

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

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

Permit No. MO-0137863

Owner: Pirates Four HOA, Inc.  
Address: 3924 SW Windsong, Lee's Summit, MO 64082

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Pirates Cove WWTF  
Facility Address: Pirates Cove Road, Camdenton, MO 65020

Legal Description: SW ¼, NW ¼, Sec. 31, T39N, R17W, Camden County  
UTM Coordinates: X= 513,718, Y= 4,214,639

Receiving Stream: Lake of the Ozarks (L2)  
First Classified Stream and ID: Lake of the Ozarks (L2) (7205)  
USGS Basin & Sub-watershed No.: (10290110-0308)

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 – Residential Subdivision – SIC #4952  
Septic Tank / MicroFAST / Chlorine Feeder / Chlorine Contact Tanks / Dechlorination / Sample Port  
Design population equivalent is 18.5.  
Design flow is 1,000 gallons per day.  
Actual flow is 840 gallons per day.  
Design sludge production is 0.13 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.

October 1, 2018                      April 1, 2021  
Effective Date                      Modification Date

Edward B. Galbraith, Director, Division of Environmental Quality

September 30, 2023  
Expiration Date

Chris Wieberg, Director, Water Protection Program

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter****	24 hr. estimate
Biochemical Oxygen Demand <sub>5</sub>	mg/L		30	20	once/quarter****	composite**
Total Suspended Solids	mg/L		30	20	once/quarter****	composite**
<i>E. coli</i> (Note 1, Page 2)	#/100mL	630		126	once/quarter****	grab
Ammonia as N (Apr 1 – Sep 30)	mg/L	7.8		3.0	once/quarter****	grab
(Oct 1 – Mar 31)		7.8		3.0		
Total Residual Chlorine (Note 2, Page 2)	µg/L	< 130		< 130	once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE <u>NOVEMBER 28, 2018</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units***	SU	6.0		9.0	once/quarter****	grab

- \* 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 below for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements				
Quarter	Months	<i>E. coli</i> and Total Residual Chlorine (TRC)	All Other Parameters	Report is Due
First	January, February, March	Not required to sample.	Sample at least once during any month of the quarter	April 28 <sup>th</sup>
Second	April, May, June	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	July 28 <sup>th</sup>
Third	July, August, September	Sample at least once during any month of the quarter	Sample at least once during any month of the quarter	October 28 <sup>th</sup>
Fourth	October	<b>Sample once during <u>October</u></b>	Sample at least once during any month of the quarter	January 28 <sup>th</sup>
	November & December	Not required to sample.		

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

Note 2 - This permit contains a Total Residual Chlorine (TRC) limit. 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.

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

### C. 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.

### D. SPECIAL CONDITIONS

1. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program.
  - (a) eDMR Registration Requirements. The permittee must register with the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/env/wpp/edmr.htm>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
  - (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://apps5.mo.gov/mogems/welcome.action>. If you experience difficulties with using the eDMR system you may contact [edmr@dnr.mo.gov](mailto:edmr@dnr.mo.gov) or call 855-789-3889 or 573-526-2082 for assistance.
  - (c) 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. 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. 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>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.
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.
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).

**D. SPECIAL CONDITIONS (Continued)**

6. 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 a parameter is not detected above ML, the permittee must report the data qualifier signifying less than ML for that parameter (e.g., < 50 µg/L, if the ML for the parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" for all non-detects for that reporting period and report the average of all the results.
7. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
8. 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 South West Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <http://dnr.mo.gov/modnrcag/> 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.
9. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
10. 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.
11. 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.
12. 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.
13. An all-weather access road shall be provided to the treatment facility.
14. 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-0137863**  
**PIRATE'S COVE WASTEWATER TREATMENT FACILITY**

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit.

**Part I – Facility Information**

Facility Type: Non-POTW

Facility Description: Septic Tank / MicroFAST / Chlorine Feeder / Chlorine Contact Tanks / Dechlorination / Sample Port

**Part II – Modification Rationale**

This operating permit is hereby modified to reflect a reduction in sampling and reporting frequencies for all parameters from monthly to quarterly, as this facility's Discharge Monitoring Report history shows consistent and compliant discharge.

In addition, this permit was modified to include new online reporting requirements. The permittees must register for electronic Discharge Monitoring Reporting through the MoGEM portal before this facility's next Discharge Monitoring Report is due.

Lastly, Special Condition #6 was modified to reflect new Department guidance on the reporting of non-detects.

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. The proposed determinations are tentative pending public comment.

**PUBLIC NOTICE:**

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

✓ The Public Notice period for this operating permit was from January 22, 2021 to February 22, 2021. No comments were received.

**DATE OF FACT SHEET:** MARCH 6, 2021

**COMPLETED BY:**

**JESSICA VITALE, ENVIRONMENTAL SPECIALIST**  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM**  
**OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT**  
**(573) 522-2575**  
**Jessica.Vitale@dnr.mo.gov**

**MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FACT SHEET  
FOR THE PURPOSE OF A NEW FACILITY  
MO-0137863  
PIRATES COVE WWTP**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant 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 stormwater 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)(A)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 – Residential Subdivision – SIC #4952

Facility Description:

Septic tank / MicroFAST / Chlorine feeder / Chlorine contact tank / Dechlorination feeder / Sample port

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

- No

Application Date: 04/30/2018

**OUTFALL(S) TABLE:**

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001	0.002	Secondary	Domestic

Facility Performance History:

New discharging facility; no existing performance history available.

**Part II – Operator Certification Requirements**

- 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**

**RECEIVING STREAM(S) TABLE: OUTFALL #001**

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	DISTANCE TO CLASSIFIED SEGMENT (MI)
Lake of the Ozarks	L2	7205	AQL, IRR, LWW, SCR, WBCA, HHP	10290110-0403	0.0

\* As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission’s water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1<sup>st</sup> classified receiving stream’s beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:

**AQL** = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: **WWH** = Warm Water Habitat; **CDF** = Cold-water fishery (Current narrative use is cold-water habitat.); **CLF** = Cool-water fishery (Current narrative use is cool-water habitat); **EAH** = Ephemeral Aquatic Habitat; **MAH** = Modified Aquatic Habitat; **LAH** = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

**WBC** = Whole Body Contact recreation where the entire body is capable of being submerged;  
**WBC-A** = Whole body contact recreation that supports swimming uses and has public access;  
**WBC-B** = Whole body contact recreation that supports swimming;  
**SCR** = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

**HHP** (formerly HHF) = Human Health Protection as it relates to the consumption of fish;  
**IRR** = Irrigation for use on crops utilized for human or livestock consumption;  
**LWW** = Livestock and wildlife watering (Current narrative use is defined as **LWP** = Livestock and Wildlife Protection);  
**DWS** = Drinking Water Supply;  
**IND** = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

**WSA** = Storm- and flood-water storage and attenuation; **WHP** = Habitat for resident and migratory wildlife species;  
**WRC** = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; **WHC** = Hydrologic cycle maintenance.

10 CSR 20-7.031(6): **GRW** = Groundwater

**MIXING CONSIDERATIONS**

**Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].**

**Mixing Zone (MZ):**

Not to exceed one-quarter (1/4) of the lake width at the discharge point or one hundred feet (100’) from the discharge point, whichever is less [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

**Zone of Initial Dilution (ZID):**

Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

**Mixing Zone:**

Mixing Zone (MZ) Parameters: According to the USGS 1:24,000K Quadrangle, the mainstem lake width near the new facility outfall location is approximately 375 feet (ft.). Using “normal” water levels of 375 ft. wide and one-quarter of this width equals 93.75 ft. Therefore, because 100 feet is more than 93.75 ft., MZ = 93.75 feet [10 CSR 20-7.031(5)(A)4.B.(IV)(a)].

Mixing Zone Volume: The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is  $\text{Volume} = L * W * (D * 0.5)$ . Assuming that the width will be either side of the discharge (MZ) length (93.75 feet) to form the plume effect, the box dimensions are length (L) = 93.75 ft., width (W) = 93.75 ft., and depth (D) = 10 ft. Depth was obtained using mixing zone length projected 93.75 ft.  $\text{Volume} = L * W * (D * (0.5)) = (93.75) * (93.75) * (0.5 * 10) = 43,945 \text{ ft}^3$ .

The flow volume of  $43,945 \text{ ft}^3$  is assumed as the daily mixing zone. Therefore;  
 $(43,945 \text{ ft}^3) * (1 \text{ day} / 86,400 \text{ sec}) = 0.509 \text{ cfs}$ .

**RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

**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.

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

**ANTI-BACKSLIDING:**

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

- This is a new facility, backsliding does not apply.

**ANTIDegradation:**

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], 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.

- This permit contains new and/or expanded discharge; please see **APPENDIX FOR ANTIDegradation ANALYSIS**.

**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://extension.missouri.edu/main/DisplayCategory.aspx?C=74>, 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.

- The facility is not currently under Water Protection Program enforcement action.



**ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:**

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are optional and found on the Department's website at the following locations:

Operational Monitoring Lagoon: <http://dnr.mo.gov/forms/780-2801-f.pdf>

Operational Monitoring Mechanical: <http://dnr.mo.gov/forms/780-2800-f.pdf>

I&I Report: <http://dnr.mo.gov/forms/780-2690-f.pdf>

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. Each facility must make a request. If a single entity owns or operates more than one facility, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

- The permittee/facility is not currently using the eDMR data reporting system. The permittee is required to register with the Department's eDMR system through MoGEM before the first report is due.

**PRETREATMENT PROGRAM:**

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

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

- 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)(1)(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.

- A RPA was not conducted for this facility.

• **Conservative assumption:**

The following conservative assumptions have been made regarding the facility:

- Ammonia is a constituent of domestic wastewater. A reasonable potential to violate water quality standards is assumed.

**REMOVAL EFFICIENCY:**

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

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

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

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur.

- 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):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes 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. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit may include interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

- This permit does not contain a SOC.

**STORMWATER 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 stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

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

Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges. The purpose of a SWPPP is to comply with all applicable stormwater regulations by creating an adaptive management plan to control and mitigate stream pollution from stormwater runoff. Developing a SWPPP provides opportunities to employ appropriate BMPs to minimize the risk of pollutants being discharged during storm events. The following paragraph outlines the general steps the permittee should take to determine which BMPs will work to achieve the benchmark values or limits in the permit. This section is not intended to be all encompassing or restrict the use of any physical BMP or operational and maintenance procedure assisting in pollution control. Additional steps or revisions to the SWPPP may be required to meet the requirements of the permit.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures determined to be adequate to achieve the benchmark values discussed above. The facility will conduct monitoring and inspections of the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation is required at least once per month but should be continued more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

For new, altered, or expanded stormwater discharges, the SWPPP shall identify reasonable and effective BMPs while accounting for environmental impacts of varying control methods. The antidegradation analysis must document why no discharge or no exposure options are not feasible. The selection and documentation of appropriate control measures shall serve as an alternative analysis of technology and fulfill the requirements of antidegradation [10 CSR 20-7.031(3)]. For further guidance, consult the antidegradation implementation procedure (<http://dnr.mo.gov/env/wpp/docs/AIP050212.pdf>).

Alternative Analysis (AA) evaluation of the BMPs is a structured evaluation of BMPs that are reasonable and cost effective. The AA evaluation should include practices that are designed to be: 1) non-degrading; 2) less degrading; or 3) degrading water quality. The glossary of AIP defines these three terms. The chosen BMP will be the most reasonable and effective management strategy while ensuring the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The AA evaluation must demonstrate why "no discharge" or "no exposure" is not a feasible alternative at the facility. This structured analysis of BMPs serves as the antidegradation review, fulfilling the requirements of 10 CSR 20-7.031(3) Water Quality Standards and *Antidegradation Implementation Procedure (AIP)*, Section II.B.

If parameter-specific numeric exceedances continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to re-evaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: <http://dnr.mo.gov/forms/index.html>.

- 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.

- 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.

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

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

Where C = downstream concentration  
Cs = upstream concentration  
Qs = upstream flow  
Ce = effluent concentration  
Qe = effluent flow

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

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

**Number of Samples "n":**

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

**WLA MODELING:**

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

- A WLA study was either not submitted or determined not applicable by Department staff.

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(4)], 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.

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

- 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 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 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri’s Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- This facility does 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

- 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.

- |   |   |
|---|---|
| <input type="checkbox"/> Missouri or Mississippi River [10 CSR 20-7.015(2)]     | <input type="checkbox"/> Special Streams [10 CSR 20-7.015(6)]   |
| <input checked="" type="checkbox"/> Lakes or Reservoirs [10 CSR 20-7.015(3)]    | <input type="checkbox"/> Subsurface Waters [10 CSR 20-7.015(7)] |
| <input type="checkbox"/> Losing Streams [10 CSR 20-7.015(4)]                    | <input type="checkbox"/> All Other Waters [10 CSR 20-7.015(8)]  |
| <input type="checkbox"/> Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)] |   |

**OUTFALL #001 – MAIN FACILITY OUTFALL**

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

**EFFLUENT LIMITATIONS TABLE:**

PARAMETER	Unit	Basis for Limits	Daily Maximum	Weekly Average	Monthly Average	Sampling Frequency	Reporting Frequency	Sample Type ****
Flow	MGD	1	*		*	1/quarter	quarterly	E
BOD <sub>5</sub>	mg/L	1, 4		30	20	1/quarter	quarterly	C
TSS	mg/L	1,4		30	20	1/quarter	quarterly	C
<i>Escherichia coli</i> **	#/100mL	1, 3	630		126	1/quarter	quarterly	G
Ammonia as N (Apr 1 – Sep 30)	mg/L	4	7.8		3.0	1/quarter	quarterly	G
Ammonia as N (Oct 1 – Mar 31)	mg/L	4	7.8		3.0	1/quarter	quarterly	G
Chlorine, Total Residual	µg/L	1, 3	< 130		< 130	1/quarter	quarterly	G
pH	SU	1	6.0		9.0	1/quarter	quarterly	G

\* - Monitoring requirement only.

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

\*\*\*\* - C = 24-hour composite

G = Grab

T = 24-hr. total

E = 24-hr. estimate

**Basis for Limitations Codes:**

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

**OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:**

• **Flow.**

In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

• **Biochemical Oxygen Demand (BOD<sub>5</sub>).**

- 30 mg/L as a Weekly Average and 20 mg/L as a Monthly Average. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

• **Total Suspended Solids (TSS).**

- 30 mg/L as a Weekly Average and 20 mg/L as a Monthly Average. Please see the **APPLICABLE DESIGNATION OF WATERS OF THE STATE** sub-section of the **Effluent Limits Determination.**

- **Escherichia coli (E. coli).** Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum of 630 per 100 mL during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d). The Geometric Mean is calculated by multiplying all of the data points and then taking the nth root of this product, where n = # of samples collected. For example: Five *E. coli* samples were collected with results of 1, 4, 6, 10, and 5 (#/100mL). Geometric Mean = 5<sup>th</sup> root of (1)(4)(6)(10)(5) = 5<sup>th</sup> root of 1,200 = 4.1 #/100mL.

- **Total Ammonia Nitrogen.** Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L. No Zone of Initial Dilution allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b).

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

Summer

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

Chronic WLA:  $C_e = ((0.002 + 0.509)1.5 - (0.509 * 0.01)) / 0.002$   
 $C_e = 381 \text{ mg/L}$

Acute WLA:  $C_e = ((0.002 + 0.0)12.1 - (0.0 * 0.01)) / 0.002$   
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 381 \text{ mg/L (0.780)} = 297 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]  
 $LTA_a = 12.1 \text{ mg/L (0.321)} = \mathbf{3.88 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$MDL = 3.88 \text{ mg/L (3.11)} = \mathbf{12.1 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $AML = 3.88 \text{ mg/L (1.19)} = \mathbf{4.6 \text{ mg/L}}$  [CV = 0.6, 95<sup>th</sup> Percentile, n = 30]

Winter

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

Chronic WLA:  $C_e = ((0.002 + 0.509)3.1 - (0.509 * 0.01)) / 0.002$   
 $C_e = 789 \text{ mg/L}$

Acute WLA:  $C_e = ((0.002 + 0.0)12.1 - (0.0 * 0.01)) / 0.002$   
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 789 \text{ mg/L (0.780)} = 615 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]  
 $LTA_a = 12.1 \text{ mg/L (0.321)} = \mathbf{3.88 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$MDL = 3.88 \text{ mg/L (3.11)} = \mathbf{12.1 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $AML = 3.88 \text{ mg/L (1.19)} = \mathbf{4.6 \text{ mg/L}}$  [CV = 0.6, 95<sup>th</sup> Percentile, n = 30]

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	12.1	4.6
Winter	12.1	4.6

**Preferred Alternative Effluent Limit for Recirculating Sand Filter:**

$AML = \mathbf{3.0/3.0 \text{ mg/L}}$

Summer/Winter:

$LTA_c = AML / 1.19 = 3.0 / 1.19 = 2.52 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$MDL = 2.52 \text{ mg/L (3.11)} = \mathbf{7.8 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]

**Note** - The preferred alternative effluent limits of 3.0 mg/L average monthly and 7.8 mg/L maximum daily average represent the treatment capacity of the selected technology for both summer and winter and are more protective when compared to water quality based effluent limits calculated above. The preferred alternative effluent limits are applied in Table A1 as final ammonia limits.

- **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.

Chronic WLA:  $C_e = ((0.002 + 0.509)10 - (0.509 * 0.0))/0.002$   
 $C_e = 2,555 \mu\text{g/L}$

Acute WLA:  $C_e = ((0.002 + 0.0)19 - (0.0 * 0.0))/0.002$   
 $C_e = 19 \mu\text{g/L}$

$LTA_c = 2,555 \mu\text{g/L} (0.527) = 1,346 \mu\text{g/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$LTA_a = 19 \mu\text{g/L} (0.321) = \mathbf{6.1 \mu\text{g/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]

MDL = **6.1 µg/L** (3.11) = 19 µg/L [CV = 0.6, 99<sup>th</sup> Percentile]

AML = **6.1 µg/L** (1.55) = 9.5 µg/L [CV = 0.6, 95<sup>th</sup> Percentile, n = 4]

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. 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.

- **pH.**  $\geq 6.0 - 9.0$  SU. pH limitations [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the buffering capacity of the mixing zone.

#### **OUTFALL #001 – GENERAL CRITERIA CONSIDERATIONS:**

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is 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.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The discharge from the existing facility is made up of treated domestic wastewater. The facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, this facility utilizes secondary treatment technology and is currently in compliance with effluent limitations that are more stringent than/the secondary treatment technology based effluent limits established in 40 CFR 133 and there has been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of this discharge. Based on the information reviewed during the drafting of this permit, these final effluent limitations appear to have protected against the excursion of this criterion in the past. Therefore, the discharge does not have the reasonable potential to cause or contribute to an excursion of this criterion.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.



- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit contains final effluent limitations which are protective of both acute and chronic toxicity for various pollutants that are either expected to be discharged by domestic wastewater facilities or that were disclosed by this facility on the application for permit coverage. Based on the information reviewed during the drafting of this permit, it has been determined if the facility meets final effluent limitations established in this permit, there is no reasonable potential for the discharge to cause an excursion of this criterion.
- (E) There shall be no significant human health hazard from incidental contact with the water. Please see (D) above as justification is the same.
- (F) There shall be no acute toxicity to livestock or wildlife watering. Please see (D) above as justification is the same.
- (G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
- (H) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

## **Part VII – Cost Analysis for Compliance**

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.

- The Department is not required to complete a cost analysis for compliance 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. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the 1<sup>st</sup> Quarter of calendar year 2019. If the Department issues the permit at this time, the effective period of the permit would be less than one year in length. To ensure efficient use of Department staff, reduce the Department’s permitting back log and to provide better service to the permittee by avoiding another renewal application to be submitted in such a short time period this operating permit will be issued for the maximum timeframe of five years and synced with other permits in the watershed at a later date.

**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 5/25/18 to 6/25/2018. No comments were received.

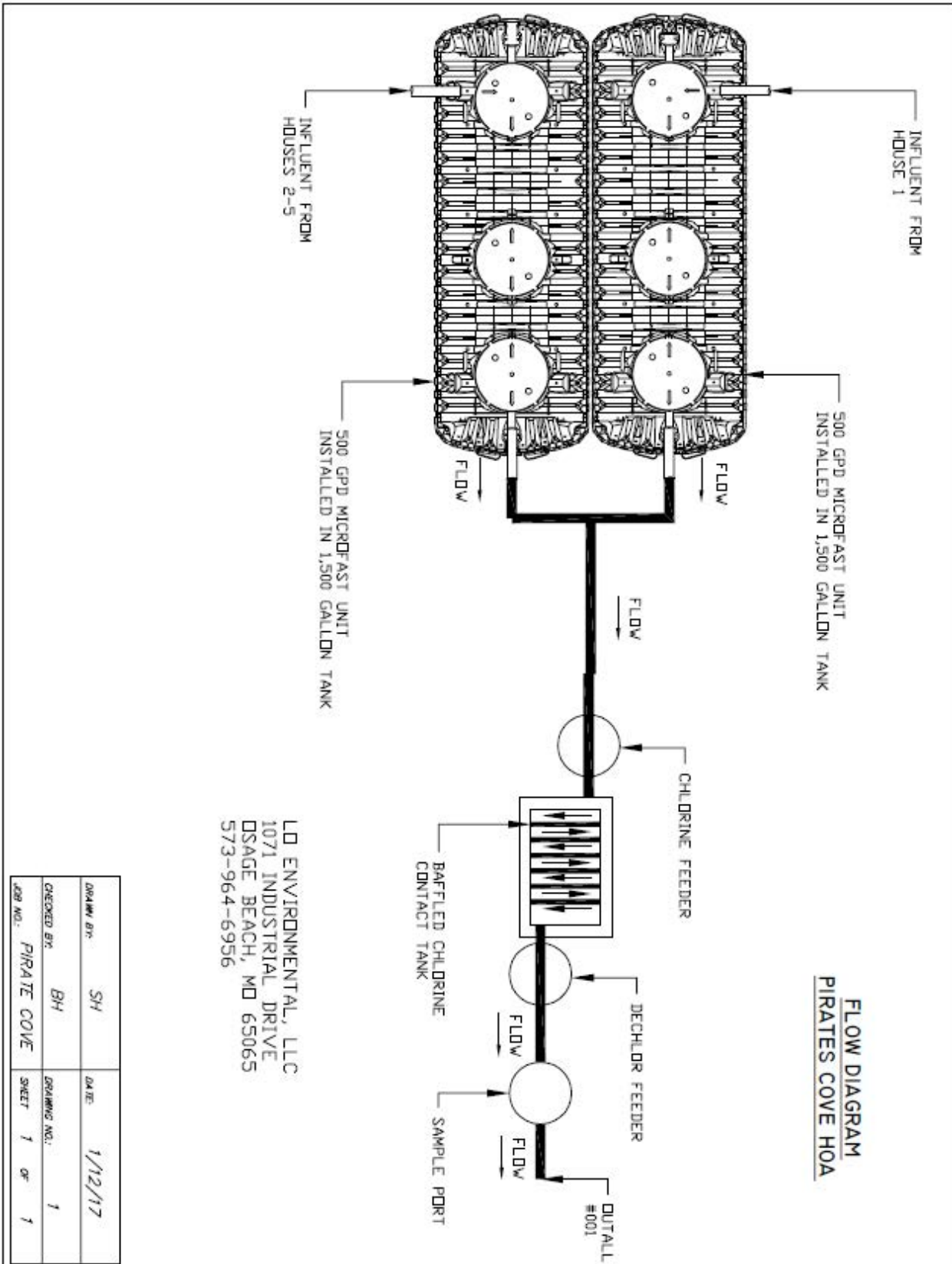
**DATE OF FACT SHEET:** 5/15/2018

**COMPLETED BY:**

**AARON SAWYER, ENVIRONMENTAL ENGINEER**  
**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**WATER PROTECTION PROGRAM**  
**ENGINEERING SECTION**  
**573-526-4589**  
**[aaron.sawyer@dnr.mo.gov](mailto:aaron.sawyer@dnr.mo.gov)**

**Appendices**

**APPENDIX – FLOW DIAGRAM**



**APPENDIX – ANTIDegradation ANALYSIS:**

# **Water Quality and Antidegradation Review**

*For the Protection of Water Quality  
and Determination of Effluent Limits for Discharge to  
Lake of the Ozarks*

*by  
Pirates Cove Wastewater Treatment Facility*



March 2018

## Table of Contents

1. Facility Information .....	3
2. Water Quality Information.....	3
2.1. Water Quality History:.....	3
3. Receiving Waterbody Information .....	3
4. General Comments.....	4
5. Antidegradation Review Information .....	4
5.1. TIER DETERMINATION .....	4
Table 1. Pollutants of Concern and Tier Determination .....	4
5.2. EXISTING WATER QUALITY .....	4
5.3. NO DISCHARGE EVALUATION .....	5
5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE.....	5
5.4.1.REGIONALIZATION ALTERATIVE.....	5
5.3.2 LOSING STREAM ALTERATIVE DISCHARGE LOCATION .....	6
5.3.3 SOCIAL AND ECONOMIC IMPORTANCE EVALUATION .....	6
6. General Assumptions of the Water Quality and Antidegradation Review .....	6
7. Mixing Considerations.....	7
8. Permit Limits and Monitoring Information .....	7
TABLE 3. EFFLUENT LIMITS OUTFALL 001 .....	7
9. Receiving Water Monitoring Requirements .....	8
10. Derivation and Discussion of Limits .....	8
10.1. OUTFALL #001 – MAIN FACILITY OUTFALL .....	8
10.2. LIMIT DERIVATION .....	8
11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION .....	11
Appendix A: Map of Discharge Location.....	12
Appendix B: Antidegradation Review Summary Attachments .....	13
Appendix C: Geohydrologic Evaluation.....	20
Appendix D: Natural Heritage Review.....	22

# 1. Facility Information

FACILITY NAME: Pirates Cove WWTF NPDES #: MO0137863

FACILITY TYPE: NON-POTW/POTW/INDUSTRIAL – Residential Subdivision– SIC #8641  
 FACILITY DESCRIPTION: In March of 2015 a construction permit by the Department for an AdvanTex treatment system with UV disinfection and a design flow of 1,400 gpd. When the project was opened for bidding the cost of construction came back greater than the owner was willing to pay. The owner was informed that a MicroFAST system could be installed and discharge the effluent to existing lateral fields. The MicroFAST was installed; however, no lateral fields existed to connect to for the no discharge system. The two existing 500 gallon MicroFAST units were installed in separate 1,500 gallon tanks and have been pumped and hauled as a temporary solution. The existing system is able to meet current limits with the exception of *E. Coli*; therefore, the addition of chlorine disinfection, dechlorination and a sampling port are proposed additions to the existing MicroFAST units. The proposed average design flow is 1,000 gpd.

COUNTY: Camden UTM COORDINATES: X=513,718 / Y=4,214,639  
 12- DIGIT HUC: 10290110-0308 LEGAL DESCRIPTION: SW¼, NW¼, Section 31, T 39N, R17W  
 EDU\*: Ozark/Osage ECOREGION: Ozark/Highlands

\* - Ecological Drainage Unit

# 2. Water Quality Information

In accordance with Missouri’s Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (Department) 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, and revised July 13, 2016, a facility is required to use *Missouri’s Antidegradation Implementation Procedure (AIP)* for new and expanded wastewater discharges.

## 2.1. Water Quality History:

No history for this facility. No receiving water information. The receiving water body, Lake of the Ozarks, is not on the 303(d) or 305(b) lists as being impaired.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.002	Secondary	Lake of the Ozarks	0.0

# 3. Receiving Waterbody Information

WATERBODY NAME	CLASS	WBID	LOW-FLOW VALUES (CFS)			DESIGNATED USES**
			1Q10	7Q10	30Q10	
Lake of the Ozarks	L2	7205	-	-	-	LWW, AQL, IRR, WBC(A), SCR, HPP, General Criteria

\*\* Irrigation (IRR), Livestock & Wildlife Protection (LWP), Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation – Category A (WBC-A), Whole Body Contact Recreation – Category B (WBC-B), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

RECEIVING WATER BODY SEGMENT #1: Lake of the Ozarks  
 Upper end segment\* UTM coordinates: X=513,718 / Y=4,214,639 (Outfall)  
 Lower end segment\* UTM coordinates: X=513,829 / Y=4,214,176 (Edge of main channel)

\* 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

Shelly Hall P.E. of LO Environmental, LLC prepared, on behalf of Pirates Four HOA, Inc, the *Antidegradation Report Proposed Pirates Cove Wastewater Facility* dated December 18<sup>th</sup>, 2017. Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternative 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 B was used to develop this review document.

Geohydrological Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (Appendix A: Map).

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. However, the review identified Indiana Bats (*Myotis sodalis*), Gray Bats (*Myotis grisescens*) and Northern long-eared bats (*Myotis septentrionalis*) as hibernating during the winter in caves and mines and Bald Eagles (*Haliaeetus leucocephalus*) as nesting in the area during winter months in the vicinity of the project area. The applicant should follow recommendations given in the Natural Heritage Review (Appendix D).

## 5. Antidegradation Review Information

The following is a review of the *Antidegradation* dated December 18<sup>th</sup>, 2017.

### 5.1 TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix B), 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 (see Appendix B).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD <sub>5</sub> /DO	2	Significant	
Total Suspended Solids (TSS)	**	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
<i>Escherichia coli</i> ( <i>E. coli</i> )	2	Significant	
<i>Total Residual Chlorine</i>	2	Significant	

\* Tier assumed. Tier determination not possible: \*\* No in-stream standards for these parameters. \*\*\* Standards for these parameters are ranges

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

For pollutants of concern, the attachments are:

- Attachment A, Tier 2 with significant degradation.
- Attachment B, Tier 2 with minimal degradation.
- Attachment D, Tier 1 Review. Additionally, a Tier 2 review must be conducted for each pollutant of concern on the appropriate water body segment

### 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. NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010 (4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Because Missouri’s antidegradation implementation procedures specify that if the proposed activity results in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Part of that analysis as shown below is the non-degrading or no discharge evaluation. See Section 5.4.1 discussion for the regionalization alternative.

1. Land Application – Treated effluent is distributed to land surface and eliminates point source discharge. The lack of land availability as well as costs of acquiring sufficient amounts of property for the project makes this a non-practical alternative.
2. Subsurface Irrigation – Effluent is disbursed through drip lines buried in the subsurface to qualified soils. In this situation, the necessary area for subsurface irrigation exceeds the area available on the lot thus making it not practicable. The cost of land acquisition also makes this a non-practical alternative.

### 5.4. 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. Seven alternatives from non-degrading to less degrading to degrading alternatives were evaluated. Alternative #1 and #2, Land Application and Subsurface Irrigation, were eliminated as impracticable due to cost and lack of available land. Alternative #3, Regionalization, was eliminated as impracticable due to the distance necessary to connect to a regional facility and the associated costs/easement acquisitions. Only those alternatives that were considered practicable were included in the economic efficiency analysis. This analysis showed that the return on environmental benefits with increasing cost of treatment did not justify more expenditure beyond the base case treatment alternative (see Appendix B, Attachment A). The MicroFAST system was the preferred alternative based on this analysis.

Table 2: Alternatives Analysis Comparison

	Orenco AdvanTex	MicroFAST w/ Bioclere	MicroFAST	BioBarrier Bio-Microbics
BOD	10	10	20	20
TSS	15	15	20	20
Ammonia (s/w)	1.4	1.4	3.0	3.0
E. coli	126	126	126	126
Total Residual Chlorine (µg/L)	0.008	0.008	0.008	0.008
Practical	Y	Y	Y	Y
Economical	N	N	Y	N
Life Cycle Cost*	\$85,527.94	\$95,056.20	\$47,986.30	\$100,045.30
Ratio	1:1.78	1:1.98	1:1	1:2.1

\* Life cycle cost at 20 year design life and 5% interest

### 5.5. REGIONALIZATION ALTERNATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. No operative regional collection system is available, within a practical distance, from the subdivision at this time so a waiver required under 10 CSR 20-6.010(3) (B) 1 Continuing Authorities cannot be obtained.

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



## 5.6. LOSING STREAM ALTERNATIVE DISCHARGE LOCATION

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

The Discharge does not discharge to a losing stream segment or will not discharge with 2 miles of a losing stream segment.

## 5.7. SOCIAL AND ECONOMIC IMPORTANCE EVALUATION

The identified community is specifically the people residing at the subdivision along with those who live or vacation in the area surrounding the subdivision near the Lake of the Ozarks. By installing chlorine disinfection and sampling port to the existing wastewater treatment system, this will enable the treatment facility to be compliant with all limits associated with its operating permit, which will ultimately improve the water quality in the Lake of the Ozarks. A centralized wastewater system provides an environmental and health benefit to the public by providing disinfection and limiting the pollutants of concern entering the Lake of the Ozarks.

The economy of the Lake of the Ozarks is tourism based and this development provides employment opportunity for local employees to build the wastewater treatment plant. This will maintain or increase the tax revenue for the local governments of the county, school, and fire protection district and state government with income and sales tax. Without a viable wastewater treatment facility, these five houses it would become difficult for these units to maintain their value. Appendix B, Attachment A: Tier 2 with Significant Degradation form contains a summary of this information.

## 6. General Assumptions of the Water Quality and Antidegradation Review

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
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.

## 7. Mixing Considerations

### Mixing Zone (MZ):

Not to exceed one-quarter (1/4) of the lake width at the discharge point or one hundred feet (100') from the discharge point, whichever is less [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

### Zone of Initial Dilution (ZID):

Not Allowed [10 CSR 20-7.031(5)(A)4.B.(IV)(b)].

### Mixing Zone:

Mixing Zone (MZ) Parameters: According to the USGS 1:24,000K Quadrangle, the mainstem lake width near the new facility outfall location is approximately 375 feet (ft.). Using "normal" water levels of 375 ft. wide and one-quarter of this width equals 93.75 ft. Therefore, because 100 feet is more than 93.75 ft., MZ = 93.75 feet [10 CSR 20-7.031(5)(A)4.B.(IV)(a)].

Mixing Zone Volume: The flow volume approximates a triangular prism because of the slope of the lake bottom, where the formula is  $Volume = L * W * (D * 0.5)$ . Assuming that the width will be either side of the discharge (MZ) length (93.75 feet) to form the plume effect, the box dimensions are length (L) = 93.75 ft., width (W) = 93.75 ft., and depth (D) = 10 ft. Depth was obtained using mixing zone length projected 93.75 ft.  $Volume = L * W * (D * 0.5) = (93.75) * (93.75) * (0.5 * 10) = 43,945 \text{ ft}^3$ .

The flow volume of 43,945  $\text{ft}^3$  is assumed as the daily mixing zone. Therefore;  
 $(43,945 \text{ ft}^3) * (1 \text{ day} / 86,400 \text{ sec}) = 0.509 \text{ cfs}$ .

## 8. Permit Limits and Monitoring Information

WASTELOAD ALLOCATION  
 STUDY CONDUCTED (Y OR N):

N

USE ATTAINABILITY  
 ANALYSIS CONDUCTED (Y OR N):

N

WHOLE BODY CONTACT  
 USE RETAINED (Y OR N):

Y

### OUTFALL #001

TABLE 3. EFFLUENT LIMITS OUTFALL 001

PARAMETER	UNITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	BASIS FOR LIMIT (NOTE 2)	MONITORING FREQUENCY
FLOW	MGD	*		*		Once/Month
BIOCHEMICAL OXYGEN DEMAND <sub>5</sub>	MG/L		30	20	FSR	Once/Month
TOTAL SUSPENDED SOLIDS	MG/L		30	20	FSR	Once/Month
PH	SU	6.0–9.0		6.0–9.0	FSR	Once/Month
AMMONIA AS N (APR 1 – SEPT 30)	MG/L	7.8		3.0	PEL	Once/Month
AMMONIA AS N (OCT 1 – MAR 31)	MG/L	7.8		3.0	PEL	Once/Month
<i>ESCHERICHIA COLIFORM (E. COLI)</i>	NOTE 1	630**		126**	FSR	Once/Month
<i>CHLORINE, TOTAL RESIDUAL</i>	µG/L	19.0		9.5	WQBEL	Once/Month
<i>CHLORINE, TOTAL RESIDUAL</i>	µG/L	<130		<130	WQBEL	Once/Month

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; OR TECHNOLOGY-BASED EFFLUENT LIMIT – TBEL; OR NO DEGRADATION EFFLUENT LIMIT – NDEL; OR FEDERAL/STATE REGULATION – FSR; OR NOT APPLICABLE – N/A. ALSO, PLEASE SEE THE **GENERAL ASSUMPTIONS OF THE WQAR #4 & #5**.

\* Monitoring requirements only.

\*\* The Monthly and Weekly Average for *E. coli* shall be reported as a Geometric Mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

## 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:

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

Where C = downstream concentration

C<sub>s</sub> = upstream concentration

Q<sub>s</sub> = upstream flow

C<sub>e</sub> = effluent concentration

Q<sub>e</sub> = 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).

2) Alternative Analysis-based – Using the preferred alternative's treatment capacity for conventional pollutants such as BOD<sub>5</sub> 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 BOD<sub>5</sub> and TSS effluent values 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 BOD<sub>5</sub> and TSS effluent values 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 (BOD<sub>5</sub>).** BOD<sub>5</sub> limits of 20 mg/L monthly average, 30 mg/L average weekly limits were proposed. These proposed limits are protective of WQS found in 10 CSR 7.015(3)(A)1.A. for discharges to lakes.

- **Total Suspended Solids (TSS).** 20 mg/L monthly average, 30 mg/L average weekly limit. These proposed limits are protective of WQS found in 10 CSR 7.015(3)(A)1.A. for discharges to lakes.
- **pH.** – 6.0-9.0 SU. Technology based limits [10 CSR 20-7.015] are protective of the water quality standard [10 CSR 20-7.031(5)(E)], due to the buffering capacity of the mixing zone.
- **Total Ammonia Nitrogen.**

**Notice to Permittee:** On August 22, 2013, the Environmental Protection Agency (EPA) published a notice in the Federal Register announcing of the final national recommended ambient water quality criteria for protection of aquatic life from the effects of ammonia in freshwater. The EPA's guidance, Final Aquatic Life Ambient Water Quality Criteria for Ammonia – Fresh Water 2013, is not a rule, nor automatically part of a state's water quality standards. States must adopt new ammonia criteria consistent with EPA's published ammonia criteria into their water quality standards that protect aquatic life in water.

The Water Protection Program (WPP) is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri criteria. The Department has begun discussions about how these new criteria will be implemented. WPP is suggesting that all permittees consider the lower ammonia criteria and adjust the proposed alternative's treatment design, if they so choose. Consideration of the future ammonia criteria at this time could avoid a near-future upgrade. More information about the new ammonia criteria for aquatic life protection may be found at: <http://dnr.mo.gov/pubs/pub2481.htm>.

Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

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

Summer: April 1 – September 30, Winter: October 1 – March 31.

Summer

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

Chronic WLA:  $C_e = ((0.002 + 0.509)1.5 - (0.509 * 0.01)) / 0.002$   
 $C_e = 381 \text{ mg/L}$

Acute WLA:  $C_e = ((0.002 + 0.0)12.1 - (0.0 * 0.01)) / 0.002$   
 $C_e = 12.1 \text{ mg/L}$

$LTA_c = 381 \text{ mg/L} (0.780) = 297 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile, 30 day avg.]  
 $LTA_a = 12.1 \text{ mg/L} (0.321) = \mathbf{3.88 \text{ mg/L}}$  [CV = 0.6, 99<sup>th</sup> Percentile]

$MDL = 3.88 \text{ mg/L} (3.11) = 12.1 \text{ mg/L}$  [CV = 0.6, 99<sup>th</sup> Percentile]  
 $AML = 3.88 \text{ mg/L} (1.19) = 4.6 \text{ mg/L}$  [CV = 0.6, 95<sup>th</sup> Percentile, n = 30]

Winter not calculated due to acute value being more protective than the chronic value. Winter chronic value is higher than the summer value used.

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	12.1	4.6
Winter	12.1	4.6

Preferred Alternative Effluent Limit for Recirculating Sand Filter

$$\text{AML} = \mathbf{3.0/3.0 \text{ mg/L}}$$

Summer/Winter:

$$\begin{aligned} \text{LTA}_c &= \text{AML} / 1.19 = 3.0/1.19 = 2.52 \text{ mg/L} && [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{MDL} &= 2.52 \text{ mg/L} (3.11) = \mathbf{7.8 \text{ mg/L}} && [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \end{aligned}$$

The preferred alternative effluent limits of 3.0 mg/L average monthly and 7.8 mg/L maximum daily average for both summer and winter are more protective when compared to water quality based effluent limits and are applied in Table 3.

- ***Escherichia coli (E. coli)***. Monthly average of 126 per 100 mL as a geometric mean and Daily Maximum of 630 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (A) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d).

For facilities less than 100,000 gpd: Per the effluent regulations the *E. coli* sampling/monitoring frequency shall be set to match the monitoring frequency of wastewater and sludge sampling program for the receiving water category in 7.015(1)(B)3. 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 week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Please see **GENERAL ASSUMPTIONS OF THE WQAR #7**

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

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

$$\begin{aligned} \text{Chronic WLA: } C_e &= ((0.002 + 0.509)10 - (0.509 * 0.0)) / 0.002 \\ C_e &= 2,555 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{Acute WLA: } C_e &= ((0.002 + 0.0)19 - (0.0 * 0.0)) / 0.002 \\ C_e &= 19 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{LTA}_c &= 2,555 \text{ } \mu\text{g/L} (0.527) = 1,346 \text{ } \mu\text{g/L} && [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{LTA}_a &= 19 \text{ } \mu\text{g/L} (0.321) = \mathbf{6.1 \text{ } \mu\text{g/L}} && [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \end{aligned}$$

$$\begin{aligned} \text{MDL} &= \mathbf{6.1 \text{ } \mu\text{g/L}} (3.11) = 19 \text{ } \mu\text{g/L} && [\text{CV} = 0.6, 99^{\text{th}} \text{ Percentile}] \\ \text{AML} &= \mathbf{6.1 \text{ } \mu\text{g/L}} (1.55) = 9.5 \text{ } \mu\text{g/L} && [\text{CV} = 0.6, 95^{\text{th}} \text{ Percentile, } n = 4] \end{aligned}$$

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, Pirates Cove WWTF, 1,000 gpd will result in significant degradation of the segment identified in the Lake of the Ozarks. The MicroFAST system with the addition of chlorine disinfection/dechlorination 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 was evaluated, and addition of chlorine disinfection with the existing facilities was found to be cost effective and was determined to be the preferred alternative.

It has also been determined that the other treatment options presented (AdvanTex Media Filter, MicroFAST with Bioclere, and BioBarrier) may also be considered reasonable alternatives provided they are designed to be capable of meeting the effluent limitations developed based on the preferred alternative. If any of these options are selected, you may proceed with the appropriate facility plan, construction permit application, or other future submittals without the need to modify this Antidegradation review document.

The System is not covered in 10 CSR 20-8 Design Guides and is considered a new treatment technology. To proceed with a new technology, your construction permit application must address approvability of the technology in accordance with the *New Technology Definitions and Requirements* factsheet available at <http://dnr.mo.gov/pubs/pub2453.htm>. If you have any questions regarding the new technology factsheet, please contact Cindy LePage of the Water Protection Program. 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. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Aaron Sawyer

Date: 03/23/2018

Unit Chief: John Rustige, P.E.

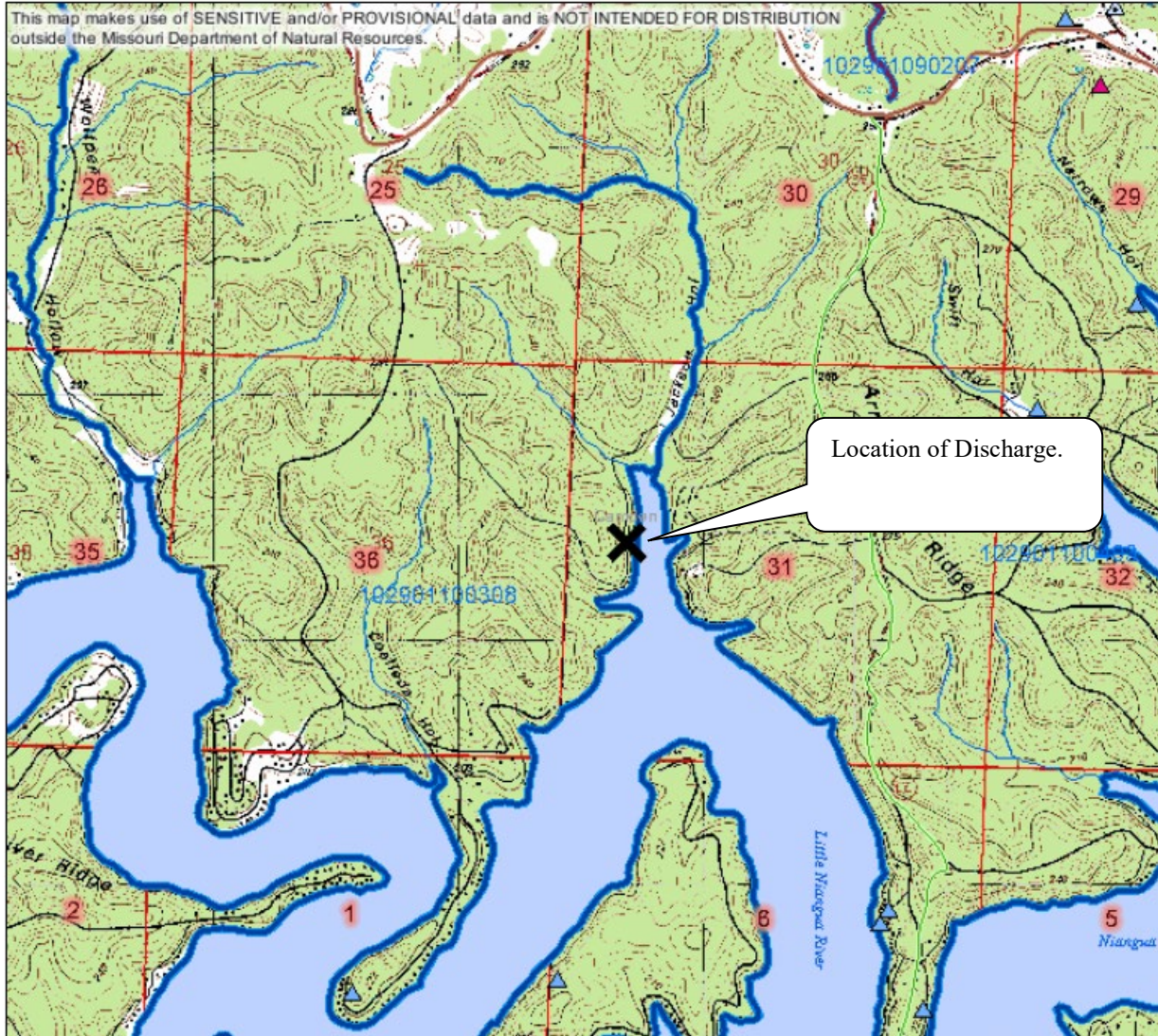
JR



Appendix A: Map of Discharge Location

(A USGS topographic map can be obtained on the web at <http://www.dnr.mo.gov/internetmapviewer/>.)

# Pirates Cove WWTP




Appendix B: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, Pirates Four Homeowners Association, 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) Attachment B: Tier 2: Significant degradation

**RECEIVED**  
 DEC 18 2017  
 Water Protection Program  
 ACT 397



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**ANTIDEGRADATION REVIEW SUMMARY FOR PUBLIC NOTICE**  
**ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION**

1. FACILITY			
NAME Pirates Cove WWTF		TELEPHONE NUMBER WITH AREA CODE	
ADDRESS (PHYSICAL) Pirates Cove Road	CITY Camdenton	STATE MO	ZIP CODE 65020
2. OWNER			
NAME AND OFFICIAL TITLES Pirates Four HOA, Inc			
ADDRESS 3924 SW Windsong	CITY Lee's Summit	STATE MO	ZIP CODE 64082
TELEPHONE NUMBER WITH AREA CODE (816) 898-3449	E-MAIL ADDRESS patmkelley@att.net		
3. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at <a href="http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf">www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf</a> .			
NAME AND OFFICIAL TITLES same as owner			
ADDRESS	CITY	STATE	ZIP CODE
TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS		
4. RECEIVING WATER BODY SEGMENT #1			
NAME Lake of the Ozarks			
4.1 UPPER END OF SEGMENT (Location of discharge) UTM _____ OR Lat _____, Long _____			
4.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
Per the Missouri Antidegradation Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."			
5. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)			
NAME			
5.1 UPPER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
5.2 LOWER END OF SEGMENT UTM _____ OR Lat _____, Long _____			
6. WET WEATHER ANTICIPATIONS			
If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to the antidegradation review report.			
What is the Wet Weather Flow Peaking Factor in relation to design flow? 1			
Wet Weather Design Summary: No infiltration. It is a closed system.			



**7. EXISTING WATER QUALITY DATA OR MODEL SUMMARY**

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II.A.1.: (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data approved by the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model. QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Watershed Protection Section. **Additional information needed with the EWQ data includes:** 1) Date existing water quality data was provided by the Watershed Protection Section, 2) Approval date by the Watershed Protection Section of the QAPP, project sampling plan, and data collected for all appropriate POCs.

Comments/Discussion:

**8. SUMMARY OF THE POLLUTANTS OF CONCERN AND THE PROPOSED EFFLUENT LIMITS**

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II.A. and assumed or demonstrated to cause significant degradation. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutants of Concern*	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	MG/L		20	30
TSS	MG/L		20	30
DISSOLVED OXYGEN	MG/L		>5	
AMMONIA	MG/L		<4.6	12.1
BACTERIA (E. COLI)	CFUS		<126	630
Chlorine	ug/L		8	17

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

\*Assumed Tier 2.

**9. 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.

Applicants choosing to use a new wastewater technology that are considered an "unproven technology" in Missouri in their Tier 2 Reviews with alternative analysis must comply with the requirements set forth in the *New Technology Definitions and Requirements Factsheet* that can be found at: <http://dnr.mo.gov/pubs/pub2453.pdf>.


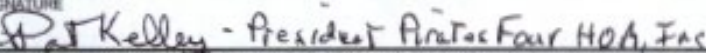
Non-degrading alternatives: Land Application, drip dispersal, connection to community sewer

Alternatives ranging from less-degrading to degrading including Preferred Alternative (All treatment levels for POCs must at a minimum meet water quality standards):

Alternatives	Level of Treatment Attainable for each Pollutant of Concern					
	BOD5	TSS	AMMONIA AS N	E. coli	DO	Chlorine
	(MG/L)	MG/L	MG/L	#/100ml	mg/L	ug/L
Orengo Advantex	10	15	1.4	126	5	8
MicroFAST w/BioClere	10	15	1.4	126	5	8
MicroFAST	20	20	3	126	5	8
Bio-Microbics	20	20	3	126	5	8

10. DETERMINATION OF THE REASONABLE ALTERNATIVE
<p>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. <b>Please do not write "See Report" for any box below.</b></p>
<p><b>Practicability Summary:</b></p> <p>"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.</p> <p>Land application and drip disposal were found to be not practicable due to the lack of available land. Connection to community sewer is not practicable due to the fact the nearest sewer is over 2 miles away. AdvanTex was found to be the best as far as effectiveness, reliability and potential environmental impacts and MicroFAST w/Bioclere has reported similar effectiveness although not approved as treatment by MODNR. The BioBarrier units have studies to prove effectiveness and reliability but again is not an approved treatment. The MicroFAST unit has not gained approval either but is similar to a fixed film activated sludge process, data provided by the manufacturer shows the technology capable of being effective and reliable with minimal environmental impacts.</p>
<p><b>Economic Efficiency Summary:</b></p> <p>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.</p> <p>Present worth analysis proved utilizing the existing MicroFAST unit and adding disinfection to be the most cost effective alternative.</p>
<p><b>Affordability Summary:</b></p> <p>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."</p> <p>Not performed.</p>
<p><b>Preferred Chosen Alternative:</b></p> <p>Provide disinfection to the already installed MicroFAST units.</p>
<p><b>Reasons for Rejecting the other Evaluated Alternatives:</b></p> <p>cost</p>
<p><b>Comments/Discussion:</b></p> <p>All alternatives considered would be able to meet water quality standards.</p>



<b>11. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE</b>			
<p>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.</p>			
<p><b>Identify the affected community:</b>                  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."                  Vacationers and landowners who enjoy the Lake of the Ozark's amenities in and around Pirates Cove Road.</p>			
<p><b>Identify relevant factors that characterize the social and economic conditions of the affected community:</b>                  Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1., but specific community examples are encouraged.                  Provide wastewater treatment for homes that would otherwise pollute the Lake and become a public health risk. Or it could pose an economic strain on the existing homeowners as their homes may be condemned and rendered worthless. Having tourist and second homeowners to the lake help with tax base and local commerce.</p>			
<p><b>Describe the important social and economic development associated with the project:</b>                  Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.                  This project will correct an existing health hazard and ease a financial burden to homeowners. It will provide tax revenue to the local and state government along with the school and fire districts. It will also add business to the local store owners, marinas, fishing, and restaurants in the area.</p>			
<p><b>PROPOSED PROJECT SUMMARY:</b>                  The homeowners currently have installed 2 - 500 gallon per day MicroFAST units installed capable of meeting water quality standards except for E. coli. The project will include providing AS Built drawings for what is currently installed along with adding chlorine/dechlor disinfection in order to meet all standards. Also, to be installed is a sample port. Actual flow data from an existing well has been provided for. Data was collected over the course of a year and flows from recreational season used to determine actual flows. Specifically to show that the average daily flows are well below the provided 1,000 GPD treatment provided.</p>			
<p>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.</p>			
<p><b>CONSULTANT:</b> 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.</p>			
SIGNATURE 		DATE 12-13-17	
NAME AND OFFICIAL TITLES / LICENSE # Shelly Hall, PE, Owner/PE2009001084		COMPANY NAME LO Environmental, LLC	
ADDRESS 1071 Industrial Drive		CITY Osage Beach	STATE MO
TELEPHONE NUMBER WITH AREA CODE (573) 964-6956		E-MAIL ADDRESS shelly@loenvironmental.com	
<p><b>OWNER:</b> I have read and reviewed the prepared documents and agree with this submittal.</p>			
SIGNATURE  - President Pirates Cove HOA, Inc		DATE 12-13-17	
<p><b>CONTINUING AUTHORITY:</b> I have read and reviewed the prepared documents and agree with this submittal.</p>			
SIGNATURE		DATE	



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM  
**WATER QUALITY REVIEW ASSISTANCE/  
 ANTIDEGRADATION REVIEW REQUEST**  
 PRE-CONSTRUCTION REVIEW FOR PROTECTION OF  
 BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

For Office Use Only	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED

TYPE OF PROJECT <input type="checkbox"/> Grant <input type="checkbox"/> SRF Loan <input checked="" type="checkbox"/> All Other Projects	
REQUESTER Shelly Hall	TELEPHONE NUMBER WITH AREA CODE (573) 964-6956
PERMITTEE / FACILITY NAME Pirates Four HOA, Inc.	MSOP NUMBER (IF APPLICABLE)
COUNTY Camden	SIC / NAICS CODE 4952

**REASON FOR REQUEST**  
 New Discharge (See Instruction #9)  Upgrade (No expansion) (See AIP)  Expansion  QAPP or Study Review

DESCRIPTION OF PROPOSED ACTIVITY  
 add disinfection to 2 - 500 GPD MicroFAST units installed

**FACILITY INFORMATION**  
 METHOD OF BACTERIA COMPLIANCE  
 Chlorine Disinfection  Ultraviolet Disinfection  Ozone  Not Applicable

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

OUTFALL	LOCATION (UTM OR LAT/LONG OR LEGAL DESCRIPTION)	MAPPED <sup>1</sup> (CHECK)	RECEIVING WATER BODY <sup>2</sup>
1	x = 513718 y = 4214639	<input checked="" type="checkbox"/>	Lake of the Ozarks
		<input type="checkbox"/>	
		<input type="checkbox"/>	

<sup>1</sup> Please attach topographic map (See: [www.dnr.mo.gov/internetmapviewer/](http://www.dnr.mo.gov/internetmapviewer/)) with outfall locations clearly marked. For additional outfalls, attach a separate form.  
<sup>2</sup> Please see general instructions for discharges to streams.

OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
1	1000	MicroFAST - Fixed Film Technology	domestic wastewater

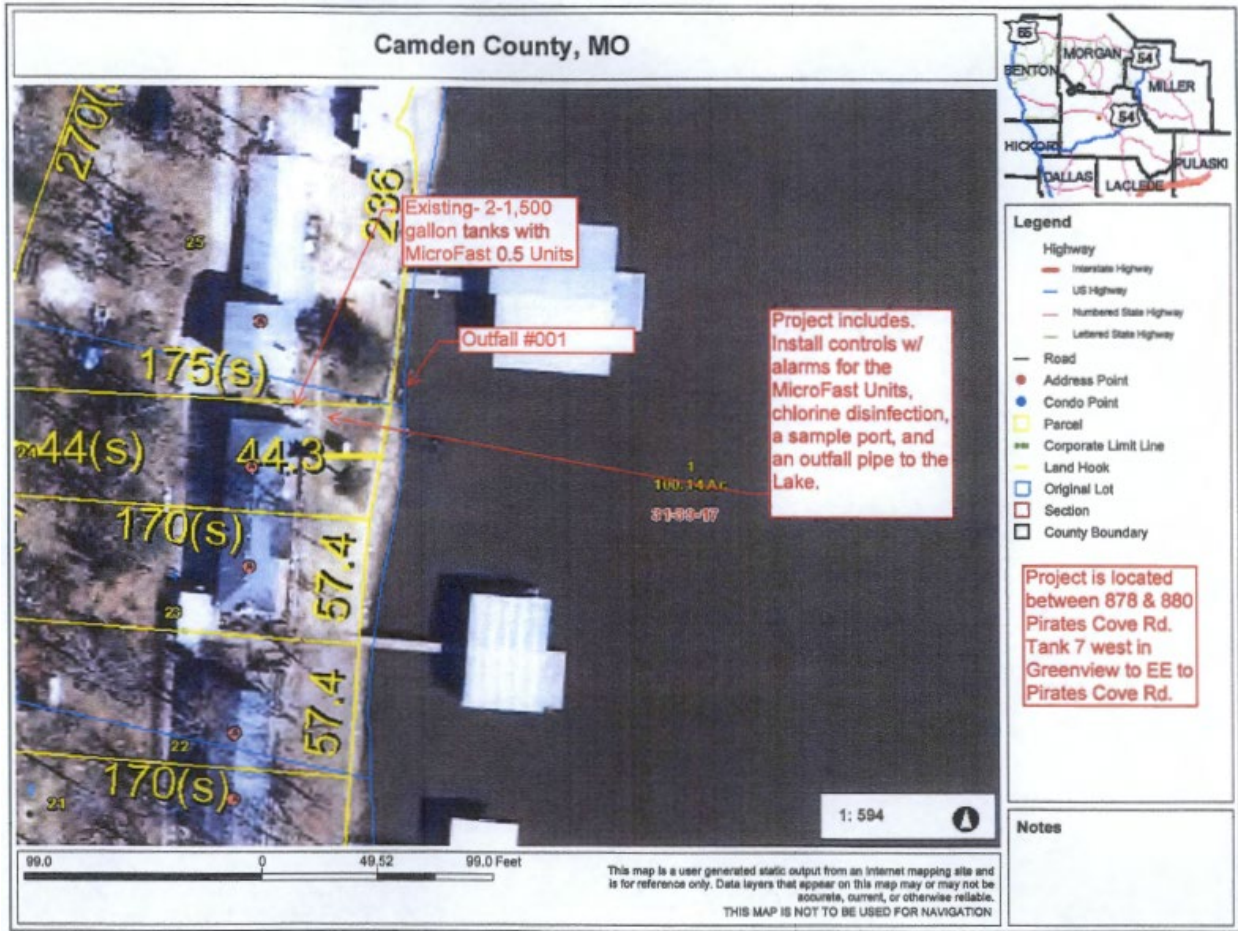
\* Describe predominating character of effluent. Example: Domestic Wastewater, Municipal Wastewater, Industrial Wastewater, Storm water, Mining Leachate, etc.  
 \*\* If expansion, indicate new design flow.

See General Instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. 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.

SIGNATURE <i>Shelly Hall</i>	DATE 12-13-17
PRINT NAME Shelly Hall, PE	EMAIL ADDRESS shelly@loenvironmental.com

<p><b>Applicant supplied (check all that apply):</b></p> <input type="checkbox"/> Fee. See Instructions <input type="checkbox"/> Attachment A - Significant Degradation <input type="checkbox"/> Attachment B - Minimal Degradation <input type="checkbox"/> Attachment C - Temporary degradation <input type="checkbox"/> Attachment D - Tier 1 Review <input type="checkbox"/> No Degradation Evaluation <input type="checkbox"/> Heritage Review Determination. See Instruction #8. <input type="checkbox"/> Geohydrologic Evaluation. See Instruction #9. <input type="checkbox"/> Tier Analysis for minimal degradation (see Page 3, Tier 2 Reviews). <input type="checkbox"/> Quality Assurance Project Plan. <input type="checkbox"/> Time of travel study (see Instruction #3) or model (see Instruction #2).	<p>TELEPHONE NUMBER WITH AREA CODE (573) 964-6956</p> <p><b>Submit request to:</b>          Missouri Department of Natural Resources,          Water Protection Program,          ATTN: WPCB Engineering Section          P.O. Box 176          Jefferson City, MO 65102-0176          Telephone: 573-751-1300          Fax: 573-522-9920</p>
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PIRATES COVE WWTF COST ANALYSIS					
	Construction Cost	Operations Cost	PW 20 years @ 5%		
AdvanTex	\$37,300.00	\$3,870.00	\$48,227.94	\$85,527.94	178.23%
MicroFAST w/Bioclere	\$31,500.00	\$5,100.00	\$63,556.20	\$95,056.20	198.09%
MicroFAST	\$2,500.00	\$3,650.00	\$45,486.30	\$47,986.30	100.00%
BioBarrier	\$42,100.00	\$4,650.00	\$57,948.30	\$100,048.30	208.49%
O&M after the first year					
Estimated Operating Cost AdvanTex					
		Labor	\$1,320.00		
		Lab Cost	\$600.00		
		Electric	\$1,200.00		
		Replacement	\$750.00		
			\$3,870.00		
Estimated Operating Cost MicroFAST w/Bioclere					
		Labor	\$1,500.00		
		Lab Cost	\$600.00		
		Electric	\$1,800.00		
		Replacement	\$1,200.00		
			\$5,100.00		
Estimated Operating Cost MicroFAST					
		Labor	\$1,350.00		
		Lab Cost	\$600.00		
		Electric	\$1,200.00		
		Replacement	\$500.00		
			\$3,650.00		
Estimated Operating Cost Bioclere					
		Labor	\$1,500.00		
		Lab Cost	\$600.00		
		Electric	\$1,800.00		
		Replacement	\$750.00		
			\$4,650.00		



Appendix C: Geohydrologic Evaluation



**Missouri Department Of Natural Resources**

Division of Geology and Land Survey  
 P.O. Box 250  
 Rolla, Missouri 65402-0250  
 Phone - 573.368.2161 Fax - 573.368.2111  
 E-mail - gspgeol@dnr.mo.gov

Project ID Number

**LWE15006**

County

**CAMDEN**

**Geohydrologic Evaluation of Liquid-Waste Treatment Site**

Project **Pirates Cove WWTP** Quadrangle **GREEN BAY TERRACE**  
 Location **SE, SW, NW** Section **31** Township **39 N** Range **17 W**  
 Additional Location Information **Part of Lot 4 Lindsay's Sub #1**  
 Latitude **38 Deg 4 Min 45 Sec** Longitude **92 Deg 50 Min 38 Sec**

**Owner** Pirates Cove WWTP

Pirates Cove Camdenton MO 65020

**Requestor** Lake Professional Engineering Services  
 Jim Jackson, PE  
 PO Box 27 Camdenton MO 65020

(573) 873-3898

Previous Report  Not Applicable

Date

Identification Number

Fiscal Year

**Facility Type**

- Mechanical treatment plant
- Recirculating filter bed
- Earthen lagoon with discharge
- Earthen holding basin
- Land application
- Other type of facility

**Type of Waste**

- Animal
- Human
- Process or industrial
- Leachate
- Other waste type

**Funding Source**

- PPG
- WWLF-SRF
- Non-Point Source

**Other Information**

- Plans were submitted
- Site was investigated by NRCS
- Soil or geotechnical data were submitted

**Date of Field Visit** 08/14/2014

**Stream Classification**  Gaining  Losing  No discharge

**Overall Geologic Limitations**

- Slight
- Moderate
- Severe

**Collapse Potential**

- Not applicable
- Slight
- Moderate
- Severe

**Topography**

- < 4%
- 4% to 8%
- 8% to 15%
- > 15%

**Landscape Position**

- Broad uplands
- Ridgetop
- Hillslope
- Narrow ravine
- Floodplain
- Alluvial plain
- Terrace
- Sinkhole

**Bedrock** The uppermost bedrock was not observed onsite, however, nearby bedrock exposures and drill logs indicate that it is moderately to highly permeable Ordovician-age Gunter Sandstone Member or possibly Cambrian-age Eminence Dolomite.

**Surficial Materials** The surficial materials are 10 to 20 feet of residuum derived from the Ordovician-age Gasconade Dolomite and Gunter Sandstone Member that is sandy, cherty, silt and has moderate to high permeability.

Project ID Number **LWE15006**

Page 2

**Recommended Construction Procedures**

- Installation of clay pad
- Diversion of subsurface flow
- Rock excavation
- Compaction
- Artificial sealing
- Limit excavation depth

**Required Geologic Exploration**

(Missouri Clean Water Commission - 10 CSR 20 - 8.200 Wastewater Treatment Ponds)

**Determine Overburden Properties**

- Partical size analysis
- Standard Proctor density
- Permeability coefficient for undisturbed sample
- Atterburg limits
- Overburden thickness
- Permeability coefficient for remolded sample

**Determine Hydrologic Conditions**

- Groundwater elevation
- Direction of groundwater flow
- 25-year flood level
- 100-year flood level

**Notify Geologist**

- Before exploration
- During constructio
- After construction
- Not necessary

**Remarks**

On August 14, 2014, a geologist with the Geological Survey Program (GSP) conducted a geohydrologic evaluation for a proposed discharging recirculating filter bed (RFB) for Pirates Cove Waste Water Treatment Plant (WWTP). The purpose of the site visit was to observe the geologic and hydrologic elements of the site and determine the potential for groundwater contamination in the event of treatment failure.

The uppermost bedrock was not observed onsite, however, nearby bedrock exposures and drill logs indicate that it is moderately to highly permeable Ordovician-age Gunter Sandstone Member or possibly Cambrian-age Eminence Dolomite. The surficial materials are 10 to 20 feet of residuum derived from the Ordovician-age Gasconade Dolomite and Gunter Sandstone Member that is sandy, cherty, silt and has moderate to high permeability.

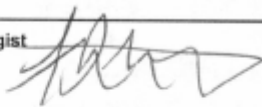
Discharge from the proposed Pirates Cove WWTP's RFB is east, less than 150 feet into the Lake of the Ozarks that is considered gaining for discharge purposes.

There are no sinkholes or springs located within one mile of the proposed facility. However, there is an inactive fault within ¼ miles of the site that is part of the Neongwah fault and fold structure.

Based on the geologic and hydrologic characteristics observed, the site receives a slight geologic limitations rating. In the event of treatment failure, the local, shallow groundwater aquifer may be adversely impacted and the surface waters of the Lake of the Ozarks.

This document is a preliminary report. It is not a permit. Additional data may be required by the Department of Natural Resources prior to the issuance of a permit. This report is valid only at the above location and becomes invalid one year after the report date below.

Report By: Fletcher Bone, Geologist



Report Date: 8/22/2014


CC SWRO; WPP



8-22-2014



Appendix D: Natural Heritage Review

	<b>Missouri Department of Conservation</b> <b>Natural Heritage Review Report</b> March 6, 2018 – Page 1 of 2		Resource Science Division P. O. Box 180 Jefferson City, MO 65102 Prepared by: Brittne Brauner Brittne.Brauner@mdc.mo.gov (573) 522 – 4115 ext. 3182
	SHELLY HALL LO ENVIRONMENTAL, LLC 1071 INDUSTRIAL DRIVE OSAGE BEACH, MO 65065	Project type: <b>LAND DEVELOPMENT</b> Location/Scope: <b>T39N R17W S31</b> County: <b>CAMDEN</b> Query reference: <b>PIRATES COVE</b> Query received: <b>1/30/2018</b>	
<p><i>This NATURAL HERITAGE REVIEW is not a site clearance letter. Rather, it identifies public lands and sensitive resources known to have been located close to and/or potentially affected by the proposed project. On-site verification is the responsibility of the project. Natural Heritage records were identified at some date and location. This report considers records near but not necessarily at the project site. Animals move and, over time, so do plant communities. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean a protected species will not be encountered. These records only provide one reference and other information (e.g. wetland or soils maps, on-site inspections or surveys) should be considered. Look for additional information about the biological and habitat needs of records listed in order to avoid or minimize impacts. More information is at <a href="http://mdc.mo.gov/discover-nature/places-go/natural-areas">http://mdc.mo.gov/discover-nature/places-go/natural-areas</a> and <a href="http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx">mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx</a>.</i></p>			
<p><b>Level 3 issues: Records of federal-listed (these are also state-listed) species or critical habitats near the project site:</b></p> <p>Natural Heritage records identify Gray bats (<i>Myotis grisescens</i>, federal and state-listed endangered) occur 2 miles from the project area. Gray bats forage over streams, rivers, and reservoirs. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See <a href="http://mdc.mo.gov/104">http://mdc.mo.gov/104</a> for best management recommendations.</p> <p><small>FEDERAL LIST species/habitats are protected under the Federal Endangered Species Act. Contact the U.S. Fish and Wildlife Service (101 Park Drive Suite A, Columbia, Missouri 65203-0007; 573-234-2132) for Endangered Species Act coordination and concurrence information.</small></p>			
<p><b>Level 2 issues: Records of state-listed (not federal-listed) endangered species AND / OR state-ranked (not state-listed endangered) species and natural communities of conservation concern. The Department tracks these species and natural communities due to population declines and/or apparent vulnerability.</b></p> <p>Natural Heritage records identify <u>no</u> state-listed endangered species within the project area.</p> <p>Natural Heritage records identify <u>no</u> state-ranked species and/or natural communities within the project area.</p> <p>See <a href="https://nature.mdc.mo.gov/sites/default/files/downloads/2017-SOCC.pdf">https://nature.mdc.mo.gov/sites/default/files/downloads/2017-SOCC.pdf</a> for a complete list of species and communities of conservation concern.</p> <p><small>STATE ENDANGERED species are listed in and protected under the Wildlife Code of Missouri (3CSR10-4.111).</small></p>			
<p><b>General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific Natural Heritage records):</b></p> <ul style="list-style-type: none"> <li>➤ Indiana bats (<i>Myotis sodalis</i>, federal and state-listed endangered) and Northern long-eared bats (<i>Myotis septentrionalis</i>, federal-listed threatened) occur in Camden County and could occur within the project area. Both species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves</li> </ul>			



known to harbor Indiana bats or Northern long-eared bats, especially from September to April. If any trees need to be removed by your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 Ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.

- Bald eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: <http://www.fws.gov/midwest/MidwestBird/EaglePermits/index.html> if eagle nests are seen.
- Camden County has known [karst geologic features](#) (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in Natural Heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area.
- [Clean Water Act](#) permits issued by other agencies regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.
- Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.
- [Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers](#) is a Conservation Department publication available at [http://mdc.mo.gov/sites/default/files/resources/2013/02/constprojnearstreams\\_2013.pdf](http://mdc.mo.gov/sites/default/files/resources/2013/02/constprojnearstreams_2013.pdf)
- Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.
  - Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
  - Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
  - When possible, wash and rinse equipment thoroughly with hard spray or HOT water ( $\geq 140^{\circ}$  F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Natural Heritage records largely reflect sites visited by specialists in the last 30 years. Many privately owned tracts have not been surveyed and could host remnants of species once but no longer common.



STANDARD CONDITIONS FOR NPDES PERMITS  
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REVISED  
AUGUST 1, 2014

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 alternates 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 method 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 if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
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 use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
  - 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.
2. **Non-compliance Reporting.**
  - 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.





STANDARD CONDITIONS FOR NPDES PERMITS  
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MISSOURI CLEAN WATER COMMISSION  
REVISED  
AUGUST 1, 2014

- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
    - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
    - ii. Any upset which exceeds any effluent limitation in the permit.
    - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
  - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
  4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
  5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
  6. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
  7. **Discharge Monitoring Reports.**
    - a. Monitoring results shall be reported at the intervals specified in the permit.
    - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
    - c. Monitoring results shall be reported to the Department no later than the 28<sup>th</sup> day of the month following the end of the reporting period.
- 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).
  - c. 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 permitted 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).
      - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
    - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

## Section C – Bypass/Upset Requirements

1. **Definitions.**
  - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
  - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
  - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
  - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

## 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



STANDARD CONDITIONS FOR NPDES PERMITS  
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MISSOURI CLEAN WATER COMMISSION  
REVISED  
AUGUST 1, 2014

- imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) 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)(iii) 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 permittee 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.



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MISSOURI CLEAN WATER COMMISSION  
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AUGUST 1, 2014

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.

**STANDARD CONDITIONS FOR NPDES PERMITS**  
**ISSUED BY**  
**THE MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**  
**March 1, 2015**

**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 1**

Biosolids ceiling concentration <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

<sup>1</sup> 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 2**

Biosolids Low Metal Concentration <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

<sup>1</sup> 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 3**

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total <sup>1</sup>	Annual	Total <sup>1</sup>	Annual	Total <sup>1</sup>
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

<sup>1</sup> 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 <sup>1</sup>

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000 <sup>2</sup>
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil) <sup>3</sup>
Other	<sup>4</sup>

<sup>1</sup> Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

<sup>2</sup> 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.

<sup>3</sup> Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

<sup>4</sup> Case by case review. Concentrations in sludge should not exceed the 95<sup>th</sup> 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  
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor<sup>1</sup>).  
<sup>1</sup>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:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$

<sup>1</sup> 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  $\geq 70\%$  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  $\geq 70\%$  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

- 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 5**

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN <sup>1</sup>	Nitrogen PAN <sup>2</sup>	Priority Pollutants and TCLP <sup>3</sup>
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	-- <sup>4</sup>
10,001 +	1 per week	1 per week	1 per day	-- <sup>4</sup>

<sup>1</sup> Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids.

This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.

Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

- 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.
- 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.
- 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

- 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.
- Reporting period
  - By January 28<sup>th</sup> 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.
  - 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.
- Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
- 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  
**FORM B: APPLICATION FOR OPERATING PERMIT FOR FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000 GALLONS PER DAY**

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED
JETPAY CONFIRMATION NUMBER	

**READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**

**1. THIS APPLICATION IS FOR:**

- An operating permit for a new or unpermitted facility. Construction Permit # \_\_\_\_\_  
(Include completed antidegradation review or request for antidegradation review, see instructions)
- A new site-specific operating permit formerly general permit #MOG \_\_\_\_\_
- A site-specific operating permit renewal: Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_
- A site-specific operating permit modification: Permit #MO- 0137863 Reason: 09/30/2023
- General permit (NON-POTWs) (MOGD –discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):  
Permit #MO- \_\_\_\_\_ Expiration Date \_\_\_\_\_

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)?  YES  NO

**2. FACILITY**

NAME Pirates Cove WWTF		TELEPHONE NUMBER WITH AREA CODE	
ADDRESS (PHYSICAL) between 878 & 880 Pirates Cove Rd	CITY Camdenton	STATE MO	ZIP CODE 65020

2.1 Legal description: Sec. 31 , T 39n , R 17w County Camden

2.2 UTM Coordinates Easting (X): 513718 Northing (Y): 4214639  
 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Lake of the Ozarks

2.4 Number of outfalls: 1 Wastewater outfalls: 1 Stormwater outfalls: Instream monitoring sites:

**3. OWNER: The owner of the regulated activity/discharge being applied for and is not necessarily the owner of the real property on which the activity or discharge is occurring.**

NAME Pirates Four HOA, Inc.		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
ADDRESS 3924 SW Windson Drive	CITY Lee's Summit	STATE MO	ZIP CODE 64082		

3.1 Request review of draft permit prior to public notice?  YES  NO

3.2 Are you a publicly owned treatment works?  YES  NO  
 If yes, please attach the Financial Questionnaire. See: <https://dnr.mo.gov/forms/780-2511-f.pdf>

3.3 Are you a privately owned treatment works?  YES  NO

3.4 Are you a privately owned treatment facility regulated by the Public Service Commission?  YES  NO

**4. CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the facility.**

NAME same as owner		EMAIL ADDRESS		TELEPHONE NUMBER WITH AREA CODE	
ADDRESS	CITY	STATE	ZIP CODE		

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

**5. OPERATOR**

NAME not required	TITLE	CERTIFICATE NUMBER
EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE	

**6. FACILITY CONTACT**

NAME Pat M. Kelley		TITLE	
EMAIL ADDRESS patmkelley48@gmail.com		TELEPHONE NUMBER WITH AREA CODE 816-898-3449	
ADDRESS 3924 SW Windsong Drive	CITY Lee's Summit	STATE MO	ZIP CODE 64082

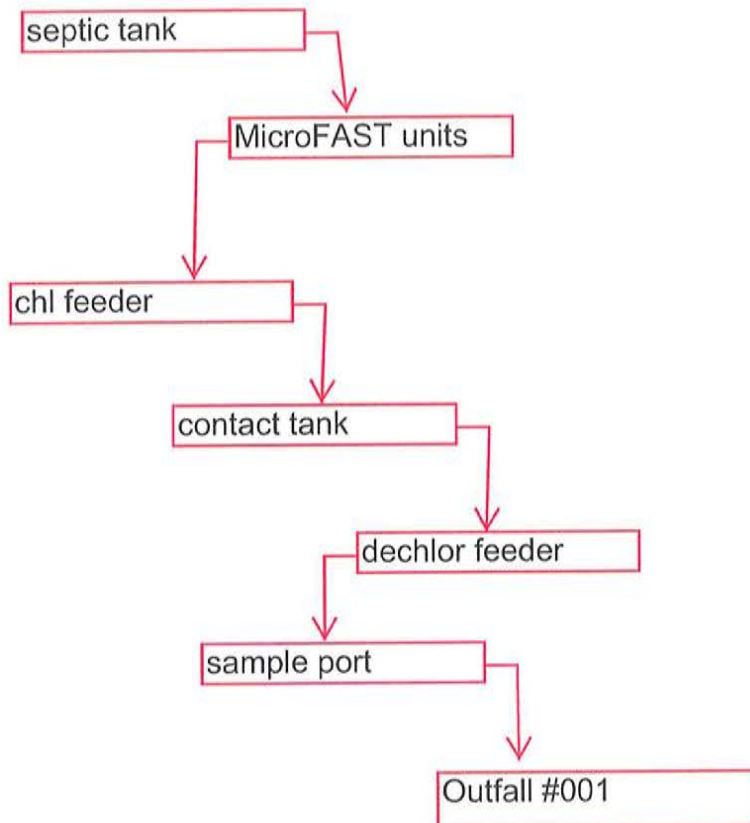


## 7. DESCRIPTION OF FACILITY

**7.1 Process Flow Diagram or Schematic:** Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.

Attach sheets as necessary.

wastewater gravity flows to 2 - 1,500 gallon 2 compartment septic tanks each with 0.5 MicroFAST units installed. Flow then goes to the chlorine feeder, to the contact tank, to the dechlor feeder, to the sample port where the sample is collected, then to the outfall. There is no process changes in the routing of wastewater during dry or peak wet weather.



**7.2** Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

Please see the following website:

<https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e0854478ca0dae87c33c8c5ce>



8. ADDITIONAL FACILITY INFORMATION		
8.1	Facility SIC code: <u>4952</u> Discharge SIC code: _____	
8.2	Number of people presently connected or population equivalent (P.E.) <u>15</u>	Design P.E. <u>18.5</u>
8.3	Connections to the facility: <u>5</u> Number of units presently connected: Residential: <u>5</u> Commercial: _____ Industrial: _____	
8.4	Design flow: <u>1000</u>	Actual flow: <u>600</u>
8.5	Will discharge be continuous through the year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Discharge will occur during the following months: _____ How many days of the week will discharge occur? _____	
8.6	Is industrial wastewater discharged to the facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, attach a list of the industries that discharge to your facility	
8.7	Does the facility accept or process leachate from landfills? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
8.8	Is wastewater land applied? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, attach Form I. See: <a href="https://dnr.mo.gov/forms/780-1686-f.pdf">https://dnr.mo.gov/forms/780-1686-f.pdf</a>	
8.9	Does the facility discharge to a losing stream or sinkhole? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
8.10	Has a wasteload allocation study been completed for this facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
9. LABORATORY CONTROL INFORMATION		
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL		
Lab work conducted outside of plant.		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Push-button or visual methods for simple test such as pH, settleable solids.		<input type="checkbox"/> Yes <input type="checkbox"/> No
Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content.		<input type="checkbox"/> Yes <input type="checkbox"/> No
More advanced determinations such as BOD seeding procedures, fecal coliform/ <i>E. coli</i> , nutrients (including Ammonia), Oil & Grease, \ total oils, phenols, etc.		<input type="checkbox"/> Yes <input type="checkbox"/> No
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph.		<input type="checkbox"/> Yes <input type="checkbox"/> No
10. COLLECTION SYSTEM		
10.1 Are there any municipal satellite collection systems connected to this facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please list all connected to this facility, contact phone number and length of each collection system		
FACILITY NAME	CONTACT PHONE NUMBER	LENGTH OF SYSTEM (FEET OR MILES)
10.2 Length of pipe in the sewer collection system? (If available, include totals from satellite collection systems) _____ Feet, or _____ Miles (either unit is appropriate)		
10.3 Does significant infiltration occur in the collection system? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:		

**11. BYPASSING**Does any bypassing occur in the collection system or at the treatment facility?  Yes  No

If yes, explain:

**12. SLUDGE HANDLING, USE AND DISPOSAL**12.1 Is the sludge a hazardous waste as defined by 10 CSR 25?  Yes  No12.2 Sludge production, including sludge received from others: 0.13 Design dry tons/year <0.1 Actual dry tons/year12.3 Capacity of sludge holding structures:  
Sludge storage provided: \_\_\_\_\_ cubic feet; \_\_\_\_\_ days of storage; \_\_\_\_\_ average percent solids of sludge;  
 No sludge storage is provided.  Sludge is stored in lagoon.12.4 Type of Storage:  Holding tank  Building  
 Basin  Lagoon  
 Concrete Pad  Other (Describe) \_\_\_\_\_12.5 Sludge Treatment:  
 Anaerobic Digester  Lagoon  Composting  
 Storage Tank  Aerobic Digester  Other (Attach description)  
 Lime Stabilization  Air or Heat Drying12.6 Sludge Use or Disposal:  
 Land Application  Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)  
 Contract Hauler  Hauled to Another treatment facility  
 Incineration  Sludge Retained in Wastewater treatment lagoon  
 Solid waste landfill12.7 Person responsible for hauling sludge to disposal facility:  
 By applicant  By others (complete below)

NAME contract hauler		EMAIL ADDRESS	
ADDRESS	CITY	STATE	ZIP CODE
CONTACT PERSON		TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-

12.8 Sludge use or disposal facility  
 By applicant  By others (Complete below.)

NAME contract hauler		EMAIL ADDRESS	
ADDRESS	CITY	STATE	ZIP CODE
CONTACT PERSON		TELEPHONE NUMBER WITH AREA CODE	PERMIT NO. MO-

12.9 Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?  
 Yes  No (Explain)

**13. 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 complete the eDMR Registration by clicking on the following link: <https://dnr.mo.gov/forms/780-2204-f.pdf>.

- 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.


**14. 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.

New Site Specific Permit: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/591/>  
 Construction Permits: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/>  
 Modification Fee: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/>  
 New General Domestic WW: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/772/>

**15. 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 (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Shelly Hall, PE	Contract Operator	573-964-6956
SIGNATURE 		DATE SIGNED 11/20/2020



# Camden County, MO



- Legend**
- Highway
    - Interstate Highway
    - US Highway
    - Numbered State Highway
    - Lettered State Highway
  - Road
  - Address Point

- Land Hook
  - DASHED LAND HOOK
  - SOLID LAND HOOK
- Original Lot
- Section
- County Boundary

**Notes**

This Cadastral Map is for informational purposes only. It does not purport to represent a property boundary survey of the parcels shown and shall not be used for conveyances or the establishment of property boundaries.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Collected Date , Time	Ammonia as	Biological	E.coli	Solids, Total	Chlorine	Dissolved	Flow	pH				
	N	Oxygen	(#/100mL)	Suspended	Residual (ug/L)	Oxygen	(MGD)	(Units)				
Limit	3.0 mg/L	20 mg/L	126	20 mg/L	130		0.001	6-9				
10/22/2019 11:00	<1.0	7.5	1732	8	20	9.13	0.0002	8.2	daily limit E.coli exceed			
10/30/2019 0:00			<1.0						monthly geometric mean below limit			
Nov. No Discharge												
Dec. No Discharge												
Jan. No Discharge												
Feb. No Discharge												
Mar. No Discharge												
4/22/2020 8:45	0.8	<4.0	49.6	<2.0	80	9.1	0.0004	7.9				
May No Discharge												
Jun. No Discharge												
Jul. No Discharge												
8/27/2020 15:40	<1.0	<4.0	>2419.60	2.6	<20		0.00045	7.3	daily limit E.coli exceed			
8/27/2020 16:30			<1.0		20				monthly geometric mean below limit			
9/24/2020 11:40	12.4	44	>2419.6	16	<20		0.00065	6.7	Equipment failure. Tank pumped and repair			
9/30/2020 15:55		<4.0	<1.0									
10/22/2020 11:00	2.74	<4.0	<1.0	3.8	30	7.06	0.0006	7.3				



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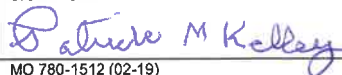
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NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Patrick M. Kelley	President	816-898-3449
SIGNATURE	DATE SIGNED	
	12/01/2020	

MO 780-1512 (02-19)