

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



**CONSTRUCTION PERMIT**

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

City of Doniphan  
Doniphan Wastewater Treatment Facility  
County Rd 142E-2A  
Doniphan, MO 63935

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.

January 4, 2019  
Effective Date

March 9, 2022  
Modification Date

October 3, 2022  
Expiration Date

  
Chris Wieberg, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

Doniphan has an existing three cell lagoon with chlorine disinfection. This project is to replace the chlorine disinfection with an UV non-contact disinfection system to meet the effective *E. coli* effluent limits of 126 #/100 mL. The UV disinfection system is capable of treating a peak flow of 0.60 MGD while delivering a minimum UV intensity of 30 mJ/cm<sup>2</sup> with an expected ultraviolet transmissivity of 50% or greater. The enclosed UV system consists of 2 banks in U configuration per reactor, with a 8 lamps per lamp rack for a total of 40 lamps in the UV system. The disinfected effluent will flow by gravity through a fifteen inch pipe to Outfall No. 001. The facility's average design flow is 0.435 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 in accordance with the plans and specifications submitted by S.H. Smith & Co. on October 31, 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 Southeast Regional Office per 10 CSR 20-7.015(9)(E)2.
5. 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.
6. 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.
7. Upon completion of construction:
  - A. The City of Doniphan will become the continuing authority for operation, maintenance, and modernization of these facilities;
  - B. Submit an electronic copy of the as builts 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) and if necessary, request the operating permit modification be issued.

#### **IV. REVIEW SUMMARY**

##### **1. FACILITY DESCRIPTION**

The Doniphan WWTF is located on County Road 142 E-2A, Doniphan, in Ripley County, Missouri. The facility has a design average flow of 456,000 gpd and serves a hydraulic population equivalent of approximately 4,560 people. The existing facility is a three cell aerated lagoon with sludge retained in the lagoon. The facility is replacing their existing chlorine/dechlorination disinfection system with UV disinfection. Below is a summary of the facility's existing performance from 2013-2018.

Parameters	Units	Average Monthly Limit	Average from DMRs
Flow	MGD	*	0.339
BOD	mg/L	30	8.67
TSS	mg/L	30	9.63
Ammonia-summer	mg/L	1.3	0.61
Ammonia-winter	mg/L	2.8	2.10
Oil and Grease	mg/L	10	4.82
pH	SU	6.5-9.0	7.42
Dissolved Oxygen	mg/L	*	11.42
Total Nitrogen	mg/L	*	5.09
Total Phosphorus	mg/L	*	1.68

\*monitoring only

## 2. COMPLIANCE PARAMETERS

The replacement of the chlorine/dechlorination disinfection system with the ultraviolet disinfection system is to meet the effective *E. Coli* effluent limits of 126 #/100 mL.

## 3. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The current design guides, 10 CSR 20-8, do not contain design parameters for ultraviolet disinfection system. The existing 3 cell aerated lagoon will remain in use with a design average flow of 456,000 gpd.

### **Construction will cover the following items:**

- Disinfection – Disinfection is the process of removal, deactivation, or killing or pathogenic microorganisms.
  - Non-Contact Ultraviolet (UV) – A closed channel, gravity flow, low pressure high intensity UV non-contact disinfection system capable of treating a peak flow of 0.60 MGD while delivering a minimum UV intensity of 30 mJ/cm<sup>2</sup> with an expected ultraviolet transmissivity of 50% or greater. The UV system consists of 2 banks in U configuration per reactor, with 8 lamps per lamp rack for a total of 40 lamps in the UV system.
    - The peak flow of 0.60 MGD is a peaking factor of 1.37 from the design average flow and a peaking factor of 1.77 from the average flow over the last 5 years.
    - The proposed UV system will be flow paced utilizing the existing effluent flow monitor.
    - The facility is to be provided with 8 spare lamps and 8 spare ballasts.
    - The disinfected effluent will flow by gravity through a fifteen inch pipe to Outfall No. 001.
- Housed Facility – The proposed wastewater treatment facility shall be housed in a 12.6 ft by 12.6 ft building.

#### **4. OPERATING PERMIT**

The facility is replacing their existing chlorine disinfection system with ultraviolet (UV) disinfection. The facility modification to replace the existing chlorine disinfection system with the ultraviolet disinfection system will occur after the permit renewal public notice is complete, and prior to the expiration of the construction permit. The only change to the operating permit as a result of this construction permit is the removal of the total residual chlorine (TRC) limits and to update the facility description. The operating permit modification will be issued with the total residual chlorine limits removed once the Department receives the Statement of Work Completed form, <https://dnr.mo.gov/forms/780-2155-f.pdf>.

#### **5. CONSTRUCTION PERMIT MODIFICATION**

This construction permit is being modified upon the request of the City of Doniphan to extend the construction permit schedule. The construction permit will now expire on October 3, 2022.

#### **6. NOTICE OF RIGHT TO APPEAL**

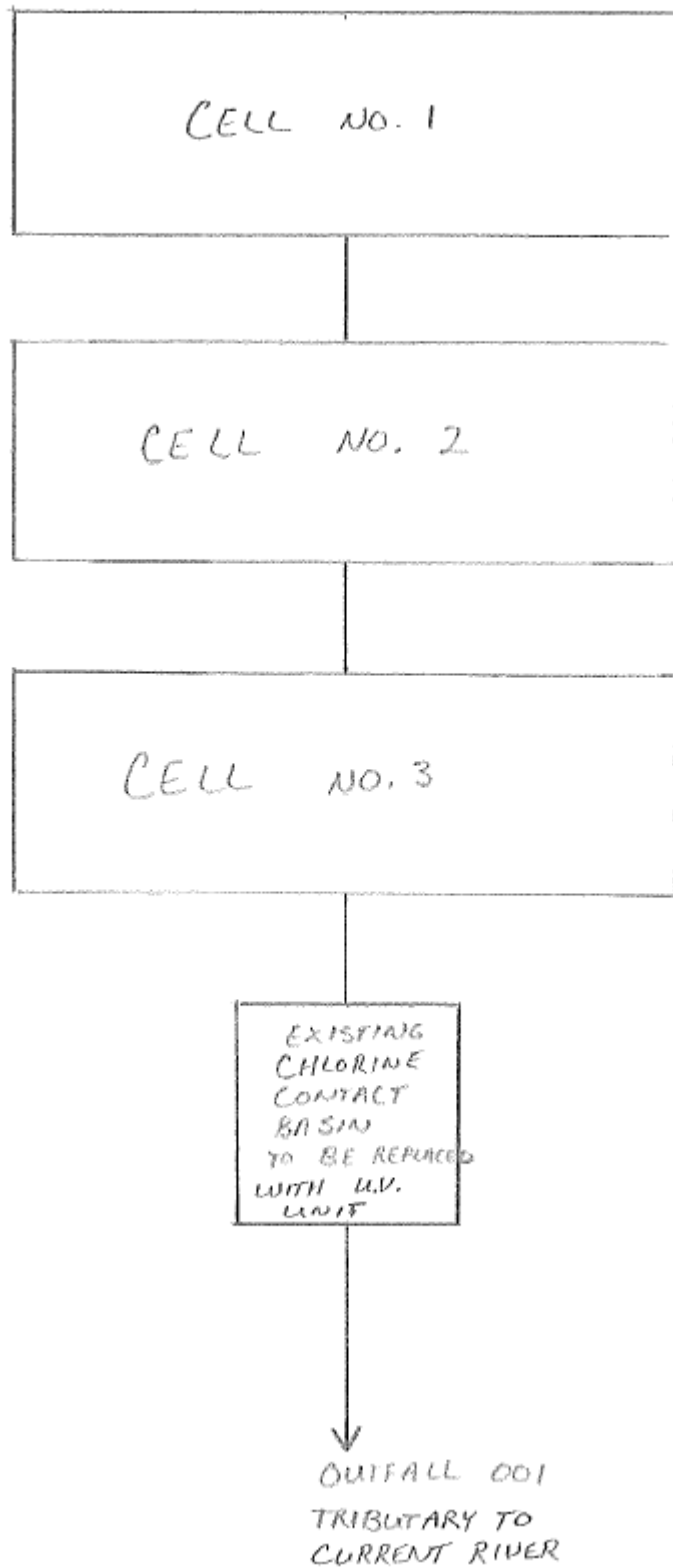
If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, 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:

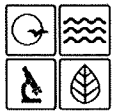
Administrative Hearing Commission  
U.S. Post Office Building, Third Floor  
131 West High Street, P.O. Box 1557  
Jefferson City, MO 65102-1557  
Phone: 573-751-2422  
Fax: 573-751-5018  
Website: <https://ahc.mo.gov>

Leasue Meyers, EI  
Engineering Section  
[leasue.meyers@dnr.mo.gov](mailto:leasue.meyers@dnr.mo.gov)

Cindy LePage, P.E.  
Engineering Section  
[cindy.lepage@dnr.mo.gov](mailto:cindy.lepage@dnr.mo.gov)

**APPENDIX – PROCESS FLOW DIAGRAM**





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

RECEIVED

OCT 23 2018

Water Protection Program

AP 31054  
 CR 0002040

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

10-23-18

**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: \_\_\_\_\_
- 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

Doniphan Wastewater Disinfection Improvements

2.2 PROJECT DESCRIPTION

The proposed project consists of changing the disinfection method used from chlorination followed by dechlorination to ultraviolet disinfection. The proposed ultraviolet disinfection unit will be installed within the existing chlorine contact chamber.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge is retained within the lagoon

2.4 DESIGN INFORMATION

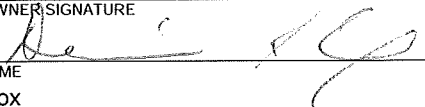
- A. Current population: 1997; Design population: 4560
- B. Actual Flow: 307,000 gpd; Design Average Flow: 456,000 gpd;  
 Actual Peak Daily Flow: 530,000 gpd; Design Maximum Daily Flow: 600,000 gpd;  
 Design Wet Weather Event: \_\_\_\_\_

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

\$ 250,000.00

3.0 WASTEWATER TREATMENT FACILITY				
NAME Doniphan Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE (573) 996-2623		EMAIL ADDRESS
ADDRESS (PHYSICAL) County Road 142 E-2A		CITY Doniphan	STATE MO	ZIP CODE 63935
COUNTY Ripley				
Wastewater Treatment Facility: Mo- 0047350 (Outfall 1 Of 1 )				
3.1 Legal Description: ¼, NW ¼, NW ¼, Sec. 35 , T 23N , R 2E (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 694199 Northing (Y): 4053534 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Tributary to Current River				
4.0 PROJECT OWNER				
NAME City of Doniphan		TELEPHONE NUMBER WITH AREA CODE (573) 996-2623		EMAIL ADDRESS
ADDRESS 124 Jefferson Street		CITY Doniphan	STATE MO	ZIP CODE 63935
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		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 Gregory Bell/S.H. Smith & Company		TELEPHONE NUMBER WITH AREA CODE (573) 785-9621		EMAIL ADDRESS gregb@shsmithco.com
ADDRESS 901 Vine Street		CITY Poplar Bluff	STATE MO	ZIP CODE 63901
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 Dennis Cox			DATE 10-16-2018	
TITLE OR CORPORATE POSITION Mayor		TELEPHONE NUMBER WITH AREA CODE (573) 996-2623		EMAIL ADDRESS doniphan.city.mayor@yahoo.com
Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM P.O. BOX 176 JEFFERSON CITY, MO 65102-0176				
<b>END OF PART A.</b>				
<b>REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.</b>				