

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Joplin Turkey Creek WWTF
3457 W Eddy Ln
Joplin, MO 64801

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, 2021
Effective Date


Edward B. Galbraith, Director, Division of Environmental Quality

March 24, 2023
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The ultraviolet disinfection system is being modified to provide additional disinfection capabilities of peak wet weather flows. The expansion will match the existing Trojan UV3000Plus system. The proposed expansion will add 16 UV lamps for a total of 288 lamps. The disinfection system will be a gravity flow, low pressure high intensity UV disinfection system capable of treating a peak flow of 35 MGD gpd while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 65% or greater. Also included is internal piping from the tertiary filters to the disinfection system. These projects are part of phased improvements at the treatment plant. The Joplin Turkey Creek WWTF will maintain a design average flow of 15 MGD.

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 Allgeier, Martin, and Associates 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 Southwest 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. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.
8. 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 dnr.mo.gov/env/wpp/401/ for more information.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Emergency Power. Disinfection and dechlorination processes, when used, shall be provided during all power outages. 10 CSR 20-8.190 (2) (A)
 - 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.

10. Upon completion of construction:

- A. The City of Joplin 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 ultraviolet disinfection system is being modified to provide additional disinfection capabilities of peak wet weather flows. It is part of phased improvements at the treatment plant.

2. FACILITY DESCRIPTION

The Joplin Turkey Creek WWTF is located at 3457 W Eddy Lane, Joplin, in Jasper County, Missouri. The facility has a design average flow of 15 MGD and serves a hydraulic population equivalent of approximately 117,000 people. The existing

treatment plant includes influent screening, peak flow pumping, grit removal, comminution, flow splitter, primary clarification, biotowers, intermediate clarification, 2 oxidation ditches, final clarification, Diamond fabric filter, UV disinfection with step aeration prior to Turkey Creek. Solids management includes anaerobic sludge digestion, aerobic digestion, sludge belt press, drying beds before being land applied.

3. COMPLIANCE PARAMETERS

The facility will still be maintaining compliance with existing *E. Coli* effluent limits.

Parameter	Units	Monthly average limit
<i>E. coli</i>	#/100mL	206

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

The existing treatment plant includes influent screening, peak flow pumping, grit removal, comminution, flow splitter, primary clarification, biotowers, intermediate clarification, 2 oxidation ditches, final clarification, Diamond fabric filter, UV disinfection with step aeration prior to Turkey Creek. Solids management includes anaerobic sludge digestion, aerobic digestion, sludge belt press, drying beds before being land applied.

Construction will cover the following items:

- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms. Joplin’s existing ultraviolet disinfection system will be modified. The expansion will match the existing Trojan UV3000Plus system.
 - The horizontal lamp configuration with 2 channels with 2 banks per channel in series and 9 modules per bank with 8 lamps per module. The proposed expansion will retain the existing 224 lamps and add 16 lamps for a total of 288 lamps.
 - The disinfection system will be a gravity flow, low pressure high intensity UV disinfection system capable of treating a peak flow of 35 MGD gpd while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 65% or greater.
 - Backup power is supplied with 2 independent power supplies.
- Internal piping from the tertiary filters to the UV disinfection system.

5. OPERATING PERMIT

These construction activities do not require a modification to the operating permit.

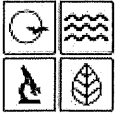
V. NOTICE OF RIGHT TO APPEAL

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>

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

Cailie Carlile, P.E.
Engineering Section
cailie.carlile@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	CHECK NO.
DATE RECEIVED	

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

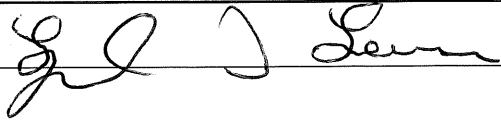
1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

- 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: 8/24/20 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 Turkey Creek WWTF UV Disinfection Expansion	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 700,000
2.3 PROJECT DESCRIPTION Removal of concrete channel baffles to permit the addition of UV lamps to the existing banks within the existing channels. See design summary for more UV information. Project also includes additional in plant piping from the tertiary filters to the UV structure.	
2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION No change to current sludge production, handling, or disposal processes.	
2.5 DESIGN INFORMATION A. Current population: <u>85,800 pe*</u> Design population: <u>117,000</u> * <u>population equivalent</u> B. Actual Flow: <u>11.6 mgd</u> Design Average Flow: <u>15 mgd</u> Actual Peak Daily Flow: <u>24 mgd</u> Design Maximum Daily Flow: <u>24 mgd</u> Design Wet Weather Event: <u>84 mgd</u>	
2.6 ADDITIONAL INFORMATION A. Is a topographic map attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO B. Is a process flow diagram attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	

3.0 WASTEWATER TREATMENT FACILITY				
NAME Joplin Turkey Creek Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE (417) 624-3615		E-MAIL ADDRESS
ADDRESS (PHYSICAL) 3457 W Eddy Ln		CITY Joplin	STATE MO	ZIP CODE 64801
COUNTY Jasper				
Wastewater Treatment Facility: Mo- (Outfall Of)				
3.1 Legal Description: <u> </u> ¼, <u>SW</u> ¼, <u>SW</u> ¼, Sec. <u>29</u> , T <u>28</u> , R <u>33W</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): <u>361664</u> Northing (Y): <u>4109167</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Turkey Creek</u>				
4.0 PROJECT OWNER				
NAME City of Joplin		TELEPHONE NUMBER WITH AREA CODE (417) 624-0820		E-MAIL ADDRESS llawson@joplinmo.org
ADDRESS 602 S Main St.		CITY Joplin	STATE MO	ZIP CODE 64801
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 Same as Owner		TELEPHONE NUMBER WITH AREA CODE		E-MAIL 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 Jared Nichols / Allgeier Martin and Assoc. Inc.		TELEPHONE NUMBER WITH AREA CODE 417-680-7200		E-MAIL ADDRESS jared.nichols@amce.com
ADDRESS 7231 E. 24th St.		CITY Joplin	STATE MO	ZIP CODE 64804
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 Lynden D. Lawson			DATE 2/26/2021	
TITLE OR CORPORATE POSITION Asst. Director of Public Works - operations		TELEPHONE NUMBER WITH AREA CODE 417-624-0820 ext-560		E-MAIL ADDRESS LLawson@joplinmo.org
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.				