONE NUMBER WITH AREA CODE

9. ADDITIONAL INFORMATION

9.1 Anticipated effective date of transfer of ownership: 9-1-2020

9.2 Are any changes in process, in raw materials, or in the quantity of discharges from this facility planned or anticipated? ☐ Yes ☐ No If yes, explain (Attach sheets as necessary)

10. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data. One of the following must be checked in order for this application to be considered complete. Please visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Package.

☐ You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☐ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

11. JETPAY

Permit fees may be paid online by credit card or eCheck through a system called JetPay. Use the URL provided to access JetPay and make an online payment.

Modification Fee: https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/

12. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME

SIGNATURE

TIMOTHY E. REINHOLD

10/29/2020

MO 760-1517 (02-19)