

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

The Honorable
Mike Vanskike
Mayor of Shelbyville
P.O. Box 90
Shelbyville, MO 63469

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.

June 28, 2022
Effective Date

June 27, 2024
Expiration Date

A handwritten signature in black ink that reads 'Chris Wieberg'. Below the signature is a horizontal line.
Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

This project is the first of two planned enhancements for the three-lagoon treatment facility in Shelbyville, MO. This project is for the installation of a single channel ultraviolet disinfection system and accompanying minor changes to piping.

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 determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

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 consistent with plans and specifications signed and sealed by Mark C. Bross, P.E., with Klingler & Associates, P.C. and as described in this permit.
3. The Department must be contacted in writing prior to making any changes to the 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(11).

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 Northeast Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment and Lagoons-200 ft to residence and 50 ft to property line per 10 CSR 20-8.140(C)(2)
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
8. 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 <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. See <https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting> for more information.
9. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the Department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the Department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information.
10. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - The UV dosage shall be based on the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (A) 1.
 - If no flow equalization is provided for a batch discharger, the UV dosage shall be based on the peak batch flow. 10 CSR 20-8.190 (5) (A) 2.

- The UV system shall deliver the target dosage based on equipment derating factors and, if needed, have the UV equipment manufacturer verify that the scale up or scale down factor utilized in the design is appropriate for the specific application under consideration. 10 CSR 20-8.190 (5) (A) 3.
- The UV system shall deliver a minimum UV dosage of thirty thousand microwatt seconds per centimeters squared ($30,000 \mu\text{W} \cdot \text{s}/\text{cm}^2$). 10 CSR 20-8.190 (5) (A) 4.
- Open channel UV systems. The combination of the total number of banks shall be capable of treating the design peak hourly flow, maximum rate of pumpage, or peak batch flow. 10 CSR 20-8.190 (5) (B) 1.
- The UV system must continuously monitor and display at the UV system control panel the following minimum conditions:
 - The relative intensity of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. A.
 - The operational status and condition of each bank or closed vessel system; 10 CSR 20-8.190 (5) (C) 1. B.
 - The ON/OFF status of each lamp in the system; 10 CSR 20-8.190 (5) (C) 1. C. and
 - The total number of operating hours of each bank or each closed vessel system. 10 CSR 20-8.190 (5) (C) 1. D.
- The UV system shall include an alarm system. Alarm systems shall comply with 10 CSR 20-8.140(7)(C). 10 CSR 20-8.190 (5) (C) 2.

11. Upon completion of construction:

- A. The City of Shelbyville will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N)

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The Shelbyville WWTF is currently a three-cell lagoon with land application. The City is proposing to discontinue land application and construct a UV disinfection system. A NitrOx system for ammonia removal will be added at a later date.

2. FACILITY DESCRIPTION

The Shelbyville WWTF is located at south of Washington Street and Highway 15 in Shelbyville, in Shelby County, Missouri. The facility has a design average flow of 74,000 gpd and serves a population equivalent of approximately 740 people.

3. COMPLIANCE PARAMETERS

The existing facility currently has no disinfection. The proposed project is required to meet final effluent limits of 206 CFU/mL as established in Operating Permit MO-0054704.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Existing major components that will remain in use include the following:

Three Lagoon Cells – The influent is pumped into Lagoon Cells Nos. 1 and 2 by an existing pump station on the treatment plant site. Lagoon Cell No. 1 is non-aerated and has a surface area of 3.7 acres and a wastewater volume of 2,427,589 gallons. Lagoon Cell No. 2 is non-aerated and has a surface area of 1.11 acres and a wastewater volume of 977,553 gallons. Lagoon Cell No. 3 is a non-aerated finishing cell and has a surface area of 0.37 acres and a wastewater volume of 808,110 gallons. Together, these three cells provide approximately 57 days of retention at the proposed design flow.

Construction will cover the following items:

Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.

Open Channel Ultraviolet (UV) – An open channel, gravity flow, low pressure high intensity UV disinfection system capable of treating a peak flow of 244,000 gpd while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 50% or greater. The single open channel UV system consists of one bank with 1 module and 8 lamps. The disinfected effluent will flow by gravity through flow measurement equipment and to Outfall No. 001.

5. OPERATING PERMIT

6.

Operating permit MO-0054704 will require a modification to reflect the construction activities. It will be public noticed with the new facility description from May 27, 2022 to June 27, 2022. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

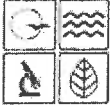
V. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: <https://ahc.mo.gov>

Bern Johnson, Associate Engineer
Engineering Section
bern.johnson@dnr.mo.gov

John Rustige, P.E.
Engineering Section
john.rustige@dnr.mo.gov



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 WATER PROTECTION PROGRAM
**APPLICATION FOR CONSTRUCTION PERMIT –
 WASTEWATER TREATMENT FACILITY**

| FOR DEPARTMENT USE ONLY | |
|--------------------------|-------------------|
| APP NO. | CP NO. |
| FEE RECEIVED \$500.00 | CHECK NO. 8994 |
| DATE RECEIVED 1-24-22 | |

89B

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility 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 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: _____ N/A
- 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: _____ NO (If No, complete No. 1.4.)
- 1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
 YES NO Exempt because _____
- 1.5 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
- 1.6 Is a summary of design* included with this application? YES NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
 YES Date of submittal: _____
 Enclosed is the appropriate operating permit application and fee submittal. Denote which form: A B B2
 N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice? YES NO
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? YES NO
- 1.9 Is the appropriate fee or JetPay confirmation included with this application? YES NO
 See Section 7.0

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

2.0 PROJECT INFORMATION

| | |
|---|--|
| 2.1 NAME OF PROJECT Shelbyville WWTF | 2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 770,667.00 |
|---|--|

2.3 PROJECT DESCRIPTION
 The project will consist of adding a UV system to aid in the removal of microbiological contaminants in the effluent waste water, prior to its discharge at the current outfall #001. In the future, a Nitrox System will be added between the existing lagoons and the proposed UV system to aid in ammonia removal.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

2.5 DESIGN INFORMATION

A. Current population: 524; Design population: 740

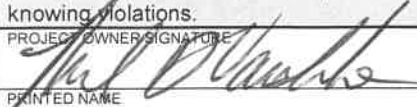
B. Actual Flow: _____ gpd; Design Average Flow: _____ gpd;
 Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd; Design Wet Weather Event: _____

2.6 ADDITIONAL INFORMATION

- A. Is a topographic map attached? YES NO
- B. Is a process flow diagram attached? YES NO

RECEIVED

JAN 24 2022

| 3.0 WASTEWATER TREATMENT FACILITY | | | | | |
|--|--|---|-------------|---|------------------|
| NAME Shelbyville WWTF | | TELEPHONE NUMBER WITH AREA CODE 573-633-2520 | | E-MAIL ADDRESS shelbyville@marktwain.net | |
| ADDRESS (PHYSICAL) 0.14 miles south of Washington St & Hwy 15 | | CITY Shelbyville | STATE MO | ZIP CODE 63649 | COUNTY Shleby |
| Wastewater Treatment Facility: Mo- (Outfall Of) | | | | | |
| 3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 29, T 58 N, R 10 W (Use additional pages if construction of more than one outfall is proposed.) | | | | | |
| 3.2 UTM Coordinates Easting (X): 582220 Northing (Y): 4405807 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83) | | | | | |
| 3.3 Name of receiving streams: Unnamed Tributary to Black Creek (U) | | | | | |
| 4.0 PROJECT OWNER | | | | | |
| NAME City of Shelbyville | | TELEPHONE NUMBER WITH AREA CODE 573-633-2520 | | E-MAIL ADDRESS shelbyville@marktwain.net | |
| ADDRESS P.O. Box 90 | | CITY Shelbyville | STATE MO | ZIP CODE 63469 | |
| 5.0 CONTINUING AUTHORITY: A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements. | | | | | |
| NAME City of Shelbyville | | TELEPHONE NUMBER WITH AREA CODE 573-633-2520 | | E-MAIL ADDRESS shelbyville@marktwain.net | |
| ADDRESS P.O. Box 90 | | CITY Shelbyville | STATE MO | ZIP CODE 63469 | |
| 5.1 A letter from the continuing authority, if different than the owner, is included with this application. <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> 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? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | | | | |
| D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | | | | |
| 6.0 ENGINEER | | | | | |
| ENGINEER NAME / COMPANY NAME Mark C. Bross, PE/Klingner & Associates, PC | | TELEPHONE NUMBER WITH AREA CODE 573-221-0020 | | E-MAIL ADDRESS mcb@klingner.com | |
| ADDRESS 4510 Paris Gravel Road | | CITY Hannibal | STATE MO | ZIP CODE 63401 | |
| 7.0 APPLICATION FEE | | | | | |
| <input checked="" type="checkbox"/> CHECK NUMBER <input type="checkbox"/> JETPAY CONFIRMATION NUMBER | | | | | |
| 8.0 PROJECT OWNER: 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. | | | | | |
| PROJECT OWNER SIGNATURE  | | | | | |
| PRINTED NAME Mike Vanskike | | | | DATE 2-12-22 | |
| TITLE OR CORPORATE POSITION Mayor | | TELEPHONE NUMBER WITH AREA CODE 573-633-2520 | | E-MAIL ADDRESS shelbyville@marktwain.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. | | | | | |