

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Selma Village Sewer District of Jefferson County
Todd Killgore, Treasurer
Selma Village Wastewater Treatment Facility
0.09 mi south of the terminus of Crystal Lake Drive
Festus, MO 63019

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.

May 14, 2024

Effective Date

May 13, 2026

Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The proposed project will include the construction of a new ultraviolet (UV) disinfection system which will be installed as the final phase of treatment for the Selma Village Wastewater Treatment Facility (WWTF).

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 Benjamin J. Kuenzel, P.E. with 21 Design Group, 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 St. Louis Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment facility shall be located at least 200 feet from any dwelling or establishment and 50 feet from the property line. 10 CSR 8.140(2)(C)2.
6. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the 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 300 feet 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 one 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.
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 <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140(2)(D).
 - Electrical equipment. Electrical equipment shall be provided with the following requirements:
 - 10 CSR 20-8.130(3)(B)2.A. Electrical equipment must comply with 10 CSR 20-8.140(7)(B);
 - Utilize corrosive resistant equipment located in the wet well; 10 CSR 20-8.130(3)(B)2.B.
 - Provide a watertight seal and separate strain relief for all flexible cable; 10 CSR 20-8.130(3)(B)2.C.

- Install a fused disconnect switch located above ground for the main power feed for all pumping stations. 10 CSR 20-8.130(3)(B)2.D.
- When such equipment is exposed to weather, it shall comply with the requirements of weatherproof equipment; enclosure NEMA 4; NEMA 4X where necessary; and *NEMA Standard 250-2014*, published December 15, 2014. 10 CSR 20-8.130(3)(B)2.E.
- Install lightning and surge protection systems; 10 CSR 20-8.130(3)(B)2.F.
- Install a 110 volt (V) power receptacle inside the control panel located outdoors to facilitate maintenance; 10 CSR 20-8.130(3)(B)2.G.
- Provide Ground Fault Circuit Interruption (GFCI) protection for all outdoor receptacles. 10 CSR 20-8.130(3)(B)2.H.
- 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 30,000 microwatt seconds per centimeters squared ($\mu\text{W} \cdot \text{s}/\text{cm}^2$). 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 Selma Village Sewer District of Jefferson County 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;

- C. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>)

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The purpose of the proposed construction is to provide a means of disinfection for the Selma Village WWTF to enable the facility to meet effluent limitations for *E. coli* and to comply with requirements of the Abatement Order on Consent signed by the applicant on May 10, 2022.

2. FACILITY DESCRIPTION

The Selma Village WWTF has a history of effluent limitation exceedances for *E. coli*. An inspection was conducted on March 29, 2017, and the facility was issued a letter of warning for failure to have a method to disinfect wastewater effluent prior to discharge to meet effluent limitations for *E. coli*. The facility continued to exceed its effluent limitations for *E. coli* and later agreed to an Abatement Order on Consent (AOC) on May 10, 2022. The AOC requires the Selma Village Sewer District of Jefferson County (district) to either upgrade the facility to comply with the permit conditions or sell the facility. Because the district has chosen to pursue upgrades, in accordance with the AOC agreement they were required to submit a facility plan and to consult with the department's Engineering Section to comply with applicable permit requirements upon approval of the facility plan. The district submitted a facility plan that was received by the department on September 14, 2022. An approval letter was issued by the department on March 24, 2023. The district then applied for a construction permit to authorize the construction of a UV disinfection system. The addition of a disinfection system will enable the facility to meet their effluent limitations for *E. coli*. The disinfection system will be added to the existing treatment system consisting of three aerated lagoon cells and one polishing cell.

The Selma Village WWTF is located approximately 0.09 miles south of the terminus of Crystal Lake Drive, Festus, in Jefferson County, Missouri. The facility has a design average flow of 150,000 gpd and serves a hydraulic population equivalent of approximately 1500 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final *E. coli* effluent limits of 206 per 100 mL as a geometric mean for the monthly average and 1,030 per 100 mL as a geometric mean for the weekly average as established in Operating Permit MO-0088854.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

The two basins forming the main treatment train will continue to be utilized:

- Basin One (Lagoon Cells No. 1, 2, and 3) – the first basin provides the volume for the three lagoon treatment cells which are separated via curtain baffles. These cells are aerated and have a combined surface area of approximately 0.9 acres. The design depth of these cells is 8.5 feet. Cell one consists of three aeration lines spaced approximately 17 feet apart with eight aeration assemblies on each line for a total of 24. Cell two consists of three aeration lines spaced approximately 41 feet apart with eight aeration assemblies on each line for a total of 24. Cell three consists of one aeration line with eight aeration assemblies.
- Basin Two (Polishing Cell) – this basin serves to aid in settling following treatment in the first three cells. The surface area is approximately 0.35 acres.

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 620,000 gpd while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 65 percent or greater. The open channel UV system consists of two banks in series with five modules per bank and two lamps per module. The disinfected effluent will flow by gravity through flow measurement equipment and to Outfall No. 001.

5. OPERATING PERMIT

These construction activities do not change the effluent limits or conditions of the current operating permit. The department will conduct an internal modification to reflect the current facility description upon receipt of the Statement of Work Completed form.

The expiration date for operating permit MO-0088854 was June 30, 2022. A renewal application was received by the department on December 30, 2021, and the renewal is currently in process. If you have questions on completing the renewal application, please contact the NPDES permitting section at 573-751-1300.

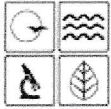
V. NOTICE OF RIGHT TO APPEAL

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>

Thomas Silkwood
Engineering Section
thomas.silkwood@dnr.mo.gov

Chia-Wei Young, P.E.
Engineering Section
chia-wei.young@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: 3-24-23 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 Selma UV Disinfection	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 150,000.00
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2.3 PROJECT DESCRIPTION
 Addition of UV Disinfection to the existing lagoon treatment system.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
 Sludge is stored in lagoon

2.5 DESIGN INFORMATION
 A. Current population: 450; Design population: 1,500
 B. Actual Flow: 40k gpd; Design Average Flow: 150k gpd;
 Actual Peak Daily Flow: 60k 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

3.0 WASTEWATER TREATMENT FACILITY				
NAME Selma Village Lagoon		TELEPHONE NUMBER WITH AREA CODE 636-232-8362		E-MAIL ADDRESS svsewerdistrict@gmail.com
ADDRESS (PHYSICAL) PO Box 322 (NS 61 05E Weaver, Festus)		CITY Crystal City	STATE MO	ZIP CODE 63019
COUNTY Jefferson				
Wastewater Treatment Facility: Mo- 0088854 (Outfall 1 Of 1)				
3.1 Legal Description: _____ ¼, SW _____ ¼, SE _____ ¼, Sec. 35, T 40N, R 6E (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 734,756 Northing (Y): 4225205 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Tributary of Muddy Creek				
4.0 PROJECT OWNER				
NAME Selma Village Sewer District of Jefferson Co.		TELEPHONE NUMBER WITH AREA CODE 636-232-8362		E-MAIL ADDRESS svsewerdistrict@gmail.com
ADDRESS P.O. Box 322		CITY Crystal City	STATE MO	ZIP CODE 63019
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		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 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 Benjamin J Kuenzel, PE/21 Design Group, Inc		TELEPHONE NUMBER WITH AREA CODE 636-432-2144		E-MAIL ADDRESS ben@21designgroup.net
ADDRESS 1351 Jefferson St., Suite 301		CITY Washington	STATE MO	ZIP CODE 63090
7.0 APPLICATION FEE				
<input type="checkbox"/> CHECK NUMBER <input checked="" type="checkbox"/> JETPAY CONFIRMATION NUMBER 20048234				
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 Todd Killgore			DATE 8/14/23	
TITLE OR CORPORATE POSITION Treasurer, Board of Directors		TELEPHONE NUMBER WITH AREA CODE 314-323-0660		E-MAIL ADDRESS svsewerdistrict@gmail.com
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.				