

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES



CONSTRUCTION PERMIT

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

Phillips-Moore WWTP
267 Mamre Rd
Edwards, MO 65326

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

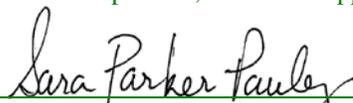
Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

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.

April 21, 2015
Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

April 20, 2017
Expiration Date


John Madras, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Phillips-Moore is a two house development approximately 16 miles from Edwards, MO and 30 miles from Warsaw, MO. Both houses have existing onsite systems which are being replaced with installation of a recirculation tank, two AX-20 Advantex Recirculating Fabric Filters, and ultraviolet disinfection. The design flow will be 555 gpd.

II. FINDING OF AFFORDABILITY

The Finding of Affordability is not applicable. The permittee is not a combined or separate sanitary sewer system or a publicly 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 in accordance with the plans and specifications submitted by Lake Professional Engineering on October 3, 2014.
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 Southwest Regional Office per 10 CSR 20-7.015(9)(E)2.
5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"
6. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."

7. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.
 - A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.
 - B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.
 - C. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:
 - a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
 - b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the department for use in water main construction.
8. 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 www.dnr.mo.gov/env/wpp/epermit/help.htm. See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.
9. 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 www.dnr.mo.gov/env/wpp/401/ for more information.

10. Upon completion of construction:

- A. Mr. Douglas Phillips will become the continuing authority for operation, maintenance, and modernization of these facilities;
- B. Submit the operating permit fee of \$150 for issuance of the Missouri State Operating Permit;
- C. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D); and
- D. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications.

IV. REVIEW SUMMARY

1. AMMONIA

The Water Protection Program is providing this notice to inform permittees that EPA's published ammonia criteria for aquatic life protection is lower than the current Missouri criteria. The department has initiated stakeholder discussions on this topic and at this time, there is no firm target date for starting the rulemaking to adopt new standards. More information can be found at <http://dnr.mo.gov/pubs/pub2481.htm>.

Under the antidegradation review process and in the draft operating permit, EPA's proposed criterion was discussed. The proposed effluent limits for the antidegradation review of 7.8 mg/L daily maximum and 3.0 mg/L monthly average were calculated. The draft operating permit calculates the seasonal limits for ammonia with the mixing zone.

2. CONSTRUCTION PURPOSE

Phillips-Moore is a two house development approximately 16 miles from the Edwards and 30 miles from Warsaw, MO. Both houses have existing onsite systems needing upgraded, as failure of those systems was attributed to the shallow soils, proximity to the lake and the inadequate field size available. The Advantex Recirculating Fabric Filter consists of a plastic box containing a felt-like material used to treat the wastewater. The system is similar to a recirculating sand filter except that the filter media is an engineered fabric textile. The raw sewage first goes through a septic tank with the Advantex filter treating the water from the septic tank. The design flow will be 555 GPD.

3. FACILITY DESCRIPTION

The wastewater will be collected in existing septic tanks then gravity flow into the recirculation tank. Then the water will be pumped from the recirculation tank to the two AX-20 Advantex textile filters. Treated effluent will then drain back to the recirculation tank for more treatment. The discharge effluent will pass through an ultraviolet light and a calibrated v-notch weir before discharge to Lake of the Ozarks.

4. COMPLIANCE PARAMETERS

The proposed facility underwent an antidegradation review in February 2015 and will be required to meet the following effluent limits when construction is complete:

Parameter	Units	Maximum Daily Effluent Limit	Average Monthly Effluent Limit
Flow	gpd	*	*
Biochemical Oxygen Demand ₅	mg/L	15	10
Total Suspended Solids	mg/L	22.5	15
pH	SU	6.5-9.0	6.5-9.0
Ammonia as N	mg/L	7.8	3.0
Dissolved Oxygen	mg/L	*	*
<i>E. Coli</i>	#/100 mL	630	126

*Monitoring only

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The existing septic tanks will be used and piped to the new recirculation tank. The existing tanks have capacity of 1,000 gallons each. The recirculation tank shall be a 1500 gallon concrete tank with a 15 inch diameter screen pump vault with two pumps, operating in an alternating manner. The pumps will be 4 stage OSI P300712 pumps with a capacity of 30 gallons per minute pumping capacity. The total dynamic head from recirculation tank to fabric filter is 64.9 feet.

The piping from the septic tank to the recirculation tank will be 4 inch Schedule 40 PVC pipe, as will the piping from the Advantex system to the ultraviolet disinfection system. The piping from the recirculation tank to the two Advantex systems will be 1.5 inch schedule PVC pipe with a two-way Hydrotek valve.

The required dosing time of the AX-20 system based on four times the average design flow and at recommended 30 gallons per dose, the total dosing cycle is 38.92 minutes for both filters. From the Advantex A-20 system, water will flow to the splitter box where the majority of the water will be recycled to the recirculation tank and a small amount will be pumped to the disinfection system for final treatment before discharge.

The dosing to the ultraviolet system was based on 20% of the pump rate of 30 gpm in the recirculation tank, which is 6 gpm. The ultraviolet disinfection system is sized for 12 gal/min discharge to cover the possibility of accidental operation of both pumps in the recirculation tank. Sanitron S23 or equivalent will be used. Maximum output at 254 nanometers and a rated effective life of 10,000 hours of 30,000 μ WSec/cm². The UV units shall be installed with alarms to separately indicate lamp failure and low UV intensity. Before discharge into Lake of the Ozarks, the wastewater flows through calibrated v-notch weir and sampling location. The project will also include fencing modifications, electrical wiring, and other general site work appropriate to the scope and purpose of the project.

6. OPERATING PERMIT

The antidegradation review is required to be public noticed per 10 CSR 20-7.031(2) and was public noticed March 6, 2015-April 6, 2015. No comments were received. Upon completion of construction, facility will need to submit the Statement of Work Completed and the operating permit fee of \$150.

Leasue J. Meyers, EI
Engineering Section
leasue.meyers@dnr.mo.gov

AP 17111
CP0001087



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH
FORM B - APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT FOR
FACILITIES WHICH RECEIVE PRIMARILY DOMESTIC WASTE (≤100,000 gallons per
day) UNDER MISSOURI CLEAN WATER LAW

FOR AGENCY USE ONLY	
CHECK NUMBER	2123
DATE RECEIVED	10/31/14
FEE SUBMITTED	\$150.00

8B

NOTE PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM

1. This application is for:

- An operating permit and antidegradation review public notice.
- A construction permit following an appropriate operating permit and antidegradation review public notice.
- A construction permit and a concurrent operating permit and antidegradation review public notice.
- A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required).
- An operating permit for a new or unpermitted facility. Construction Permit # _____
- An operating permit renewal: Permit #MO-_____ Expiration Date _____
- An operating permit modification: Permit #MO-_____ Reason: _____

WATER PROTECTION PROGRAM

OCT 3 2014

RECEIVED

1.1 Is this a Federal/State Funded Project? YES NO Funding Agency/Project #: _____

1.2 Is the appropriate fee included with the application (See instructions for appropriate fee)? YES NO

2. FACILITY (Outfall 1 of 1)

NAME Douglas Phillips		TELEPHONE WITH AREA CODE	
ADDRESS (PHYSICAL) 267 Mamre Road	CITY Edwards	STATE MO	ZIP CODE 65326

2.1 LEGAL DESCRIPTION: NE ¼, NE ¼, NE ¼, Sec. 27, T 40, R 17 Camd County

2.2 UTM Coordinates Easting (X): _____ Northing (Y): _____
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: _____

3. OWNER

NAME Douglas Phillips		E-MAIL ADDRESS	TELEPHONE WITH AREA CODE
ADDRESS 367 Mamre Road	CITY Edwards	STATE MO	ZIP CODE 65326

3.1 Request review of draft permit prior to Public Notice? YES NO

4. CONTINUING AUTHORITY: Permanent organization which will serve as the continuing authority for the operation, maintenance and modernization of the facility.

NAME Douglas Phillips		TELEPHONE WITH AREA CODE	
ADDRESS 367 Mamre Road	CITY Edwards	STATE MO	ZIP CODE 65326

5. OPERATOR

NAME Chad Stout	CERTIFICATE NUMBER 6284	TELEPHONE WITH AREA CODE (573) 346-2092
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6. FACILITY CONTACT

NAME Douglas Phillips	TITLE Owner	TELEPHONE WITH AREA CODE
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7.0 ADDITIONAL FACILITY INFORMATION

7.1 Description of facilities (Attach additional sheet if required). Attach a 1" = 2,000' scale U.S. Geological Survey topographic map showing location of all outfalls and downstream landowners. (See Item 9.)

7.2 Facility SIC code: 495; Discharge SIC code: 495; Facility NAICS code: _____; Discharge NAICS code: _____.

7.3 Number of people presently connected or population equivalent (P.E.) 7.4 Design P.E. 7.4
 Number of units presently connected: Homes 2 Trailers 0 Apartments 0 Other 0
 Design flow for this outfall: 555 Total design flow for the facility: 555 Actual flow for this outfall: _____
 Commercial Establishment: Daily number of employees working _____ Daily number of customers/guests _____

7.4 Length of pipe in the sewer collection system? 200 feet/miles (Please denote which unit is appropriate.)

7.5 Does any bypassing occur in the collection system or at the treatment facility? Yes No (If yes, attach explanation.)

7.6 Does significant infiltration occur in the collection system? Yes No (If yes, attach explanation and proposed repair.)

7.7 Is industrial waste discharged to the facility identified in Item 2? Yes No (If yes, see instructions.)

7.8 Will the discharge be continuous through the year? Yes No
 a. Discharge will occur during the following months: All 12 Months
 b. How many days of the week will the discharge occur? All 7 Days

7.9 Is wastewater land applied? Yes No (If yes, attach Form I.)

7.10 Will chlorine be added to the effluent? Yes No
 a. If chlorine is added, what is the resulting residual? UV µg/l (micrograms per liter)

7.11 Does this facility discharge to a losing stream or sinkhole? Yes No

7.12 Attach a flow chart showing all influents, treatment facilities and outfalls.

7.13 Has a waste load allocation study been completed for this facility? Yes No

7.14 List all permit violations, including effluent limit exceedances in the last five years. Attach a separate sheet if necessary.
 If none, write none. NONE

8. SLUDGE HANDLING, USE AND DISPOSAL			
8.1	Is the sludge a hazardous waste as defined by 10 CSR 25? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
8.2	Sludge Production, including sludge received from others: <u>.0518</u> Design Dry Tons/Year <u>.0518</u> Actual Dry Tons/Year		
8.3	Capacity of sludge holding structures: Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge; <input type="checkbox"/> No sludge storage is provided.		
8.4	Type of Storage:	<input type="checkbox"/> Holding tank <input type="checkbox"/> Basin <input type="checkbox"/> Concrete Pad	<input type="checkbox"/> Building <input checked="" type="checkbox"/> Other (Please describe) <u>Septic Tanks</u>
8.5	Sludge Treatment: <input type="checkbox"/> Anaerobic Digester <input type="checkbox"/> Storage Tank <input type="checkbox"/> Lime Stabilization <input type="checkbox"/> Lagoon <input type="checkbox"/> Aerobic Digester <input type="checkbox"/> Air or Heat Drying <input type="checkbox"/> Composting <input type="checkbox"/> Other (Attach description)		
8.6	Sludge Use or Disposal: <input type="checkbox"/> Land Application <input checked="" type="checkbox"/> Contract Hauler <input type="checkbox"/> Hauled to Another Treatment Facility <input type="checkbox"/> Solid Waste Landfill <input type="checkbox"/> Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years) <input type="checkbox"/> Incineration <input type="checkbox"/> Sludge Retained in Wastewater treatment lagoon <input type="checkbox"/> Other _____ Attach explanation sheet.		
8.7	PERSON RESPONSIBLE FOR HAULING SLUDGE TO DISPOSAL FACILITY <input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (complete below)		
NAME A & A Septic			
ADDRESS PO Box 589		CITY Linn Creek	STATE MO ZIP CODE 65052
CONTACT PERSON Daryl Amall		TELEPHONE WITH AREA CODE 573-346-5123	PERMIT NO. MO- 0117731
8.8	SLUDGE USE OR DISPOSAL FACILITY <input type="checkbox"/> By Applicant <input checked="" type="checkbox"/> By Others (Please complete below.)		
NAME Same as above			
ADDRESS		CITY	STATE ZIP CODE
CONTACT PERSON		TELEPHONE WITH AREA CODE	PERMIT NO. MO-
8.9	Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Please attach explanation)		
9. DOWNSTREAM LANDOWNER (S). ATTACH ADDITIONAL SHEETS AS NECESSARY. SEE INSTRUCTIONS.			
NAME Charles Bernardi			
ADDRESS 295 Mamre Road		CITY Edwards	STATE MO ZIP CODE 65326
10. DRINKING WATER SUPPLY INFORMATION			
10.1	WHAT IS THE SOURCE OF YOUR DRINKING WATER SUPPLY: A. Public supply (municipal or water district water) _____ If public, please give name of the public supply _____ B. Private well <u>Private</u> C. Surface water (lake, pond or stream) _____		
10.2	Does your drinking water source serve at least 25 people at least 60 days per year (not necessarily consecutive days)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
10.3	Does your supply serve housing which is occupied year round by the same people? This does not include housing which is occupied seasonally? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
11.	I certify that I am familiar with the information contained in the application, that 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 the Missouri Clean Water Law.		
NAME AND OFFICIAL TITLE (TYPE OR PRINT) Douglas Phillips		TELEPHONE WITH AREA CODE 573 345-8832	
SIGNATURE <i>Douglas C Phillips</i>		DATE SIGNED 7/7/14	