

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Hermit Hollow, Inc
28 Hermit Hollow Drive
Labadie, MO 63055

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 18, 2020
Effective Date


Edward B. Galbraith, Director, Division of Environmental Quality

August 17, 2022
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The existing wastewater facility has several septic tanks. These tanks are followed by a pump tank, and the flow is then passed into a buried sand filter. The flow is then discharged into Lartto Creek (C).

The facility is not upgrading or changing their capacity, however, it is improving the facility performance. The chlorine system will consist of a chlorine tablet feeder followed by a chlorine contact chamber. After the contact chamber, a second tablet feeder will be used to neutralize the chlorine residual from the system prior to discharge. The flow from the de-chlorination tablet feeder will be piped to the existing outfall.

The disinfection system will have two Bio-Dynamic table feeders - IT 2000 S as manufactured by Norweco. It has a minimum flow of 200 GPD and a maximum of 100,000 GPD of flow. The pre-cast concrete chlorine contact chamber is designed for a flow of 6,500 GPD and manufactured by Murdon Concrete Products or similar. The contact chamber is installed to allow for a minimum of 15 minutes of contact time at peak flow which allows the chlorine to disinfect the final effluent. The designed size of the chlorine chamber is 280 gallons. The pre-cast tank has external dimensions of 48 in width, 72 in length, and 58 in depth. The chlorine tank has 5 runs with 4 baffles. The baffling within the pre-cast unit will provide a length to width ratio of 48.5 to 1 for more complete mixing. The equivalent population is 20. The design flow is 2,000 GPD.

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 Scheer Design 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 Saint Louis Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment disinfection system shall be located above the twenty-five (25)-year flood level.
6. The wastewater disinfection 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 (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.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

- 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.
- Disinfection and dechlorination processes, when used, shall be provided during all power outages. 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)
- The materials utilized for storage, piping, valves, pumping, metering, and splash guards, etc., for chemical handling, shall be specially selected considering the physical and chemical characteristics of each hazardous or corrosive chemical. 10 CSR 20-8.140 (9) (A) 1.
- Alarm System for chlorination and dechlorination systems. The applicant shall conform to 10 CSR 20-8.140(7)(C) and be responsible for specifying what the alarm requirements are necessary to assure consistent disinfection in compliance with the applicable bacteria limits and the disinfection residual limit in the effluent. 10 CSR 20-8.190 (3) (C)
- 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 20-8.190 (3) (D)
- Solid dechlorination systems shall not be located in the chlorine contact tank. 10 CSR 20-8.190 (4) (B) 1.
- Contact time. A minimum of thirty (30) seconds for mixing and contact time of dechlorination systems shall be provided at the design peak hourly flow or maximum rate of pumpage. 10 CSR 20-8.190 (4) (B) 2.

10. Upon completion of construction:

- A. Hermit Hollow, Inc 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 enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the previously public noticed operating permit be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

This project is to add chlorination, a chlorine contact chamber, and dechlorination tablet feeders for the effluent flow from the WWTF. The facility must meet the final *E.coli* limits that went into effect on July 1, 2020. No change in the capacity of the facility. Construction is not addressing the schedule of compliance for ammonia. Kirby Scheer, Project Engineer Scheer Design Group, LLC confirmed that the facility will be able to meet the Ammonia limits went into effect on July 1, 2020 through his email dated May 19, 2020.

2. FACILITY DESCRIPTION

Hermit Hollow Subdivision WWTF is a modification on an existing facility. The current facility consists of 3 equally sized septic precast concrete tanks which are 1,500 gallons each and followed by a 3,500 gallon pumped tank. The flow then enters a buried sand filter. The effluent is then discharged into Latto Creek. The sludge is hauled and land applied by a contract hauler.

The upgrade will not impact the capacity of the facility, however, it will improve the treatment quality to meet *E. Coli* final effluent limits that went into effect on July 1, 2020. A chlorine disinfection system will be added to the existing wastewater facility to meet the required permit limits. The chlorine system will consist of a chlorine tablet feeder followed by a pre cast concrete chlorine contact chamber. After the contact chamber, a second tablet feeder will be used to neutralize the chlorine residual from the system prior to discharge. The flow from the de-chlorination tablet feeder will be piped to the existing outfall.

The Hermit Hollow Subdivision WWTF is located at the northeast quarter, of the southeast quarter, of section 29, township 44 north, range 02 east, City of Grey Summit, in Franklin County, Missouri. The facility has a design average flow of 2,000 gpd and serves an organic population equivalent of approximately 20 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits of 206 mg/l as established in Operating Permit MO-0112402 on July 1, 2017.

The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Total Residual Chlorine	µg/L	<130 ML
<i>E. coli</i>	#/100mL	206
Dissolved Oxygen	Mg/L	*

* Monitoring only

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Septic Tank – A septic tank provides passive primary treatment as the settleable solids in raw wastewater settle onto the bottom of the tank.
- Holding Tank – Construction of two holding tanks to pump primary treated wastewater to the recirculating media filter.
- Recirculating Media Filter
- The sludge is removed by a contract hauler.

Construction will cover the following items:

- Components are designed for a Population Equivalent of 333 based on organic loading to the system.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
 - Tablet Chlorinator – Installation of a tablet Norweco Bio-Dynamic[®], Jet-Chlor Model 2000-S chlorination chamber receiving clarified effluent and prior to the chlorine contact tank. The tablet chlorinator shall have a design flow of 20000 gpd and a maximum flow of 100000 gpd. The system will dispense hypochlorite as the wastewater comes into contact with the tablets.
 - Chlorine Contact Tank – Installation of a pre-cast concrete tank approximately 6 ft x 4 ft x 4.83 ft with 4 end-around baffles allowing for a 48.5:1 length to width ratio. This tank will allow for a 15 minute contact time during a peak flow of 2000 gpd.
 - Tablet Dechlorinator – Installation of a tablet Norweco Bio-Dynamic[®], Jet-Dechlor Model 2000-S dechlorination chamber receiving the chlorinated effluent and prior to Outfall No. 001. The tablet dechlorinator shall have a design flow of 20000 gpd and a maximum flow of 100000 gpd. The system will dispense sodium sulfite as the wastewater comes into contact with the tablets.

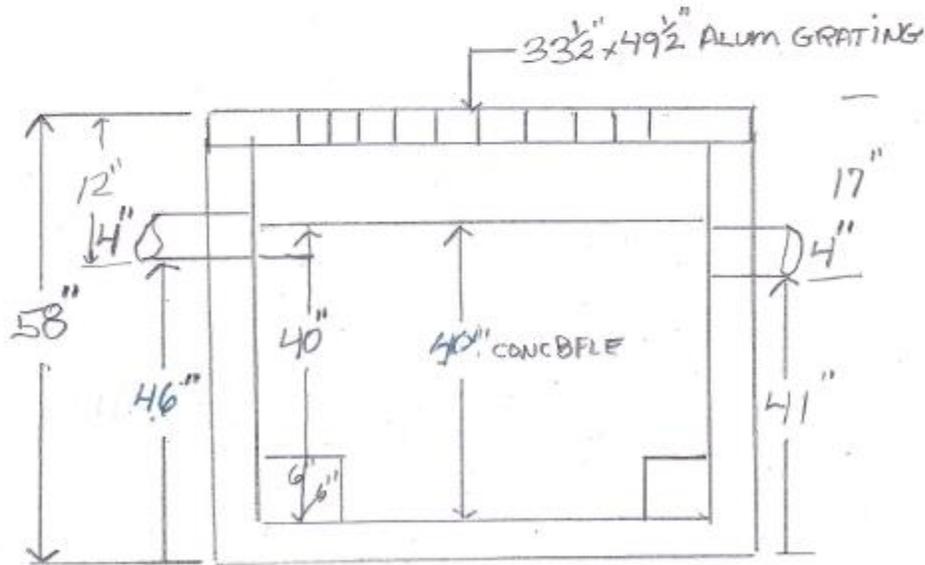
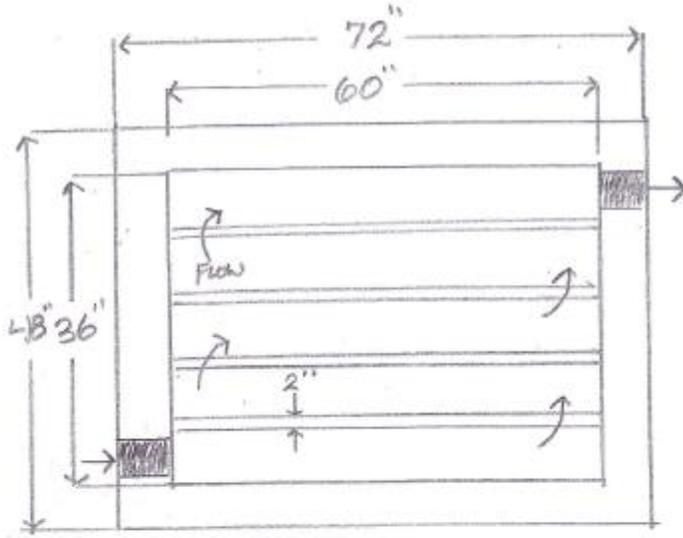
5. OPERATING PERMIT

The modified Hermit Hollow Subdivision WWTF, MO-0112402, was public noticed from July 10, 2020 to August 10, 2020 with no comments received. The modified operating permit added total residual chlorine (TRC) limits and dissolved oxygen monitoring. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

Mohammed, Mohammed, M.S.
Engineering Section
Mohammed.Mohammed@dnr.mo.gov

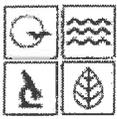
Cindy LePage, P.E.
Engineering Section
cindy.lepage@dnr.mo.gov

Appendix- Chlorine Contact Chamber



87 GAL FT

RECEIVED



MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT - WASTEWATER TREATMENT FACILITY

APR 23 2020

FOR DEPARTMENT USE ONLY

Table with columns: APP NO., CP NO., FEE RECEIVED, CHECK NO., DATE RECEIVED. Includes handwritten values: \$1000.00, 1062, 4-23-20.

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?
1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
1.3 Has the department approved the proposed project's facility plan*?
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?
1.5 Is a copy of the appropriate plans* and specifications* included with this application?
1.6 Is a summary of design* included with this application?
1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency?
1.9 Is the appropriate fee or JetPay confirmation included with this application?

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

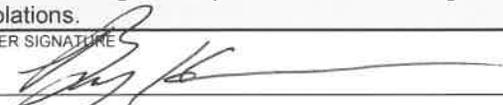
2.1 NAME OF PROJECT: Hermit Hollow Subdivision WWTF; 2.2 ESTIMATED PROJECT CONSTRUCTION COST: \$ 12,000

2.3 PROJECT DESCRIPTION: Addition of two tablet feeders and a chlorine contact chamber to provide disinfection to the WWTF effluent prior to discharge.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION: contract hauler

2.5 DESIGN INFORMATION: A. Current population: ; Design population: 20; B. Actual Flow: 861 gpd; Design Average Flow: 2000 gpd; Actual Peak Daily Flow: ; Design Maximum Daily Flow: ; Design Wet Weather Event:

2.6 ADDITIONAL INFORMATION: A. Is a topographic map attached? YES; B. Is a process flow diagram attached? YES

3.0 WASTEWATER TREATMENT FACILITY				
NAME Hermit Hollow WWTF		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS (PHYSICAL) 28 Hermit Hollow Dr		CITY Labadie	STATE MO	ZIP CODE 63055
COUNTY Franklin				
Wastewater Treatment Facility: Mo- 0112402 (Outfall 1 Of 1)				
3.1 Legal Description: <u>NE 1/4, SE 1/4, _____ 1/4, Sec. 29, T 44N, R 2E</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): <u>690762</u> Northing (Y): <u>4266711</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Lartto Creek (C)</u>				
4.0 PROJECT OWNER				
NAME Hermit Hollow Inc		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS
ADDRESS 28 Hermit Hollow Dr		CITY Labadie	STATE MO	ZIP CODE 63055
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 See Above		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 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 Kirby Scheer / Scheer Design Group, LLC		TELEPHONE NUMBER WITH AREA CODE 573 459-2611		E-MAIL ADDRESS kirbs@fidnet.com
ADDRESS 8584 HWY YY		CITY New Haven	STATE MO	ZIP CODE 63068
7.0 APPLICATION FEE				
<input 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 <u>Brandon K. Johnson</u>			DATE <u>3/7/2020</u>	
TITLE OR CORPORATE POSITION <u>President Hermit Hollow Inc</u>		TELEPHONE NUMBER WITH AREA CODE <u>636-388-6131</u>		E-MAIL ADDRESS <u>HermitHollowInc@outlook.com</u>
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.				