

**STATE OF MISSOURI**  
**DEPARTMENT OF NATURAL RESOURCES**  
**MISSOURI CLEAN WATER COMMISSION**



**CONSTRUCTION PERMIT**

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

John Trenshaw  
205 Trennoll Farm Lane  
Linn, MO 65051

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.

March 25, 2019  
Effective Date

March 24, 2021  
Expiration Date

  
Edward B. Galbraith, Director, Division of Environmental Quality

  
Chris Wieberg, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

Installation of a closed vessel ultraviolet disinfection system to serve a design flow of 7,700 gallons per day from a PE of 110 and a peak flow of up to 30,800 gpd. System will include two closed vessel gravity flow, low pressure high intensity units arranged in series with a monitoring system and audiovisual alarm system.

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 consistent with plans and specifications signed and sealed by Meco Engineering Company, Inc. 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 above the twenty-five (25)-year flood level.
6. 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.
7. 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](http://dnr.mo.gov/env/wpp/epermit/help.htm). See [dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm](http://dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm) for more information.
8. 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/](http://dnr.mo.gov/env/wpp/401/) for more information.
9. Upon completion of construction:
  - A. John Trenshaw 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). When the facility applies for their next operating permit renewal, they will be expected to include an updated facility description on their application.

## **IV. REVIEW SUMMARY**

### **1. CONSTRUCTION PURPOSE**

The existing operating permit for this facility includes final effluent limits for *E. coli* effective February 1, 2019. The proposed UV unit is being installed to meet these limits.

### **2. FACILITY DESCRIPTION**

Fairgrounds Apartments is a 10-building apartment complex. The current facility consists of a septic tank with a recirculating sand filter system. An ultraviolet disinfection system is proposed for installation to meet *E. coli* effluent limits.

The Fairground Apartments WWTP is located at Fairgrounds Lane, Linn, in Osage County, Missouri. The facility has a design average flow of 7,700 gpd and serves a hydraulic population equivalent of approximately 110 people. Actual flow is approximately 2,300 gallons per day.

### **3. COMPLIANCE PARAMETERS**

The proposed project is required to meet final effluent limits for *E. coli* of 1030 #/100 mL as a daily maximum and 206 #/100 mL as a monthly average as established in Operating Permit MO-0128953, effective February 1, 2019.

### **4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

**Construction will cover the following items:**

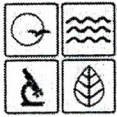
- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
- Closed Vessel Ultraviolet (UV) – Two aqua azul model IVO-15 closed vessel, gravity flow, low pressure high intensity UV disinfection units arranged in series will be installed, each capable of treating a peak flow of 21.4 gpd while delivering a minimum UV intensity of 30 mJ/cm<sup>2</sup> with an expected ultraviolet transmissivity of 65% or greater. The disinfected effluent will flow by gravity to Outfall No. 001. Monitoring will be provided for relative intensity of each unit, operational status and condition of each unit, ON/OFF status of each lamp in each unit, and total number of operating hours of each unit. An audiovisual alarm system will also be installed. The existing septic tanks can provide storage in the event of a power outage, and the pumps for the recirculating sand filter would not be running during a power outage, so there would also be no discharge during that time.

## **5. OPERATING PERMIT**

These construction activities do not require a modification to the operating permit. It is expected that the facility owner will include a new facility description in their next operating permit renewal application to reflect the installation of an ultraviolet disinfection system.

Cailie Carlile, PE  
Engineering Section  
[cailie.carlile@dnr.mo.gov](mailto:cailie.carlile@dnr.mo.gov)





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

**FOR DEPARTMENT USE ONLY**

APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

**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: N/A
- 1.4 Has the department approved the proposed project's facility plan\*?  
☒ YES Date of Approval: 1/25/2019 ☐ 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**

Wastewater Treatment Facility Improvements for Fairground Apartments

**2.2 PROJECT DESCRIPTION**

Installation of a UV Disinfection unit to meet upcoming E. coli effluent limits. There will be two UV units installed. Each unit is designed to disinfect wastewater at a rate of 20 gpm or 28,800 gpd. The Design Maximum Daily Flow is 30,800 gpd. With both units in service a total of 57,600 gpd should be able to be disinfected. The actual peak daily flow is expected to only reach 13,600 gpd, which is easily handled by just one unit.

**2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION**

Septage is stored in the septic tank and disposed of by a contract hauler.

**2.4 DESIGN INFORMATION**

A. Current population: 110; Design population: 110

B. Actual Flow: 3,400 gpd; Design Average Flow: 7,700 gpd;  
Actual Peak Daily Flow: 13,600 gpd; Design Maximum Daily Flow: 30,800 gpd;  
Design Wet Weather Event: N/A


**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**

\$ 25,491.00



3.0 WASTEWATER TREATMENT FACILITY				
NAME Fairgrounds Apartment WWTP		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS N/A
ADDRESS (PHYSICAL) Fairgrounds Lane	CITY Linn	STATE MO	ZIP CODE 65051	COUNTY Linn
Wastewater Treatment Facility: Mo- 0128953 (Outfall 001 Of 001 )				
3.1 Legal Description: ¼, SW ¼, NW ¼, Sec. 22 , T 43N , R 08W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 603767 Northing (Y): 4258083 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Cedar Creek (C) (3960)				
4.0 PROJECT OWNER				
NAME John Trenshaw		TELEPHONE NUMBER WITH AREA CODE (573) 680-6057		EMAIL ADDRESS N/A
ADDRESS 205 Trennoll Farm Lane	CITY Linn	STATE MO	ZIP CODE 65051	
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 Same as above		TELEPHONE NUMBER WITH AREA CODE		EMAIL ADDRESS
ADDRESS	CITY	STATE	ZIP CODE	
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 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 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 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 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 type="checkbox"/> NO				
6.0 ENGINEER				
ENGINEER NAME / COMPANY NAME Byron F. Shaw, Jr., P.E. / MECO Engineering Co., Inc.		TELEPHONE NUMBER WITH AREA CODE (573) 893-5558		EMAIL ADDRESS bshaw@mecoengineering.com
ADDRESS 2701 Industrial Drive	CITY Jefferson City	STATE MO	ZIP CODE 65109	
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 				
PRINTED NAME John Trenshaw			DATE 02/26/19	
TITLE OR CORPORATE POSITION President		TELEPHONE NUMBER WITH AREA CODE (573) 680-6057		EMAIL ADDRESS N/A
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.				