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 Homestead Village
Honorable Mayor Frank James
Homestead Village WWTF
At the South Terminus of Cherokee Dr.
Excelsior Springs, MO 64024

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.

August 19, 2025
Effective Date

August 18, 2027
Expiration Date

Heather Peters, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Installation of an Ultraviolet Disinfection (UV) system and new flow meter, replacement of the electrical system and existing aeration blowers. Installation of new pipe connecting influent structure to the concrete sludge holding basin, this allows the sludge holding basin to be used as emergency storage in the event of a power outage. The design flow of facility will remain 20,000 gallons per day (gpd) and the outfall location is not changing. The facility discharges to a tributary of E. Fork Fishing River (C) (386). 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 Connie Walden, P.E. with GREAT RIVER ENGINEER, 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 Kansas City Regional Office per 10 CSR 20-7.015(9)(G).

5. 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.

6. 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.

7. 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).

- Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the 100-year flood elevation. 10 CSR 20-8.140(2)(B)

- No treatment unit with a capacity of 22,500 gpd or less shall be located closer than the minimum distance of 50 feet to a neighboring residence for all other discharging facilities. See 10 CSR 20-2.010(68) for the definition of a residence. 10 CSR 20-8.140(2)(C)2

- All sampling points shall be designed so that a representative and discrete 24 hour automatic composite sample or grab sample of the effluent discharge can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters. 10 CSR 20-8.140(6)(B)

- All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140(7)(A)1.

- Emergency Power. Disinfection and dechlorination, when used, shall be provided during all power outages. 10 CSR 20-8.140(7)(A)2 and 10 CSR 20-8.190(2)(A).

- An audiovisual alarm or a more advanced alert system, with a self-contained power supply, capable of monitoring the condition of equipment whose failure could result in a violation of the operating permit, shall be provided for all wastewater treatment facilities. 10 CSR 20-8.140(7)(C)

- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140(7)(E)

- Effluent 24 hour composite automatic sampling equipment shall be provided at all mechanical wastewater treatment facilities and at other facilities where necessary under provisions of the operating permit. 10 CSR 20-8.140(7)(F) and 10 CSR 20-8.190(3)(D).

- Adequate provisions shall be made to effectively protect facility personnel and visitors from hazards. The following shall be provided to fulfill the particular needs of each wastewater treatment facility:
    - Fencing. Enclose the facility site with a fence designed to discourage the entrance of unauthorized persons and animals; 10 CSR 20-8.140 (8) (A)
    - Gratings over appropriate areas of treatment units where access for maintenance is necessary; 10 CSR 20-8.140(8)(B)
    - First aid equipment; 10 CSR 20-8.140(8)(C)
    - Posted “No Smoking” signs in hazardous areas; 10 CSR 20-8.140(8)(D)
    - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140(8)(E)
    - Appropriately-placed warning signs for slippery areas, non-potable water fixtures (see subparagraph (7)(D)3.B. of this rule), low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.; 10 CSR 20-8.140(8)(I)
    - Provisions for local lockout/tagout on stop motor controls and other devices; 10 CSR 20-8.140(8)(L)

- The UV dosage shall be based on the design peak hourly flow of 4,500 gallons per hour (gph) 10 CSR 20-8.190(5)(A)1.

- 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 ($\mu W \bullet s/cm^2$). 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 of 4500 gph. 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.

8. Upon completion of construction:

    A. City of Homestead Village will become the continuing authority for operation and maintenance 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;

    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 current operating permit MO-0056545 requires the facility to comply with *E. coli* limits. The new construction of a UV system will ensure the facility complies with existing *E. coli* limits.

2. FACILITY DESCRIPTION

The City of Homestead Village WWTF is located at the south terminus of Cherokee Dr. in Excelsior Springs, MO 64024, has a design flow of 20,000 gpd, an actual flow of 13,004 gpd, and serves an organic population of 200.

Current system components are: screen / aeration basin / clarifier / sludge holding tank / sludge disposed by contract hauler.

The proposed construction consists of relocation of the aeration system (pipes), replacement of the existing blowers, addition of a new ultraviolet disinfection system, replacement of flowmeter and the construction of a new pipe connecting the influent structure to the concrete sludge holding basin.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet monthly average effluent limits of 206 #/100mL as established in Operating Permit MO-0056545

E. coli	#/100mL	206

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction of new concrete pad for the new blower equipment. Construction of new aeration header piping, valving and fittings, including welding caps for drop pipes. Replacement of the existing flowmeter with a Teledyne ISCO 3010 or similar system.

Demolish existing electrical and aeration equipment including aeration blowers, enclosures, hardware, power cables, conduits, and existing flowmeter present at the WWTF.

Open Channel Ultraviolet (UV) – An open channel, gravity flow, low pressure high intensity UV disinfection system capable of treating a peak flow of 112,500 gpd while delivering a minimum UV intensity of 30 mJ/cm^2 with an expected ultraviolet transmissivity of 65% or greater will be constructed. The single open channel UV system consists of one bank with three modules and two lamps per module for a total of six lamps with an approximate treatment flowrate capacity of 78.125 gallons per minute (gpm). The disinfected effluent will flow by gravity through flow measurement equipment and to Outfall No. 001.

- Emergency Power – A standby power generator will be provided in the near future to operate the treatment facility in event of power failure. For the immediate future, untreated wastewater will be stored in the concrete sludge holding basin until power is regained at the treatment facility.

- An alarm system for the air blowers will be installed and a satellite auto dialer remote monitoring system for the UV system will be added to inform operator that the UV system is not working properly, A valve will be added at the entrance of the aeration basin to manually divert wastewater entering the WWTF to the concrete sludge holding basin. The concrete sludge holding basin capacity is approximately 30 hours at the daily average design flow. Once electrical power is regained, the stored wastewater from the concrete sludge holding basin will be transferred back to the beginning of the aeration system for treatment by a portable pump.

5. OPERATING PERMIT

An operating permit renewal application was filed February 15, 2024. The operating permit MO-0056545 expired on June 30, 2024.

Operating permit MO-0056545 will require a modification to reflect the construction activities. The renewal permit for City of Homestead Village WWTF, MO-0056545, will be drafted to include the proposed UV.

Submit the Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(N).

This facility does not meet the requirements of the MOGDS, issued on July 01, 2024, for the following reason: the facility charges a monthly rate.

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

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APPENDIX

- **Process Flow Diagram**

Process Flow Diagram