STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Cooper's Landing
11505 Smith Hatchery Rd
Columbia, MO 65203

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 24, 2021
Effective Date

Edward B. Galbraith
Edward B. Galbraith, Director, Division of Environmental Quality

May 23, 2023
Expiration Date

Chris Wieberg
Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Cooper's Landing is located at 11505 Smith Hatchery Rd, Columbia, in Boone County, Missouri. The facility has a design average flow of 1,614 gpd and serves a hydraulic PE of 16 people. Construction will include a 3,000 gallon 2 compartment septic tank with effluent filter, 3,000 gallon time dosed holding tank with passive filter, 3,200 gallon pump tank with a 20 gpm Myers Rustler pump. The subsurface drip system will dose 2 zones at 0.25 gpd/sq. ft, which provides 10 dosings per day. There will be 823 emitters per zone, for a total 1,645 emitters with a flow rate of 8.4 gpm per zone. The drip field area is 6,580 square feet and contains 3,290 linear feet with 4 air release valves. As the facility is located on the banks of the Missouri River, concrete ballasts with metal cables will be attached to the tanks to prevent floatation and protect the equipment.

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 A Civil Group 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 completed project shall be field tested to verify actual pumped volume of each dose. The timer controls shall be set to ensure a dosing rate not to exceed the allowable rate of 0.25 gallons per square foot per day.

6. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment.

7. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.

8. 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.

9. 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.

10. 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/ for more information.

11. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
    - 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 one hundred- (100-) year flood elevation. 10 CSR 20-8.140 (2) (B)

- Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300'). 10 CSR 20-8.140 (2) (C) 1.
- No treatment unit with a capacity of twenty-two thousand five hundred gallons per day (22,500 gpd) or less shall be located closer than the minimum distance of 50' 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
- Facilities shall be readily accessible by authorized personnel from a public right–of-way at all times. 10 CSR 20-8.140 (2) (D)
- All outfalls shall be posted with a permanent sign indicating the outfall number (i.e., Outfall #001). 10 CSR 20-8.140 (6) (C)
- 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.
- Electrical systems and components in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors that are normally present, shall comply with the NFPA 70 *National Electric Code (NEC)* (2017 Edition), as approved and published August 24, 2016, requirements for Class I, Division 1, Group D locations. 10 CSR 20-8.140 (7) (B)
- 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)
- No piping or other connections shall exist in any part of the wastewater treatment facility that might cause the contamination of a potable water supply. 10 CSR 20-8.140 (7) (D) 1.
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140 (7) (E)
- Effluent twenty-four (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)
- 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)
    - Portable blower and hose sufficient to ventilate accessed confined spaces; 10 CSR 20-8.140 (8) (F)

- All wastewater treatment facilities must have a screening device, comminutor, or septic tank for the purpose of removing debris and nuisance materials from the influent wastewater. 10 CSR 20-8.150 (2)
- 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.
- A septic tank must have a minimum capacity of at least one thousand (1,000) gallons. 10 CSR 20-8.180 (2) (A)
- The septic tank shall be baffled. 10 CSR 20-8.180 (2) (B)
- Subsurface systems shall—
    - Exclude unstabilized fill and soils that have been highly compacted and/or disturbed, such as old road beds, foundations, or similar things; 10 CSR 20-8.200 (7) (A) 1. A.
    - Provide adequate surface drainage where slopes are less than two percent (2%);10 CSR 20-8.200 (7) (A) 1. B.
    - Provide surface and subsurface water diversion where necessary, such as a curtain or perimeter drain; 10 CSR 20-8.200 (7) (A) 1. C. and
    - Have a ten foot (10') buffer from the property line. 10 CSR 20-8.200 (7) (A) 1. D.
- The vertical separation between the bottom of the drip lines and/or the trench and a limiting layer, including but not limited to, bedrock; restrictive horizon; or seasonal high water table, shall be no less than:
    - Twenty-four inches (24"); 10 CSR 20-8.200 (7) (A) 2. A. or
    - Twelve inches (12") for systems dispersing secondary or higher quality effluent; 10 CSR 20-8.200 (7) (A) 2. B. or
    - Forty-eight inches (48") where karst features are present unless the site can be reclassified. 10 CSR 20-8.200 (7) (A) 2. C.
- Subsurface systems shall be, at a minimum, preceded by preliminary treatment. 10 CSR 20-8.200 (7) (B)
- Loading rates shall not exceed the values assigned by the site and soil evaluation. 10 CSR 20-8.200 (7) (C)
- All network piping and low pressure distribution piping and fittings with polyvinyl chloride (PVC) shall meet ASTM Standard D 1785 *Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, or 120* as approved and published August 1, 2015, or equivalent rated to meet or exceed ASTM D2466 *Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings* as approved and published August 1, 2017. These standards shall hereby be incorporated by reference into this rule, as published by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. This rule does not incorporate any subsequent amendments or additions. 10 CSR 20-8.200 (8) (A) 2.
- The location and size of the drains and buffers must be factored into the total area required for the drip dispersal system. 10 CSR 20-8.200 (9) (A) 1.
- The drip dispersal lines shall be placed at a minimum depth of six inches (6") below the surface. 10 CSR 20-8.200 (9) (B) 1.

- Emitters and drip dispersal lines shall be placed at a minimum on a two foot (2') spacing to achieve even distribution of the wastewater and maximum utilization of the soil. 10 CSR 20-8.200 (9) (B) 2.

12. Upon completion of construction:

A. Muddy MO Landing, LLC 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; and

C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) with a request to issue the general operating permit, MOG823.

IV. REVIEW SUMMARY

1. FACILITY DESCRIPTION

Cooper's Landing is located at 11505 Smith Hatchery Rd, Columbia, in Boone County, Missouri. The facility has a design average flow of 1,614 gpd and serves a hydraulic population equivalent of approximately 16 people. As a facility located adjacent to the KATY Trail State Park and providing entertainment opportunities, there is a peak daily flow 3,018 gpd and a non-peak day of 610 gpd

2. COMPLIANCE PARAMETERS

The proposed project meets the applicability requirements and will be subject to the permitting conditions of MOG823 with an expiration date of August 24, 2022. As a subsurface drip dispersal system with tanks, there are no monitoring requirements in MOG823, at this time.

3. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction will cover the following items:

- Flow Measurement – Flow measurement will be by flow meter installed directly after the pump to the drip field.
- Sanitary Sewer Line - Install approximately 190 ft of 4 inch PVC with appropriate fittings and cleanouts to connect bathroom and showerhouse to the septic tank.
- Septic Tank – A septic tank provides passive primary treatment as the settleable solids in raw wastewater settle onto the bottom of the tank. Settled solids in the septic tank shall be removed by a contract hauler.
    - 1- 3,000 gallon 2 compartment septic tank with effluent filter. Provides approximately 1.8 days of retention at design average flow and 1 day of retention at peak flow.

        - Effluent filter-Polylok A100 12 series with 1/16 inch filtration.
    - 1-3,000 gallon time dosed holding tank with passive filter. Provides approximately 1.8 days of retention at design average flow and 1 day of retention at peak flow.
        - Passive filter-located within the dosing tank, will be a Simtech A1 vault with filtration of 1/16 inch.
    - 3,200 gallon pump tank. Provides approximately 2 days of retention at design average flow and 1 day of retention at peak flow.
        - Pump tank will have a 20 gpm Myers Rustler pump with a TDH of 140.3 ft at 14.8 gpm .
        - Pump will be set for 10 minutes on and 128 minutes off.
        - The pump will have a micron disc filters that are within the JMN Technologies ACT C2005 Series Filtration/Distribution package, which has backflow rate of 12 gpm.
- Subsurface Soil Dispersal System – The facility decided to use a design loading rate of 0.25gpd/sf for the entire system. Soil morphology review was conducted during the facility plan review and on site soils were determined to be acceptable for this system. The soil investigation was completed by G. MacBean, Certified Soil Scientist on January 23, 2020. This is in follow up to a previously completed soils report done by Dr. Randy Miles for the previous owner.
    - Soils Report. In the soils investigation, there were 7 probes over the proposed site, along with a soil pit, surrounding the proposed area.
        - Specifications for placement of the fill prescribe a specific range of acceptable soil moisture content and the type of construction equipment (tracked) to be used to avoid over compaction.
    - Drip – The facility has selected the NETAFIM subsurface drip dispersal system.
        - The system will dose 2 zones at 0.25 gpd/sq. ft, which provides 10 dosings per day.
        - 823 emitters, for a total 1645 emitters with a flow rate of 8.4 gpm per zone (0.61 gph per emitter).
    - The drip field area is 6,580 square feet and contains 3,290 linear feet of 1.25 inch PVC tubing fitted with emitters every 2 ft, installed 12 inches deep, with 4 air release valves.
        - At 1,614 gpd, a minimum of 6,456 square feet is required at 0.25 gpd/sq ft, which is less than the 6,580 square ft being utilized.
        - Return manifold is 1.25 inch PVC

The facility is located in FEMA Floodplain zone AE, which is a high risk area. As the facility is located on the banks of the Missouri River, to protect the equipment, concrete ballasts with metal cables are attached to the tanks to prevent floatation.

4. OPERATING PERMIT

After completion of construction project submit: statement of work completed, as-builts if the project was not constructed in accordance with previously submitted plans and specifications, and ensure that Application Form B, and fee has been submitted. Missouri State Operating Permit, General Permit MO-G823xxx, will be issued after receipt of the above documents.

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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