Permit No. CP0001949

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Stonebraker WWTP
Bear Paw Road
Camdenton, MO 65020

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the Department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the Department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

April 25, 2018
Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

April 24, 2020
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Stonebraker Estates is a planned 4 house development, with 1 existing house and 3 planned houses. The construction of the treatment plant and collection system is to serve a design average flow of 1480 gpd and serves a hydraulic population equivalent of approximately 15 people. At each house there will be a 1,500 gallon septic tank, which will then be pumped to the 2,000 gallon pre-anoxic tank then flow to the first 1,500 gallon recirculation tank for treatment by 4 Advantex AX20 units or equal units then flows are either returned to the 1st recirculation tank or on to the 2nd recirculation tank for additional treatment by 2 Advantex AX20 units and then flows are split to return to the pre-anoxic tank or to the Norweco AT 1500 UV disinfection system and then gravity discharge to Lake of the Ozarks.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. COST ANALYSIS FOR COMPLIANCE

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a “finding of affordability” on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

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.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be in accordance with the plans and specifications submitted by Midwest Engineering on October 30, 2017 and revised on January 22, 2018 and February 27, 2018.

3. The Department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.

5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"

6. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment.

7. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.

8. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.

9. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."

10. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.

    A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the Department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.

    B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.

C. Manholes shall be located with the top access at or above grade level.

D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:

a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or

b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the Department for use in water main construction.

11. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

12. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.

13. Upon completion of construction:

A. Ms. Kimberly Tyler will become the continuing authority for operation, maintenance, and modernization of these facilities;

B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit be issued; and

C. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Stonebraker Estates is a planned 4 house development, with each house having 5 bedrooms. The construction of the treatment plant and collection system is to serve the 1 existing house and the other planned 3 houses.

2. FACILITY DESCRIPTION

The Stonebraker WWTP is located on Bear Paw Road and Stonebraker Dr., Camdenton, in Camden County, Missouri. The facility has a design average flow of 1,480 gpd and serves a hydraulic population equivalent of approximately 15 people.

3. COMPLIANCE PARAMETERS

The proposed project is expected to help the facility meet the following final effluent limits:

EFFLUENT PARAMETER(S)	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Flow	MGD	*		*
Biochemical Oxygen Demand$_5$	mg/L		30	20
Total Suspended Solids	mg/L		30	20
E. coli	#/100mL	630		126
Ammonia as N	mg/L	1.7		0.6
EFFLUENT PARAMETER(S)	UNIT	MINIMUM		MAXIMUM
pH	SU	6.5		9.0

* Monitoring requirement only.

4. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated March 13. 2018, due to the facility being a new discharge to Lake of the Ozarks. The Antidegradation Review was public noticed from March 23, 2018 to April 23, 2018 with the draft operating permit. See **APPENDIX A: ANTIDEGRADATION REVIEW** of the draft operating permit for the discussion. The effluent limits set as part of the Antidegradation review are listed in Section 3 above.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The current design guides, 10 CSR 20-8, do not contain design parameters for a STEP system followed by a recirculating media filter and UV disinfection.

Construction will cover the following items:

- Construction of a STEP system with approximately 1202 lf of 2-inch PVC SDR-21 force main.
- Septic Tank – A septic tank provides passive primary treatment as the settleable solids in raw wastewater settle onto the bottom of the tank. Raw wastewater will flow by gravity to the 1500 gallon two compartment septic tank. When the water level reaches a certain height, the wastewater flows into the second compartment by two tee-drop pipes.
    - The septic tanks provide approximately 4 days of detention at design average flow and 2 days at peak flow.
    - Screened simplex pumps each capable of 10 gpm at 180 ft of TDH are located in the second compartment of the septic tank.
    - The pumped wastewater shall discharge into the pre-anoxic tank. Settled solids in the septic tank shall be removed by a contract hauler.
- The pre-anoxic tank will be a 2,000 gallon tank which will then flow by gravity into the first recirculation tank.
- Recirculation Tank – Construction of 2 recirculation tanks to pump wastewater to the recirculating media filter. Each recirculation tank is 14 ft x 6 ft x 5.37 ft deep with a wastewater volume of approximately 1500 gallons.
    - The high head effluent pumps in the recirculation tanks are Orenco systems Model PF3005 or approved equivalent, 0.5 HP capable of 5 gpm at 110 TDH.
    - The pumps transfer wastewater to 6 Advantex AX20 units, 4 after the first recirculation tank and 2 after the second recirculation tank.
- The Advantex AX20 units. The Advantex system is a packed bed media filter with proprietary textile media.
    - The Advantex tank is 3 ft x 2.5 ft x 7 ft.
    - The filter is rated for an average hydraulic loading rate of 25 gallons per day per square foot.
    - The distribution manifold will have 5 laterals with 32 holes per lateral for a total of 160 holes per unit or an overall total of 640 holes between the units.
- If flows are pumped to the 2nd recirculation tank, flows will then be recycled back to the pre-anoxic tank or discharged to the disinfection system.
    - The pump back to the pre-anoxic tank is an Orenco Model PF1005 or equivalent, 0.5 HP.
- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
    - A Norweco AT1500 UV disinfection system capable of treating a peak flow of 8,640 gpd while delivering a minimum UV intensity of 40 mJ/cm^2 with an expected ultraviolet transmissivity of 65% or greater. The UV system consists of two modules in series with 1 lamp per module.
    - The disinfected effluent will flow by gravity through flow measurement equipment and to Outfall No. 001.
- Design sludge production is 0.148 tons per year. Sludge will be stored in the septic tanks and removed by pump truck to a permitted facility.

- Emergency Operation is contact a pump truck for pumping the septic tanks or lift station. There is one pump for emergency replacement.
- All tanks are to be installed above elevation of 664 to reduce impact of flooding by Lake of the Ozarks.

6. OPERATING PERMIT

The draft operating permit with the antidegradation review was public noticed on March 23, 2018 to April 23, 2018 with no comments received. Upon construction completion, submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit be issued. The facility has paid for their operating permit.

Leasue Meyers, EI
Engineering Section
leasue.meyers@dnr.mo.gov

RECEIVED
OCT 13 2017
Water Protection Program

CP0001949
AP28433

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT WASTEWATER FACILITY

RECEIVED
OCT 30 2017
Water Protection Program

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED ~~$1000~~	CHECK NO. ~~7922~~
DATE RECEIVED ~~10-25-17~~ 10/30/17	

CK# 7922 $1,000 JS. JS.

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

1.1 Is this a Federal/State funded project? ☐ YES ☑ N/A Funding Agency: _____ Project #: _____

1.2 Is this an application for an agrichemical? ☐ YES (See instructions.) ☐ N/A

1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: _____ Pending Approval, Submitted

1.4 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☐ NO ☑ N/A (If Not Applicable, complete No. 1.5.)

1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
☑ YES ☐ NO

1.6 Is a copy of the appropriate plans* and specifications* included with this application?
☑ YES Denote which form is submitted: ☑ Hard copy ☐ Electronic copy (See instructions.) ☐ NO

1.7 Is a summary of design* included with this application? ☑ YES ☐ NO

1.8 Is a general operating permit applicable?
☐ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
☑ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☐ B ☐ B2

1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☑ NO

1.10 Is the appropriate fee included with this application? ☑ YES ☐ NO (See instructions for appropriate fee.)

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT
Stonebraker Waste Water Treatment Plant

2.2 PROJECT DESCRIPTION
Wastewater plant to serve four 5-bedroom homes.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
By contract hauler

2.4 DESIGN INFORMATION
A. Current population: 0 ; Design population: 14.8

B. Actual Flow: 0 gpd; Design Average Flow: 2400 gpd;
Actual Peak Daily Flow: 0 gpd; Design Maximum Daily Flow: 2400 gpd;
Design Wet Weather Event: 2400

2.5 ADDITIONAL INFORMATION
A. Is a topographic map attached? ☑ YES ☐ NO

B. Is a process flow diagram attached? ☑ YES ☐ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST
$ 75,000.00

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Stonebraker Waste Water Treatment Plant	(573) 286-1221	jktyler@yhti.net

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
Stonebraker Drive	Camdenton	MO	65020	Camden

Wastewater Treatment Facility: Mo- (Outfall Of)

3.1 Legal Description: ¼, ¼, ¼, Sec. , T , R
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 38.1 Northing (Y): -92.8
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Lake of the Ozark

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Kim Tyler, Same as	573-286-1221	jktyler@yhti.net

ADDRESS	CITY	STATE	ZIP CODE
84 River Oaks	Camdenton	MO	65020

5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Same as 4.0		

ADDRESS	CITY	STATE	ZIP CODE

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ N/A

5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.

A. Is a copy of the certificate of convenience and necessity included with this application? ☐ YES ☐ NO

5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.

A. Is a copy of the as-filed restrictions and covenants included with this application? ☐ YES ☐ NO

B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? ☐ YES ☐ NO

C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Matthew J. Marschke, P.E.	(573) 216-0066	matt.m@mwec.us

ADDRESS	CITY	STATE	ZIP CODE
5610 Alona Point	Osage Beach	Osage Bea	65065

7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.

PROJECT OWNER SIGNATURE
Kim Tyler

PRINTED NAME	DATE
Kim Tyler	10-10-17

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	EMAIL ADDRESS
Owner	(573) 286-1221	jktyler@yhti.net

Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.

PART B – LAND APPLICATION ONLY
(Submit only if the proposed construction project includes land application of wastewater.)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: ☐ Domestic ☐ State/National Park ☐ Seasonal business
☐ Municipal ☐ Municipal with a pretreatment program or significant industrial users
☐ Other (explain)

8.2 Months when the business or enterprise will operate or generate wastewater:
☐ 12 months per year ☐ Part of the year (list months):

8.3 This system is designed for:
☐ No-discharge ☐ Subsurface
☐ Partial irrigation when feasible and discharge rest of time
☐ Irrigation during recreational season, April – October, and discharge during November – March
☐ Other (explain)

9.0 STORAGE BASINS

9.1 Number of storage basins: _____ (Use additional pages if greater than two basins.)

9.2 Type of basins: ☐ Steel ☐ Concrete ☐ Fiberglass ☐ Earthen ☐ Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.
Basin #1: _____ ft Basin #2: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: _____ ft Basin #2: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal
☐ Subsurface Low Pressure Pipe ☐ Other (describe) _____

10.2 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.3 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops
☐ Other (describe)

10.4 Wastewater flow (dry weather) gallons per day: Average annual _____
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.7 Actual months used for irrigation (check all that apply):
☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec

10.8 Land application rate is based on:
☐ Hydraulic Loading ☐ Other (describe) _____
☐ Nutrient Management Plan (N and P) If N and P is selected, is the plan included? ☐ YES ☐ NO